Macon County

Multi-Hazard Mitigation Plan



Submitted for Agency Review in April 2013

Table of Contents

Figures

Tables

APPENDICES

Executive Summary

Natural hazards are an unavoidable part of daily life. The communities participating in this plan are subject to natural hazards that can impact the quality of life, and have the capability of destroying property, threatening lives, disrupting businesses and impacting infrastructure. Macon County has experienced natural hazards, including tornados, flooding, severe winter storms, extreme temperatures, and drought. There is little that citizens can do to control the forces of these events. However, citizens and communities can reduce the negative impact of natural hazards through mitigation measures. The Federal Emergency Management Agency (FEMA) defines hazard mitigation as "any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards." The purpose of this plan is to identify the risks associated with the hazards that threaten Macon County and identify ways to reduce these risks through mitigation activities for current structures and infrastructure and to lessen the impacts on future growth. These mitigation activities include structural projects, education and outreach efforts, capital improvement projects, etc. FEMA encourages the use of hazard mitigation to develop a complete document that can be modified and updated as needed.

Hazard Mitigation Grant Program

This plan was developed through a Hazard Mitigation Grant Program grant. The Hazard Mitigation Grant Program (HMGP) is intended to assist state and local governments in recovery efforts following a disaster and development of long term natural hazard reduction plans. The HMGP grant will assist Macon County in mitigating the exposure of the County and its residents to natural disasters through analysis and planning efforts. This plan was also developed with the cooperation of the Illinois Emergency Management Agency.

List of Acronyms

CDBG	Community Development Block Grant
EMPG	Emergency Management Performance Grant
EOP	Emergency Operations Plan
ER	Emergency Relief
EWP	Emergency Watershed Protection
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Studies
FMA	Flood Mitigation Assistance Program
GIS	Geographic Information Systems
HAZUS-MH	Hazards U.S. Multi-Hazard
HI	Heat Index
HMGP	Hazard Mitigation Grant Program
IDNR	Illinois Department of Natural Resources
IEMA	Illinois Emergency Management Agency
ISWS	Illinois State Water Survey
MMI	Modified Mercalli Intensity
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OSLAD	Open Space Lands Acquisition and Development
PA	Public Assistance Grant Program
PDSI	Palmer Drought Severity Index
RL	Repetitive Loss
SRL	Severe Repetitive Loss
STAPLEE	Social, Technical, Administrative, Political, Legal, Environmental, and Economic
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
WRDA	Water Resources and Development Act

1.0 Introduction

Macon County is located in central Illinois, approximately 30 miles east of Springfield, Illinois. Macon County is often referred to as "The Heart of Illinois" because of its central location in the state. The county is bounded on the west by Christian, Sangamon, and Logan counties, the east by Piatt and Moultrie counties, the north by De Witt County, and the south by Shelby County. Macon County is approximately 581 square miles in size, with 110,768 residents as of the 2010 U.S. Census. The Sangamon River is the main river running through Macon County, which splits the county in half north to south. The largest body of surface water in the county is Lake Decatur, which is a reservoir located within the City of Decatur. An earthen/concrete dam was built in 1923 to produce this lake, which serves as a source of water for multiple communities in Macon County especially the City of Decatur.

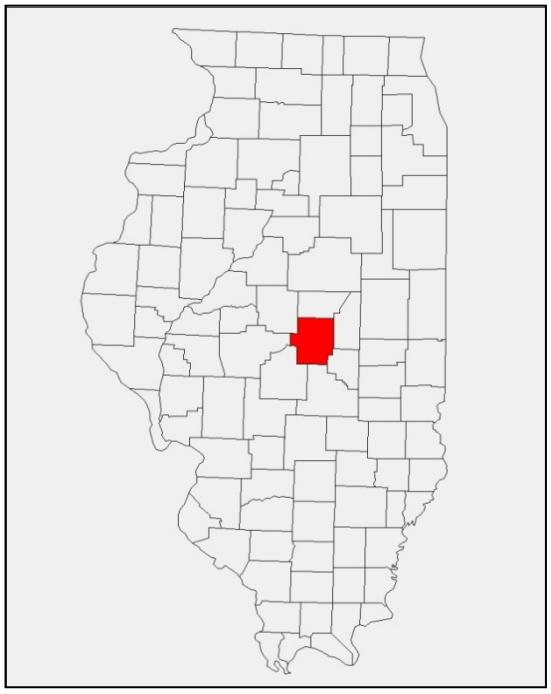


Figure 1. Macon County (in red) location map

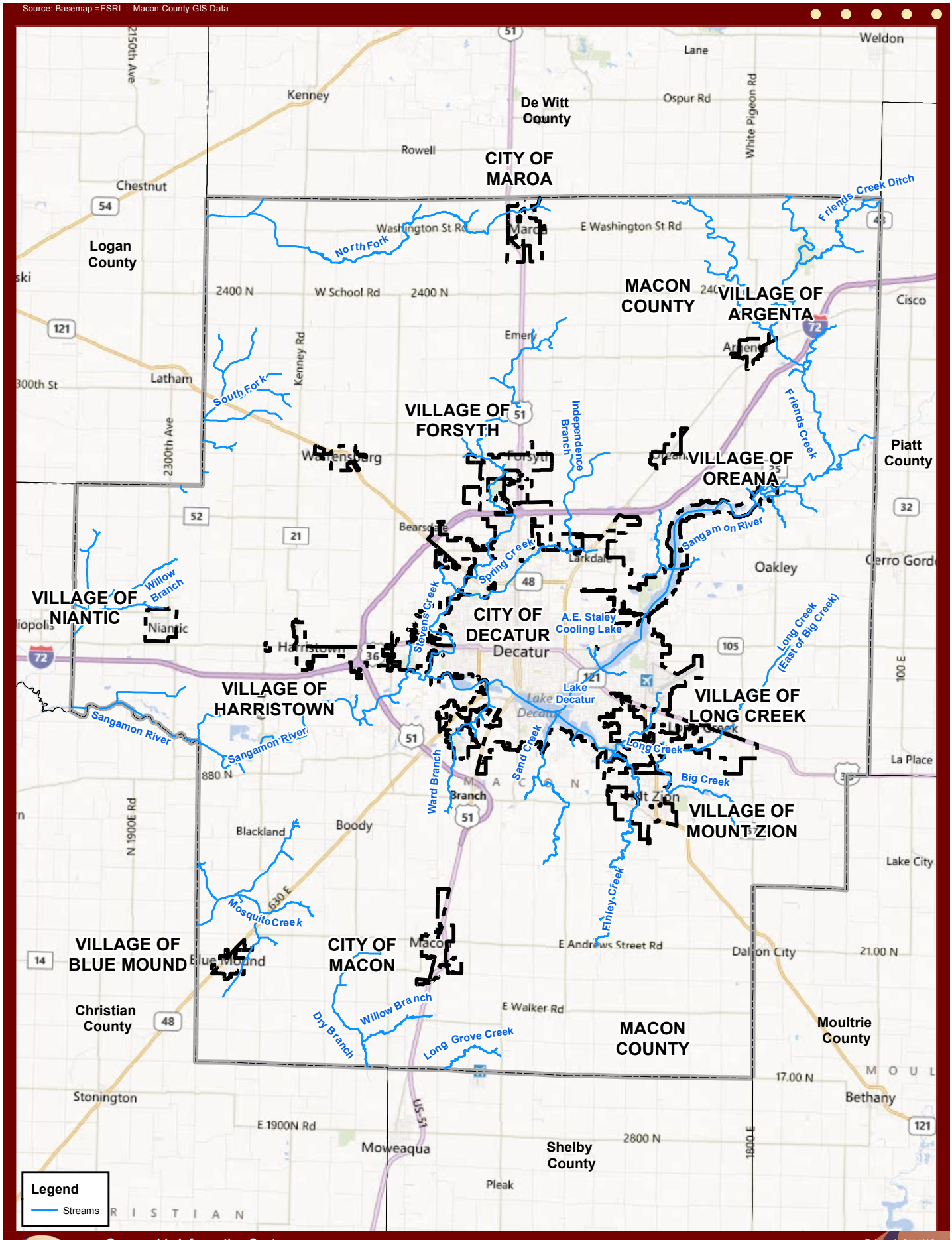
The predominant employment category in the County according to the 2010 Census is split between manufacturing and social services. The major industries are located primarily in the Decatur area, which includes manufacturers of heavy equipment, auto parts and glass (Source: Federal Emergency Management Agency FEMA). Three major industries within Decatur are Caterpillar Tractor, A.E. Staley Manufacturing Company, and Archer Daniels Midland (ADM). ADM is a major manufacturer of agriculture products. The per capita income for the residents of Macon County was $25,797, with a median household income of $59,982, which is 93% of the national median income (U.S. Census). Figure 1 shows the location of Macon County in Illinois.

There are nine incorporated villages, three incorporated cities, and eleven unincorporated communities in Macon County. Figure 2 shows all communities within the county. These are:

Villages: Argenta, Blue Mound, Forsyth, Harristown, Long Creek, Mount Zion, Niantic, Oreana, and Warrensburg

Cities: Decatur, Macon, and Maroa

Unincorporated Communities: Austin, Elwin, Friends Creek, Hickory Point, Illini, Milam, Oakley, Pleasant View, South Macon, South Wheatland, and Whitmore


Source: Basemap =ESRI : Macon County GIS Data
CITY OF MAROA
De Witt County
Logan County
MACON COUNTY
VILLAGE OF ARGENTA
VILLAGE OF FORSYTH
VILLAGE OF OREANA
Piatt County
VILLAGE OF NIANTIC
CITY OF DECATUR
VILLAGE OF HARRISTOWN
VILLAGE OF LONG CREEK
VILLAGE OF MOUNT ZION
VILLAGE OF BLUE MOUND
CITY OF MACON
Christian County
MACON COUNTY
Moultrie County
Shelby County
Legend
Streams
Geographic Information Systems
Printed: 2/14/13
0
4.5 Miles
N
Figure 2 - Communities
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com
Macon County Multi-Hazard Mitigation Plan

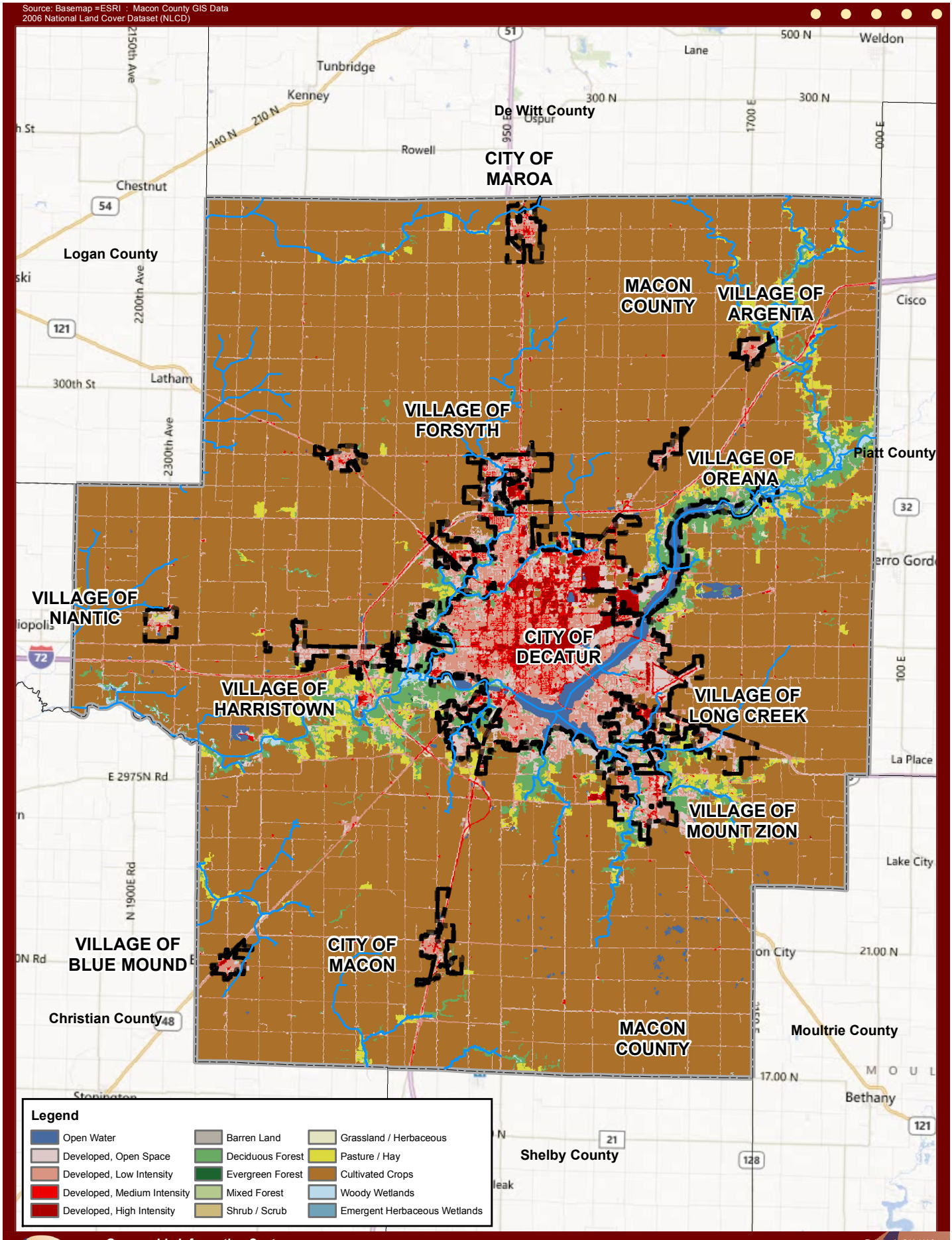
Land use in the county is predominately agricultural. According to the land cover data, as calculated by the 2006 National Land Cover Data set (NLCD), 76% of Macon County is cultivated crops. Approximately 14% of the County is classified as developed and 1.2% of the County is classified as seasonally wet to permanently open water. Figure 3 shows the land cover of the County. The following table is a summary of the land cover data, provided by the NLCD.

Table 1. Land Cover Data

Cover Type	Percent Cover
Barren Land	0%
Cultivated Crops	76.2%
Deciduous Forest	4.5%
Developed, High	<1%
Developed, Low	6.9%
Developed, Medium	1.7%
Developed, Open	5.6%
Emergent Herbaceous	<1%
Evergreen Forest	<1%
Grassland/Herbaceous	<1%
Open Water	1.2
Pasture/Hay	2.4
Woody Wetlands	<1%

Source: United States Geological Survey (USGS) 2006 NLCD.

The land area of Macon County is approximately 581 square miles with roughly 255 miles of mapped streams and rivers. The County is situated in the Springfield Plain and the Bloomington Ridge Plain. The topography is generally level and gently sloping on the broad upland with greater relief in areas dissected by drainage ways. Elevations range from more than 700 feet above sea level in Oakley Township to less than 550 feet above sea level where the Sangamon River leaves the county.



Geographic Information Systems

Printed: 2/14/13

Figure 3 - Land Use

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Macon County Multi-Hazard Mitigation Plan

1.1 AREA CLIMATE

The climate in Illinois is described as continental with all four seasons. There are generally substantial annual and diurnal temperature, humidity, and pressure system fluctuations, and the area has cold winters and hot summers. The average annual temperature in the central portion of the state, where Macon County and its jurisdictions are located, is approximately 53°F. During the summer, there is an average of 25 days with temperatures over 85°F, with an overall average high in the mid 70's during the summer. Temperatures for the winter season are: approximately 73 days at or below 32°F, with average highs in the upper 30's to lower 40's. Macon County averages approximately 40 inches of precipitation per year, with snow and ice accounting for approximately 16 inches of that total each year (Source: Illinois State Water Survey (ISWS)).

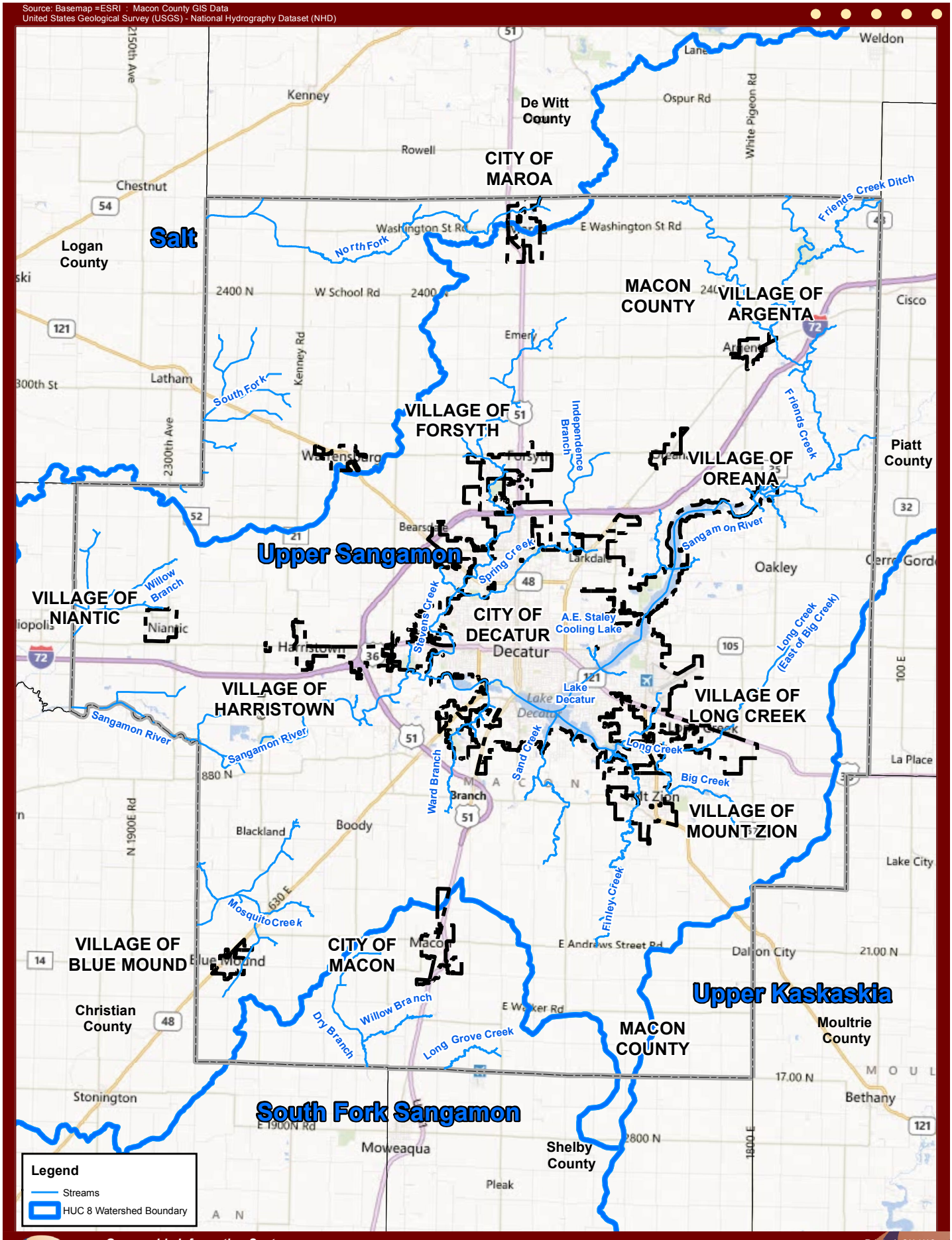
1.2 COUNTY WATERSHEDS

Macon County is located within the Sangamon River, Salt River, and Kaskaskia River watersheds. The Salt, Sangamon, and Kaskaskia rivers all flow into the Illinois River. Figure 4 shows the watershed boundaries in Macon County (thick blue line).

1.3 ADOPTION BY THE LOCAL GOVERNING BODY

The Macon County Multi-Hazard Mitigation Plan, hereafter known as "the Plan" adheres to the guidelines outlined in *44 CFR, Section 201.6*.

As the Plan's Administrator, Macon County submitted the Plan to the Illinois Emergency Management Agency (IEMA) and the FEMA Region V for review and comment. After the state and federal reviewers certified that the Plan was approved, Macon County then forwarded the Plan to each participating jurisdiction for formal adoption. Signed copies of the executed orders for each jurisdiction are included in **Appendix A** of the Plan.


Source: Basemap =ESRI : Macon County GIS Data
United States Geological Survey (USGS) - National Hydrography Dataset (NHD)
CITY OF MAROA
De Witt County
Logan County
Salt
MACON COUNTY
VILLAGE OF ARGENTA
VILLAGE OF FORSYTH
VILLAGE OF OREANA
Piatt County
Upper Sangamon
VILLAGE OF NIANTIC
CITY OF DECATUR
VILLAGE OF HARRISTOWN
VILLAGE OF LONG CREEK
VILLAGE OF MOUNT ZION
VILLAGE OF BLUE MOUND
CITY OF MACON
Upper Kaskaskia
Christian County
Moultrie County
MACON COUNTY
South Fork Sangamon
Shelby County
Legend
Streams
HUC 8 Watershed Boundary
Geographic Information Systems
Printed: 2/14/13
0
4.5 Miles
N
Figure 4 - Watersheds
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com
Macon County Multi-Hazard Mitigation Plan

The following jurisdictions are represented by the Plan.

Table 2. Jurisdictions Represented by the Plan

Community	FEMA Community ID	Adoption Date
Argenta, Village of	170942	
Blue Mound, Village of	170946	
Decatur, City of	170429	
Forsyth, Village of	171017	
Harristown, Village of	171214	
Long Creek, Village of	171016	
Macon, City of	171226	
Maroa, City of	171215	
Macon County	170928	
Macon County Conservation District	N/A	
Mount Zion, Village of	170962	
Niantic, Village of	170430	
Warrensburg, Village of	171218	

1.4 JURISDICTION PARTICIPATION

The jurisdictions stated above were included in the stakeholder group. The planning team coordinated with the stakeholders on multiple levels of the planning process. The stakeholders provided information on historical hazard events, regulatory planning documents, mitigation activities, and overall comments/feedback on the plan and planning process. This involvement was either through direct contact during the three public meetings, face to face meetings between the EMA office and the jurisdictions, or through e-mail contact. The information requested by the planning team was provided during the public meetings. Documentation / Information provided to the stakeholders can be found in **Appendix B** of the Plan.

2.0 Planning Process

The Macon County Multi-Hazard Mitigation Plan is developed as a multi-hazard, multi-jurisdictional plan for the communities within Macon County, Illinois. The Macon County Emergency Management Agency (EMA) Department served as the Plan's administrator and is the primary point of contact for the Plan. Stantec Consulting Services Inc. (Stantec) assisted in the development of the plan, facilitated community coordination, and supported the County through the plan approval process.

2.1 DESCRIPTION OF THE PLANNING PROCESS

The process used to develop the Plan was based upon FEMA's 386-8 Multi-Jurisdictional Planning document. Specifically, the planning process focused upon soliciting comprehensive feedback from stakeholders and the general public through meetings, questionnaires, and document comment forms.

Phases of the planning effort were consistent with the original scope of work included in the Fiscal Year 2010 Hazard Mitigation Grant Program grant application and complied with FEMA recommended approaches including:

a. Focusing toward including all jurisdictions within the County.

b. Forming a multi-tiered planning team with clearly defined roles and responsibilities.

c. Providing opportunities for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process.

d. Providing public outreach and opportunities for involvement.

e. Reviewing and incorporating existing plans, studies, reports, and technical information, as appropriate.

f. Conducting thorough hazard profiling and comprehensive risk assessment.

g. Developing mitigation goals and actions prioritized for each community.

h. Providing opportunities for the public to comment on the Plan during the drafting stage and prior to plan approval.

i. Developing plan maintenance procedures that keep the Plan up to date.

2.2 THE PLANNING TEAM

The planning process was designed to maximize stakeholder involvement and participation to create a viable plan, complete with risk identification and risk mitigation strategies.

The Planning Team was represented by the following groups:

- Chief Elected Officials. Consisted of the County's senior leadership for each participating jurisdiction including the County Chairman, Board Members, and Village Presidents. This group authorized and committed the necessary resources and personnel to ensure that each jurisdiction was properly represented and met the participation requirements.

- Planning Committee. Consisted of one person as the primary point of contact from each jurisdiction responsible for collecting data, reviewing plans/studies, facilitating public input, developing mitigation goals and actions for each of their jurisdictions, and helping draft the Plan. The Planning Committee was also responsible for coordinating future plan maintenance including yearly reviews and five-year updates.

- Plan Consultant. Stantec was responsible for facilitating plan development, analysis, mapping, and document preparation support.

Appendix B contains a list of all meeting participants and the jurisdictions they represented.

2.3 PUBLIC INVOLVEMENT

Public participation, for the purpose of the Plan, is defined as an opportunity for each jurisdiction and the citizens of that community to participate in the planning process. Opportunities for public participation were offered through multiple public stakeholder meetings, a publicly available website, and additional future plan maintenance opportunities. In addition, representatives of neighboring counties and jurisdictions were solicited for their input into the planning process and the results of the plan. Documentation announcing the meetings and soliciting input from the public and stakeholders is available in **Appendix B**.

Opportunities for the public to participate were provided in the following ways:

a. Planning Team stakeholder meetings were open to the public.

b. Open public meetings were held to inform the public of the planning process and to request participation.

c. Draft plan text and supporting information were made available via the website for public input and review.

d. Public opportunities for review of the final plan.

2.3.1 Public Meetings

Three public meetings were held during the development of the Plan, as shown in the table below. The meetings were publicized through a web link from the County's government homepage.

Table 3. Stakeholder Meetings Scheduled

Date	Purpose of Meeting	Location
02/22/2012	Steering Committee Meeting, Data Collection	Macon County Board Room
08/17/12	Hazard Assessment and Mitigation Activities	Macon County Board Room
02/14/13	Mitigation Activity Implementation and Funding	Macon County Board Room

The Plan Kickoff Meeting held on February 22, 2012 included a presentation to inform community representatives and the public about the hazard mitigation planning process and the benefits for each jurisdiction. The focus of the meeting was to introduce the planning process, request assistance from the public/private sector and citizens, collect hazard data and critical facilities, and encourage continued participation in the planning and implementation process. During this meeting, Mr. Jim Root of the Macon County EMA was identified as the Plan's primary point of contact for public input or questions and the primary contact between the County and the Plan's consultant.

The Stakeholder Hazard Assessment and Mitigation Activities Meeting held on August 20, 2012, included a presentation sharing the results of the hazard identification surveys, hazard profiles, and hazard assessments. During this meeting, participants were encouraged to define mitigation goals and consider actions in a manner that weighted priority, funding, and mitigation methodology.

The planning consultant and local plan administrators provided guidance throughout both meetings and shared ideas for maximizing stakeholder input. Minutes for each meeting were kept by the County EMA and made available to the public, as well as the presentations. They are provided in **Appendix B** of this Plan.

2.3.2 Multi-Media Outreach

The Planning Team used the County EMA website http://www.maconcountyema.org/ for purposes of promoting planning meetings, hazard questionnaires, storing documents, facilitating Plan review and providing general plan information to the public and stakeholders.

The site allowed users to upload, download, and access sections of the hazard plan and supporting documents. The result allowed the public to easily obtain and comment on the Plan during both draft stages and prior to Plan adoption. The site was also used to disseminate brochures, past presentations, meeting minutes, other example hazard plans, promote FEMA mitigation project programs and link to the Illinois Emergency Management Agency for additional support.

2.3.3 Public Review of Draft Plan

The draft plan was assembled and provided to the Planning Team for review on February 14, 2013, and then for public review on March 4, 2013. The public and planning team was given 30 days to provide comments. Hardcopy versions of the draft plan were delivered to each jurisdiction's City Hall, while electronic versions were made accessible from the Hazard Mitigation Plan website http://www.maconcountyema.org/Mitigation.html.

2.3.4 Final Plan Access

Following local adoption and FEMA approval of the Plan, the document will be made available to the public at the Macon EMA office and website.

2.4 INCORPORATION OF EXISTING DOCUMENTS

Existing plans, studies, reports, and technical information were collected from the communities during the planning process and at meetings. The Planning Team members reviewed and identified common problems, development policies, mitigation strategies, and other policies, plans, programs, and regulations. As part of this effort, the Team contacted numerous agencies seeking local hazard data, existing plans, partnerships, common goals, projects, and commitment to a multi-hazards mitigation plan. This outreach included soliciting information from federal, state, and local resources.

The following are examples of the types of information used to identify natural hazards, vulnerable areas and assets, mitigation actions, and mitigation projects.

- Zoning and Subdivision Ordinances. The ordinances adopted by the County and communities prohibit most development in floodplains and "land subject to inundation" to minimize the danger and financial losses of flooding. The Zoning Ordinance does allow development which would not be overly impacted by flooding, such as parks, golf courses, playgrounds, etc.

- Emergency Operations Plan (EOP). Macon County maintains an Emergency Operations Plan. The plan is a source for hazard identification and emergency operation procedures. Procedures include lists of roles and responsibilities of persons/departments in charge of dispatching support during a natural hazard, rules that are followed, evacuation routes, etc.

- Floodplain Ordinance. This ordinance was adopted in 2011 to prevent damages caused by flooding and to regulate development in the floodplain. The permit requires existing buildings impacted by a flood to be re-built in such a way to minimize future damages. In addition, the ordinance prohibits development in the floodplain without a permit from the Zoning Administrator. No development in the flood hazard area is permitted to increase the base flood elevation or impact other properties.

- Flood Insurance Rate Maps (FIRMs). Macon County's Flood Insurance Rate Maps were published in 2011. The data was made available by FEMA and the data was used in

correlation with geographic information systems (GIS) to estimate structural vulnerability and critical facilities that are located within area floodplains.

- Illinois State Hazard Mitigation Plan. The state hazard mitigation plan was useful in providing information for each hazard (i.e. identifying hazards), vulnerability classes, and assessment methods. http://www.state.il.us/iema/planning/planning.htm

- National Flood Insurance Program (NFIP). The County and each of the communities, with the exception of Argenta, Harristown, City of Macon, Maroa, Niantic, Oreana, and Warrensburg, enrolled in the NFIP. The NFIP establishes standards for development in the floodplain and provides flood insurance to property owners. The NFIP also maintains a database, which contains information regarding the number and value of flood insurance policies in each jurisdiction, the value of any claims paid, and the number of repetitive loss structures in the communities.

- Upper Sangamon River Discovery Project. The Upper Sangamon Watershed Discovery Project was a partnership with the University of Illinois, ISWS, and FEMA to initiate FEMA's "Risk Map" process. The discovery process involved coordination with watershed stakeholders, data collection and analysis, a meeting with stakeholders in the watershed, and development of recommendations for future Risk MAP projects based on an analysis of data information gathered throughout the process. This information helped determine hazard impacts to Macon County.

- Illinois State Water Survey (ISWS) Drought Study. The ISWS studied the potential impacts on the Mahoment Aquifer and Surface Reservoirs. The Decatur area was part of that study. This study examined the impact of current and future water demands on the streams and aquifers in east-central Illinois through the use of computer-based models. This study was incorporated into the Drought hazard of this plan. www.isws.illinois.edu/pubdoc/CR/ISWSCR2011-08.pdf

- Lake Decatur Dam Operations and Maintenance Plan (O & M). The City of Decatur uses a current Operation and Maintenance Plan for Lake Decatur Dam. This document identifies the responsibility to perform routine operation and maintenance of the dam and appurtenances. This O & M manual is referenced within the Dam/Levee section of this plan.

These plans, reports, and studies are incorporated or referenced throughout the Plan. If any plans, report, or studies were not included in the plan or if new documents are published, they may be added to the Plan during the next update.

3.0 Hazard Risk Assessment

In order to identify and prioritize mitigation actions for Macon County, the vulnerabilities and risks posed by each hazard to the community's population and infrastructure must be identified and calculated. Risk is defined as the combination of probability of a hazard occurring and the damage caused by the hazard. It is often expressed in terms of damage dollars per year or

percent chance of life loss. The goal of the risk analysis is to compare each hazard on an even basis because some hazards may be more likely to occur with less damage (e.g. thunderstorms) and others are relatively rare but can cause catastrophic damage (e.g. tornadoes).

3.1 RISK ASSESSMENT METHODOLOGY

The planning team utilized a multi-step process for the hazard risk assessment that utilized the following steps.

- Identify specific hazards of concern
- Identify vulnerable populations, assets and critical infrastructure
- Gather information on historic events and technical studies
- Calculate the probability of occurrence and associated damages
- Prioritize hazards

3.1.1 Hazard Identification

The Planning Team identified the following 10 hazards of concern for inclusion in the plan.

1. Flooding
2. Severe Storms
3. Winter Storms
4. Tornadoes
5. Droughts
6. Extreme Heat
7. Earthquakes
8. Dam/Levee Failure
9. Nuclear/Hazardous Material Accidents

3.1.2 Vulnerable Populations and Critical Infrastructure

At the outset of the project, data was gathered from project stakeholders including the locations of residential and commercial structures, utility and transportation infrastructure and critical facilities. Critical facilities are commonly considered to be police stations, fire and rescue facilities, hospitals, shelters, schools, nursing homes, water supply and waste treatment facilities and other structures the community identifies as essential to the health and welfare of the population and that are especially important following a disaster. These datasets were analyzed in a Geographic Information System (GIS) to compare their proximities to expected hazards. Table 4 lists the population for each community. Table 5 provides a summary of all critical facilities identified during the project. Location of Critical Facilities is in **Appendix I**. Additional information on specific properties and facilities at risk from individual hazards are discussed in the following sections.

Table 4. 2000 – 2010 U.S. Census

FIPS CODE			2000 Census	2010 Census	2000-2010	
CO	PLACE	Municipalities/CDPs	Total Population	Total Population	Change	% Change
115		**Macon County**	114,706	110,768	-3,938	-3.4
115	1972	Argenta village	921	947	26	2.8
115	6756	Blue Mound village	1,129	1,158	29	2.6
115	7315	Boody CDP	X	276	N/A	N/A
115	18823	Decatur city	81,860	76,122	-5,738	-7
115	27091	Forsyth village	2,434	3,490	1,056	43.4
115	33227	Harristown village	1,338	1,367	29	2.2
115	44498	Long Creek village	1,364	1,328	-36	-2.6
115	45941	Macon city	1,213	1,138	-75	-6.2
115	47072	Maroa city	1,654	1,801	147	8.9
115	51206	Mount Zion village	4,845	5,833	988	20.4
115	52961	Niantic village	738	707	-31	-4.2
115	56471	Oreana village	892	875	-17	-1.9
115	78916	Warrensburg village	1,289	1,210	-79	-6.1
		Macon County (Unincorporated)		14,516		

Source: http://www2.illinois.gov/census/Pages/Census2010Data.aspx

Table 5. Critical Facilities Summary

Emergency	Emergency Operations Center / Warning Sirens	11
	Police Stations	6
	Fire Stations	13
Education	Schools	62
Medical & Care Facilities	Medical / Nursing Facilities	9
Transportation	Airports / Heliports	4
	Bridges (Road/RR/Bike Trails)/ Culverts	467
	Dams / Levees	4
Utilities	Electric Facility / Lines / Communication Sub-stations	5
	Oil / Gas Facility / Pipeline	10
	Water Treatment Plants	8
	Water Sources	19
	Wastewater Treatment Plants / Facilities (Pump Stations)	18
Community Facilities / Government		17
Conservation District Sites (Rock Springs Conservation Area)		2
Industry / Manufacturing / Commerce Cents		2
	Total	**657**

3.1.3 Historic Records and Relevant Technical Studies

Data from the National Climatic Data Center (NCDC) was downloaded to review historic hazard information at the County level. The NCDC website presents each hazard and the historic information associated with it for each County, offering several hazard search results including: droughts, dust storm, flooding, fog, hail, hurricanes, lightning, tornadoes, wild/forest fires, ocean/lake surf, precipitation, snow and ice, temperature extremes, thunderstorms and high winds. Of those results, dust storms, severe fog, hurricanes, wild/forest fires, ocean/lake surf and severe precipitation have either never been documented in Macon County, or have not occurred since 1950. This left droughts, flooding, hail, lightning, tornadoes, snow and ice, temperature extremes, thunderstorms and high winds to further assess. Note that earthquakes are not part of the NCDC database. The information pertaining to earthquake susceptibility was attained from United States Geological Survey (USGS), the Illinois Department of Natural Resources (IDNR), and the Illinois Emergency Management Agency (IEMA).

In addition to the NCDC data, Stantec reviewed other data sources for a more detailed analysis. These data sources included; payments made by the Farm Service Agency (FSA) to farmers for disaster relief, the 2010 Illinois Natural Hazard Mitigation Plan, United States Army Corps of Engineers (USACE), Federal Emergency Management Agency (FEMA), Macon County EMA and Engineer's Office, U.S. Departments of Agriculture (USDA), and the Illinois State Water Survey (ISWS).

3.1.4 Hazard Risk Calculations

The next step was to analyze data sources to calculate risk for each hazard and their impact on each community. Two methods were utilized to prioritize hazards. The first, Average Annualized Loss (AAL) calculations, is a quantitative method. The AAL was computed from known damages and/or structures at risk. These values were gathered from the NCDC, Macon County Parcel/Structure Values, FEMA's All Hazards Loss Estimation Software (HAZUS-MH), FSA, & ODA. The HAZUS-MH program was used for in-depth analyses for Flooding and Earthquake Hazards.

Not all hazards had enough information to calculate direct AALs. For this reason, a second more qualitative method was utilized to compare each hazard through a consistent framework. This method and results are described in the further detail in Section 3.13.

3.2 FLOODING

Floods are generally the result of excessive precipitation, and can be classified under two categories: flash floods, the product of heavy localized precipitation in a short time period over a given location; and riverine floods, caused by precipitation over a longer time period. **Appendix D** provides further information/resources on flooding.

3.2.1 Historic Events

NOAA has recorded 29 flood events documented between 1994 and 2012 in Macon County (see **Appendix C**). Macon County has been impacted by 6 Flood/Flash Flood Disasters over the past 60 years. Table 6 summarizes the damages caused by these events.

Table 6. Summary of Flooding Events for Macon County

Hazards	Sum of Property Damage(s)	Sum of Crop Damages(s)	Sum of Deaths	Sum of Injuries
Flooding	50,000,000	0	0	0
Flash Flood	155,000	0	0	1
Total	**50,155,000**	**0**	**0**	**1**

During these events multiple communities in Macon experienced similar issues. The following information was provided by certain communities.

Forsyth, Village of

- April 11, 1979 Flood along Stevens Creek caused by 4.89" of rain. Flood water damaged the Weaver Road Bridge. Forsyth qualified for Disaster Relief Funds for the repair of the Bridge. Water also overtopped Oakland Avenue and County Highway 20.
- June 21, 1981 Flooding along Stevens Creek.
- May 16, 1990 Flooding along Stevens Creek damaged homes in Stevens Creek Estates.
- May 16, 1990 Flooding caused a total of $389,785 in reported damages. Village circulated questionnaire on flooding damages.
- Flooding reached near 100 year level on May 23 along Stevens Creek.

- June 14, 1990 Flooding along Stevens Creek damaged homes.
- December 4, 1994 Water over Oakland Avenue and County Highway 20.
- February, 2008 Water over County Highway 20.
- June 3, 2008 Flooding over County Highway 20, Oakland Avenue and through Beaver Creek.

Macon, City of

- Heavy precipitation from 2008 – 2010, causing damage to two dozen homes.
- Various homes around Eckhardt Street flooding backs up in basements.
- Stream overflows banks near the Hogan Hills subdivision.
- Sanitary System suffers from considerable groundwater infiltration.

Mount Zion, Village of

- West Main Street Bridge replaced in the late 1970's due in part to flood damage.

3.2.1.1 Repetitive Loss and NFIP (FEMA)

The primary purpose of the NFIP is to provide flood insurance to properties located in floodplains, as delineated by Flood Insurance Rate Maps (FIRMs). The NFIP maintains records of the frequency and costs of insurance claims for each jurisdiction. Table 7 summarizes the number and value of policies and claims in Macon County and each of the incorporated jurisdictions. Figure 5 shows the current FEMA floodplains within the county. Figures 6 and 7 show the general location of repetitive loss properties.

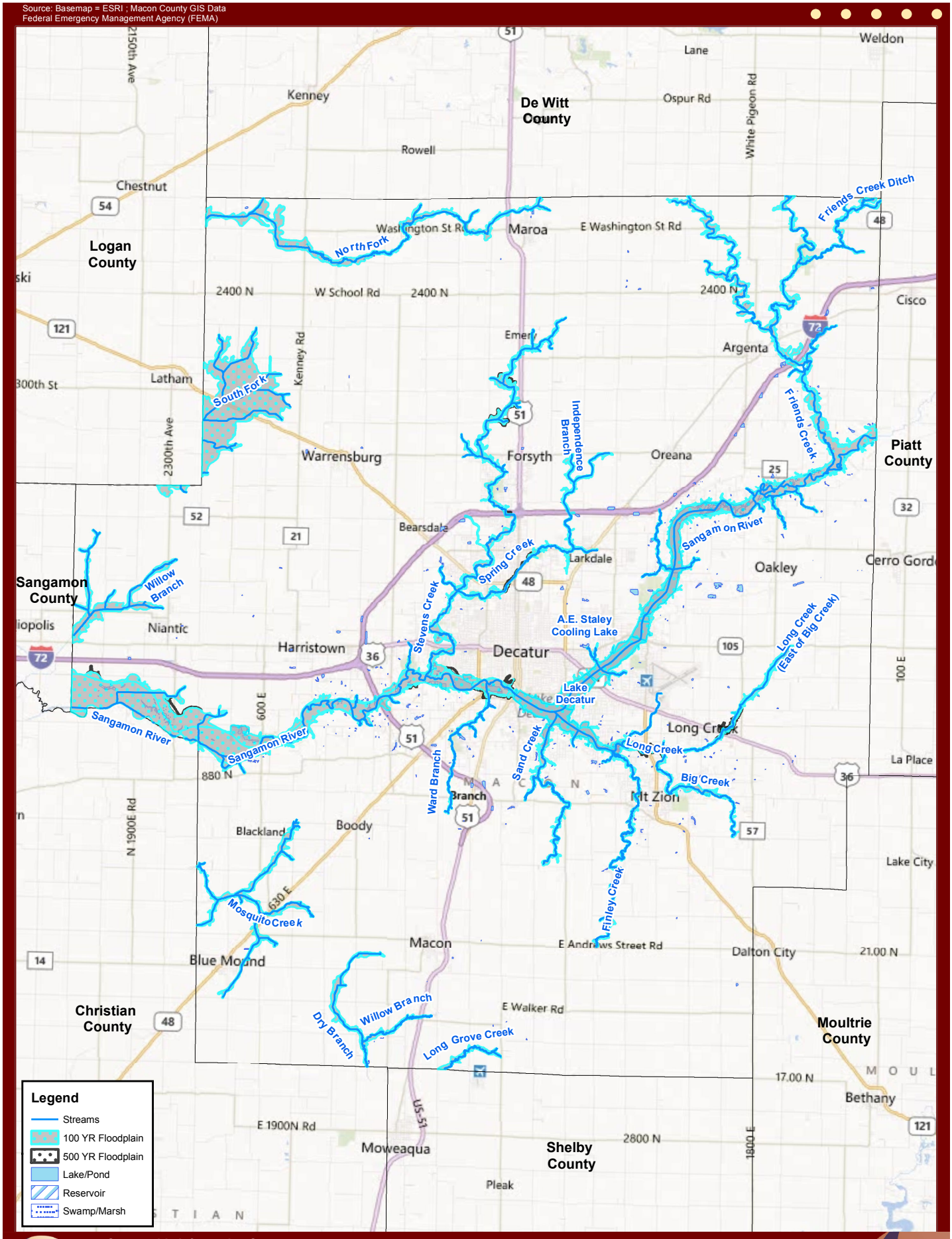

Source: Basemap = ESRI ; Macon County GIS Data
Federal Emergency Management Agency (FEMA)
Weldon
Lane
Kenney
De Witt County
Ospur Rd
White Pigeon Rd
Rowell
Chestnut
Logan County
Maroa
E Washington St Rd
North Fork
Friends Creek Ditch
2400 N
W School Rd
Cisco
Argenta
Latham
South Fork
Kenney Rd
Emery
Independence Branch
Friends Creek
Piatt County
Warrensburg
Forsyth
Oreana
2300th Ave
Bearsdale
Sangamon River
Spring Creek
Larkdale
Oakley
Sangamon County
Willow Branch
Niantic
Stevens Creek
A.E. Staley Cooling Lake
Harristown
Decatur
Long Creek (East of Big Creek)
Lake Decatur
600 E
Sangamon River
Long Creek
Sand Creek
Ward Branch
Big Creek
La Place
880 N
Mt Zion
Blackland
Boody
N 1900E Rd
Lake City
630 E
Mosquito Creek
Finley Creek
Macon
E Andrews Street Rd
Dalton City
21.00 N
Blue Mound
Christian County
Dry Branch
Willow Branch
E Walker Rd
Long Grove Creek
Moultrie County
17.00 N
Bethany
E 1900N Rd
US-51
Moweaqua
Shelby County
2800 N
1800 E
Pleak
Legend
Streams
100 YR Floodplain
500 YR Floodplain
Lake/Pond
Reservoir
Swamp/Marsh
Geographic Information Systems
Printed: 2/14/13
0
4.5 Miles
N
Figure 5 - FEMA Floodplains
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com
Macon County Multi-Hazard Mitigation Plan

Table 7. Summary of NFIP Policies and Claims

Community* *Indicates Non-Participation in the NFIP	Flood Policies	Past Claims No. /Total $	Repetitive Loss Properties
City of Decatur	155	138 / 899,497	22
CITY OF MACON*	0		0
CITY OF MAROA*	0		0
Macon County (Unincorporated)	40	34 / 342,391	4
Village of Argenta*	0		0
Village of Blue Mound	0		0
Village of Forsyth	23	7 / 28,431	0
Village of Harristown*	0		0
Village of Long Creek	1		0
Village of Mount Zion	2		0
Village of Niantic*	0		0
Village of Oreana*	0		0
Village of Warrensburg*	0		0
Totals	**221**	**179 / 1,270,319**	**26**

One of the primary concerns of the NFIP and FEMA are the repetitive loss structures and payments. In general, these structures are located in the floodplain, and account for approximately 12% of insurance policies in Macon County, but represent 36% of the total claims value. Thus, minimizing, or ideally eliminating, repetitive loss structures is a primary goal of the NFIP and FEMA. The majority of the repetitive loss structures throughout the county are single family residences.

Macon County currently has eleven (11) repetitive loss structures out of the twenty-six (26) on record that have not been mitigated. Nine (9) of these properties are in the City of Decatur and are caused by flooding from Lake Decatur, Stevens Creek, or Big Creek, There is also a cluster in the City of Decatur on Stevens Creek near the Village of Forsyth. The un-mitigated repetitive loss properties could be future mitigation projects.

3.2.1 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

3.2.1.1 Structure Inventory in Macon County

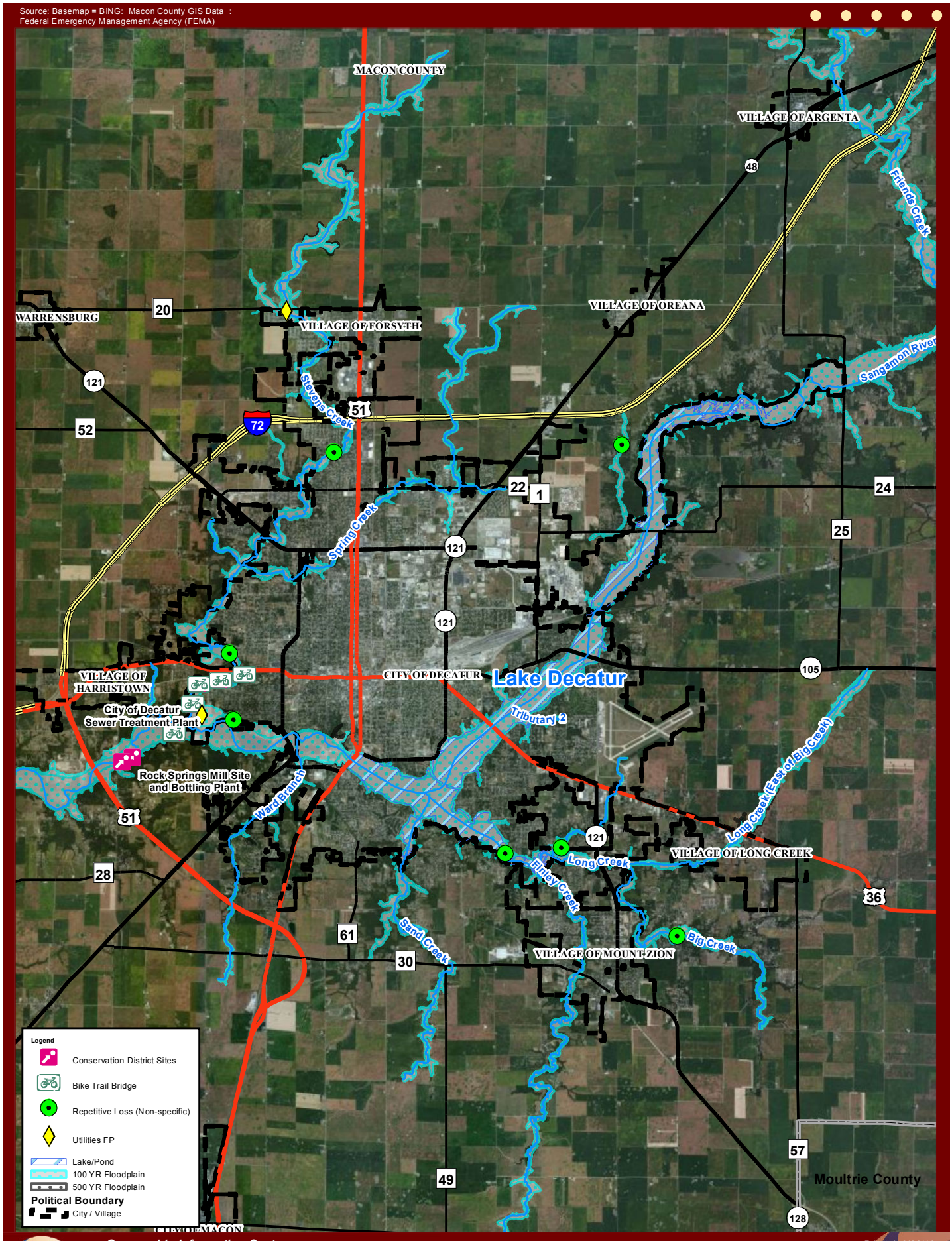
There are a total of 56,163 structures (building footprints) in Macon County (Source: Macon County GIS structure inventory) and 476 of which are located in the FEMA floodplains. A breakdown of the locations of these structures can be found in **Appendix G**, Worksheet 3a. Locations of these at-risk structures by affected community are located in **Appendix F**.

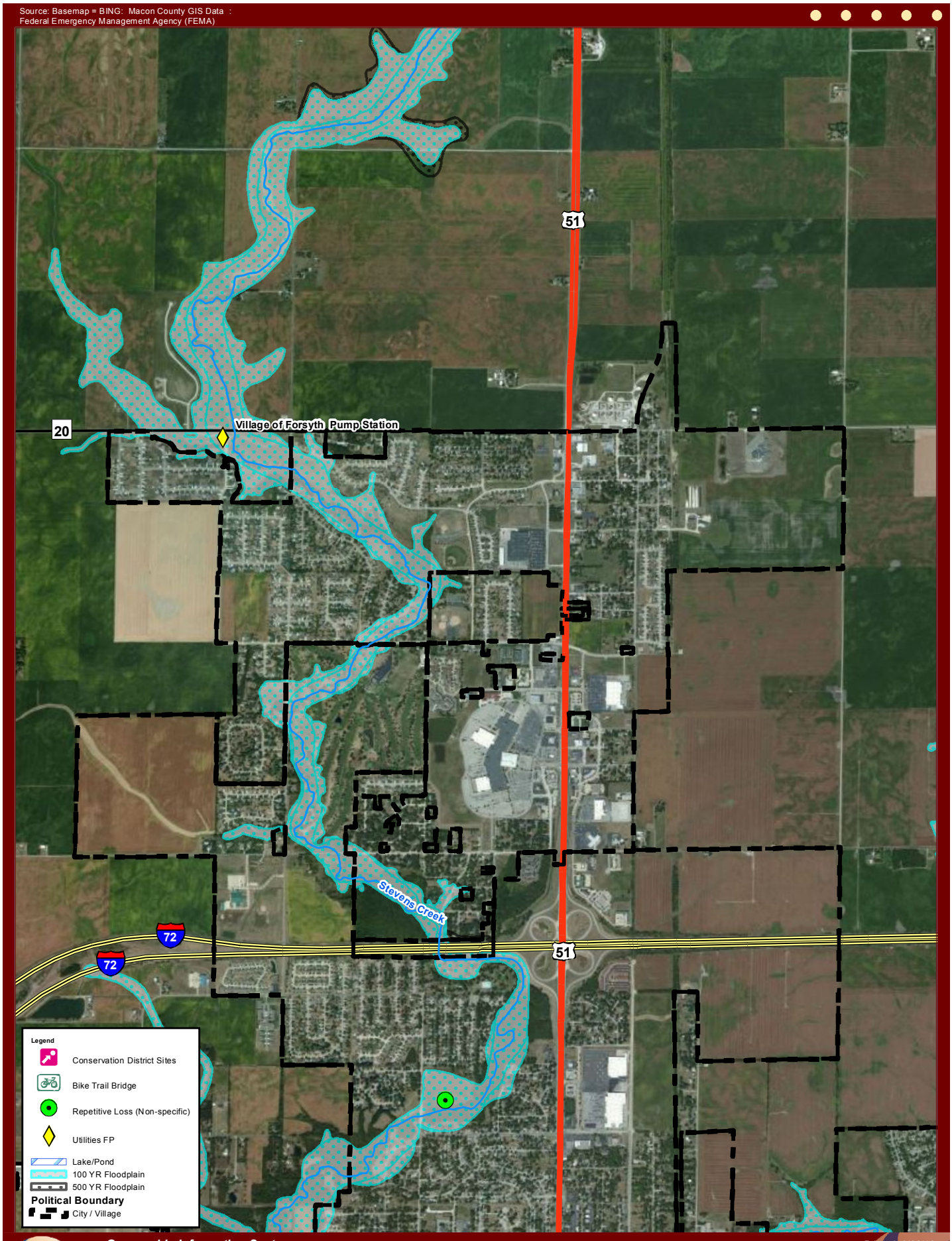
3.2.1.2 Infrastructure and Critical Facilities

There are currently 169 critical facilities within the floodplains, with four (4) of those not associated with transportation or utility pipeline facilities. Table 8 provides a summary of these critical facilities inside the floodplain. Figures 6-7 show the communities with critical facilities within the floodplain.

Table 8. Critical Facilities inside FEMA Floodplains

Historical Sites	Conservation District Sites (Rock Springs Conservation Area)	2
Transportation	Bridges (Road/RR/Bike Trails) / Culverts	155
	Dams / Levees	3
Utilities	Oil / Gas Facility / Pipeline	7
	Wastewater Treatment Plants / Facilities (Pump Stations)	2
	Total	**169**


Source: Basemap = BING: Macon County GIS Data :
Federal Emergency Management Agency (FEMA)
MACON COUNTY
VILLAGE OF ARGENTA
VILLAGE OF OREANA
VILLAGE OF FORSYTH
WARRENSBURG
CITY OF DECATUR
Lake Decatur
VILLAGE OF HARRISTOWN
City of Decatur Sewer Treatment Plant
Rock Springs Mill Site and Bottling Plant
VILLAGE OF LONG CREEK
VILLAGE OF MOUNT ZION
Moultrie County
Friends Creek
Sangamon River
Stevens Creek
Spring Creek
Tributary 2
Ward Branch
Long Creek (East of Big Creek)
Long Creek
Finley Creek
Sand Creek
Big Creek
20
121
52
72
51
48
22
1
24
25
105
28
61
30
36
57
49
128
Legend
Conservation District Sites
Bike Trail Bridge
Repetitive Loss (Non-specific)
Utilities FP
Lake/Pond
100 YR Floodplain
500 YR Floodplain
Political Boundary
City / Village
Geographic Information Systems
Printed: 3/22/13
0
2.5 Miles
N
Figure 6 Critical Facilities
Inside Floodplain
CITY OF DECATUR
Macon County Multi-Hazard Mitigation Plan
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Printed: 3/22/13

0 0.45 Miles

N

Figure 7 Critical Facilities
Inside Floodplain
VILLAGE OF FORSYTH
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

3.2.1.3 Flood Probability and HAZUS Analysis

Table 9 provides the probability of occurrence for several types of flood that the county may experience, in addition to the 1% annual chance flood. The probability of occurrence is expressed as the percent chance that a flood of a specific magnitude will occur in any given year.

Table 9. Flood Probability of Occurrence

Flood Return Interval	Chance of Occurrence in Any Given Year
10 - Year	10 %
25 - Year	5 %
50 - Year	2 %
100 - Year	1 %
500 - Year	0.2 %

To determine potential dollars lost due to flooding events, the program software HAZUS-MH 2.1 was applied to Macon County. HAZUS was developed by FEMA under contract with the National Institute of Building Sciences. Per FEMA's HAZUS website, "HAZUS-MH is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane winds and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after, a disaster occurs."

An Enhanced Level 1 analysis was performed on a countywide basis to determine flood risk. HAZUS-MH utilizes national elevation datasets, and US Census data to estimate damages resulting from specified storm events. The program performs hydrologic and hydraulic analyses to identify flood inundation limits for each stream within the County with a watershed of greater than 10 square miles. The base HAZUS-MH run was supplemented with flood study information for the Sangamon River and Lake Decatur from the Macon County FEMA Flood Insurance Study. The FEMA flood profiles can provide a more accurate picture of flood risk, especially for large river systems. This analysis was performed for the 10%, 5%, 2%, 1% and 0.2% annual chance flood events.

The analysis produces an Average Annualized Loss (AAL) estimate based on the results of each flood event and the probability of that event occurring. The AAL is intended to provide an estimate of a community's annual flood risk exposure. The calculated AAL for Macon County is $9.17 Million per year. Table 10 summarizes the results of the HAZUS-MH analysis and an estimate of the number of buildings impacted for the listed flood events. The detailed HAZUS analysis results are included as Appendix F of this plan. A graphical depiction of the HAZUS-MH AAL results, at the census block level, is provided for each community in Appendix F.

Table 10. HAZUS-MH Results Summary

Flood Annual Chance of Occurrence	Buildings Damaged / Destroyed	Total Economic Loss
10 %	91	$ 60.69 Million
5%	180	$ 84.63 Million
2 %	203	$ 97.28 Million
1 %	275	$122.38 Million
0.2 %	273	$144.28 Million
AAL	N/A	$ 9.17 Million

3.2.2 Future Development Risks

The risks associated with flooding are directly related to the population and infrastructure located within the boundaries of the riverine floodplains. Development should be limited in these potential impact areas. Infrastructure improvements should also consider potential impacts. Existing floodplain and construction regulations are in place to help reduce the impacts from flooding.

Storm water infrastructure should also be looked at to determine the impact from flash flooding. This infrastructure does not always take into effect the growth of a community. An increase in impervious surfaces (e.g., concrete parking lots) may cause increased storm water runoff during short rain events.

3.3 SEVERE STORMS

Severe storm hazards include severe thunderstorms, high wind, hail and lightning. While tornadoes and flooding may be related to these events, they have been broken out as separate categories for this plan. **Appendix D** provides further information/resources on severe storms.

3.3.1 Historic Events

The complete list of historic severe storm events documented by NOAA since 1965 can be found in **Appendix C**. Table 11 below provides a summary of these events

Table 11. Summary Table of Severe Storm Events

Hazards	Sum of Property Damage(s)	Sum of Crop Damages(s)	Sum of Deaths	Sum of Injuries
Hail*	0	0	0	0
High Winds	3,417,000	2,200,000	1	10
Total	**3,542,000**	**2,200,000**	**1**	**12**
***No damages provided by NOAA – NCDC events**.				

3.3.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

Because the location and impacts associated with severe storms are random in nature, the Planning Team utilized historic events to determine Macon County's susceptibility to severe storms. NOAA has recorded 134 severe storms in Macon County since 1992, with total losses of approximately $3.5 million (please see **Appendix C**). Based on these results, Macon County averages approximately six (6) to seven (7) severe storm events per year with average annual damages of approximately $177,100.

Critical facilities can be impacted most directly by severe storms through power outages. Those critical facilities for which power is crucial (i.e. hospitals, nursing homes, etc.) can be greatly impacted by severe storms and precautions must be taken for the provision of backup power. In terms of potential impacts on infrastructure and utilities, roads may be flooded by heavy rains associated with severe storms. Utility outages can be attributed to heavy winds. Continuous operation of services such as Sanitary, Drinking Water, Electricity, and Natural Gas are very important during a Severe Storm.

3.3.3 Future Development Risks

Due to the non-site-specific nature of this hazard, future development trends will have no significant effects on the occurrence of severe storms. However, population growth and increased infrastructure and building stock will likely increase annual expected damages.

New construction should seek to minimize wind-load impacts for buildings and provide basement areas or other secure locations to serve as storm shelters. Additionally, utility areas could be maintained to reduce the number of power outages from fallen trees and/or branches due to strong winds.

3.4 WINTER STORMS

Winter storm hazards include wind chill, ice storms, heavy snow, and blizzard conditions. **Appendix D** provides further information/resources on winter storms.

3.4.1 Historic Events

The complete list of Winter Storm Events documented by NOAA since 1995 is provided in **Appendix C.** Table 12 below contains a summary of these events for Macon County.

Table 12. Summary of Winter Storm Events for Macon County

Hazards	Sum of Property Damage(s)	Sum of Crop Damages(s)	Sum of Deaths	Sum of Injuries
Blizzard	100,000	0	0	0
Winter Weather	500,000	0	10	35
Total	**600,000**	**0**	**10**	**35**

During these events multiple communities in Macon experienced similar issues. The following information was provided by certain communities.

Blue Mound, Village of
- 2007 – Snow Storm with power outage for several days
- 2010 - Ice Storm with power outage for several days

Harristown, Village of
- March 26, 1978 – Ice Storm with considerable damage and power outage.
- December 1, 2006 – Ice Storm with considerable damage and power outage.

Macon, City of
- November and December 2006 Ice Storm event. After this event, the City purchased two new large portable generators in order to keep the water and sewer utilities operational.

Warren
- Mar
- December 1, 2006 – Ice Storm with considerable damage and wide spread power outage.

The blizzard of 1978 caused drifts of several feet in height and shut down many communities across the Midwest for several days.

tage.

3.4.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

Because the location and impacts associated with winter storms are random in nature, the Planning Team utilized historic events to determine Macon County's susceptibility to winter storms. The NCDC has recorded 31 winter storms in Macon County since 1995, with total losses of approximately $600,000 (please see **Appendix C**). Based on these results, Macon County averages approximately one (1) to two (2) winter storm events per year with average annual damages of approximately $46,200.

Similar to sever storms, critical facilities can be impacted most directly by winter storms through power outages. Those critical facilities for which power is crucial (i.e. hospitals, nursing homes, etc.) can be greatly impacted by winter storms and precautions must be taken for the provision of backup power generators. In terms of potential impacts on infrastructure and utilities, roads may be covered by snow and ice. Utility outages can be attributed to heavy winds and freezing temperatures.

3.4.3 Future Development Risks

Due to the non-site-specific nature of this hazard, future development trends will have no significant effects on the occurrence of severe storms. However, population growth and increased infrastructure and building stock will likely increase annual expected damages.

3.5 TORNADOES

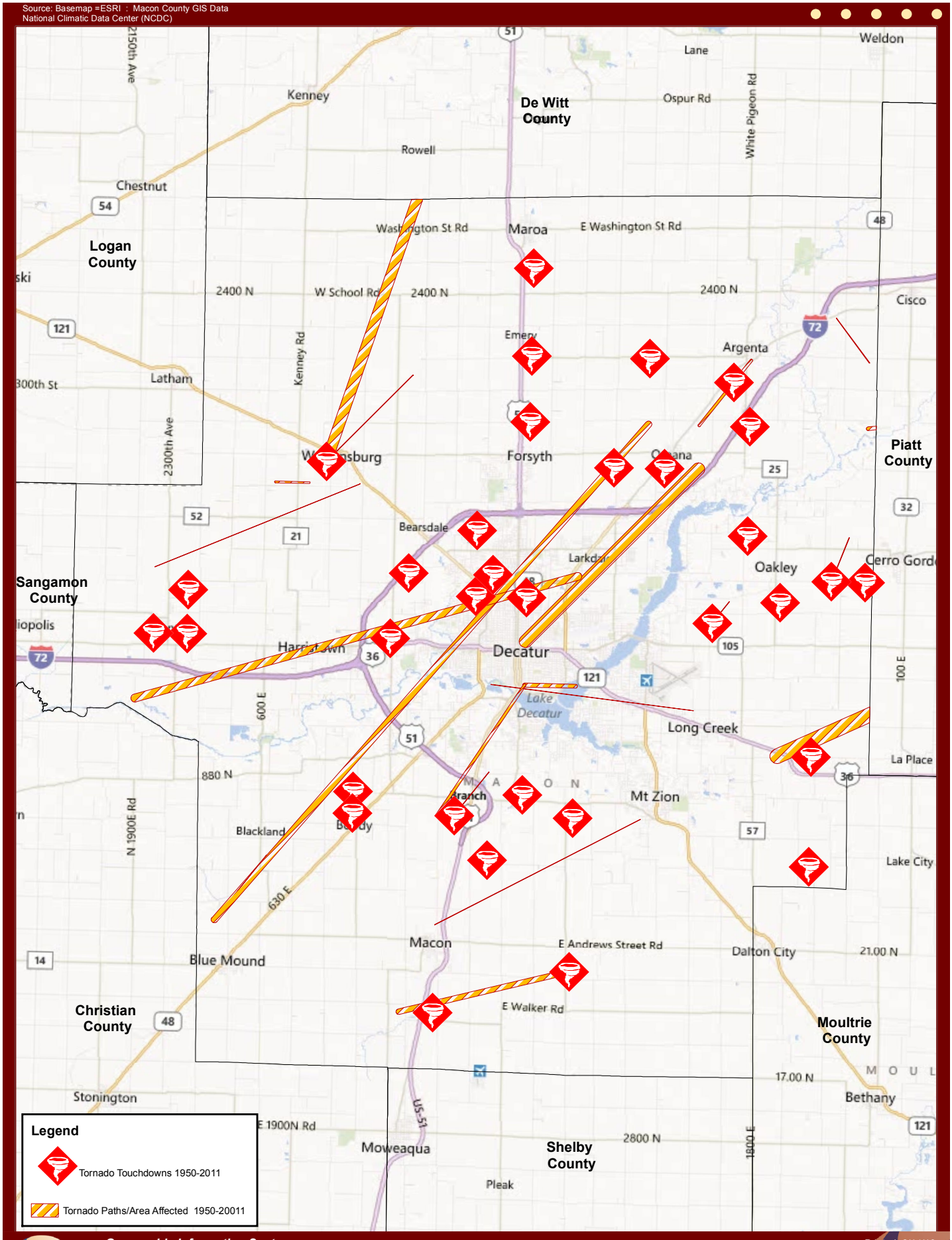
Tornadoes are produced from the energy released during a thunderstorm, but account for only a tiny fraction of the overall energy generated by a thunderstorm. What makes them particularly dangerous is that the energy is concentrated in such a small area, perhaps only a hundred yards in diameter. **Appendix D** provides further information/resources on tornadoes.

3.5.1 Historic Events

Tornadoes are relatively common in the central portion of the State of Illinois. Figure 8 shows the locations of tornadoes that have impacted Macon over the past 60 years. Table 13 provides a summary of tornado events listed within the NCDC database. A complete list of reported NOAA tornado events is located in **Appendix C**.

Table 13. Summary Table of Tornado Events

Category	# of Events	Deaths	Injuries	Damages	Average Death/Event	Average Injury/Event	Average $/Event
EF0	16	0	0	$ 290,000	0.00	0.06	$ 18,125
EF1	9	0	9	$ 1,818,000	0.00	1.00	$ 202,000
EF2	3	0	6	$ 2,750,000	0.00	2.00	$ 916,667
EF3	3	1	55	$11,750,000	0.33	18.33	$3,916,667
EF4	1	0	2	$2,500,000	0.00	2.00	$2,500,000
Total	32	1	73	19,108,000			


Source: Basemap =ESRI : Macon County GIS Data
National Climatic Data Center (NCDC)
Weldon
Lane
Kenney
De Witt County
Ospur Rd
White Pigeon Rd
Rowell
Chestnut
Logan County
Maroa
E Washington St Rd
2400 N
W School Rd
Kenney Rd
Latham
2300th Ave
Emery
Argenta
Cisco
Piatt County
Forsyth
Bearsdale
Larkdale
Oakley
Cerro Gordo
Sangamon County
Decatur
Lake Decatur
Long Creek
La Place
Mt Zion
Blackland
Lake City
Macon
E Andrews Street Rd
Dalton City
Blue Mound
E Walker Rd
Christian County
Moultrie County
Stonington
Bethany
Moweaqua
Shelby County
Pleak
2800 N
Legend
Tornado Touchdowns 1950-2011
Tornado Paths/Area Affected 1950-20011
Geographic Information Systems
Printed: 2/14/13
0
4.5 Miles
N
Figure 8 Historical Tornadoes
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com
Macon County Multi-Hazard Mitigation Plan

3.5.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

The location, frequency and impacts of tornadoes cannot be accurately predicted. However, an analysis of historic events can provide a reasonable understanding of expected future risks.

According to NOAA and local sources, there have been 32 tornadoes in 22 unique years Macon County reported since 1956, with total losses of approximately $19.1 million. (Please see Appendix C.) The annual chance of occurrence for a tornado is 40%. The annualized risk is approximately $340,000 with 1-3 injuries and 2% chance of life loss.

3.5.3 Future Development Risks

Due to the non-site-specific nature of this hazard, future development trends will have no significant effects on the occurrence of tornadoes. However, population growth and increased infrastructure and building stock will likely increase annual expected damages.

3.6 DROUGHT

According to FEMA, a drought is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). As such, drought planning must account for both climactic (rainfall, temperature, etc.) and human behaviors (water use). Associated water shortages can have severe public health consequences and direct economic impacts to industry and agriculture. Macon County, and specifically each community that relies on the Lake Decatur water supply, is especially vulnerable to drought impacts. **Appendix D** provides further information/resources on drought.

3.6.1 Historic Events

In December, 2011, the Illinois State Water Survey (ISWS) published the report (*Meeting East-Central Illinois Water Needs to 2050: Potential Impacts on the Mahomet Aquifer and Surface Reservoirs*). This document examined the impact of current and future water demands on streams and aquifers in east-central Illinois including Macon County. A supplement to this report focusing specifically on the Lake Decatur reservoir was published during development of this plan in June, 2012.

The ISWS reports documented seven historic droughts in Macon County since 1914, with the 1930-1931 as the historic drought of record. These events and their durations are listed below:

- June 4, 1914 – January 31, 1915 (242 days)
- July 14, 1930 – April 20, 1931 (281 days)
- July 3, 1940 – February 2, 1941 (215 days)
- July 30, 1953 – March 12, 1954 (226 days)
- June 14, 1963 – January 19, 1964 (220 days)
- June 12, 1988 – November 11, 1988 (153 days)
- August 17, 1999 – February 12, 2000 (180 days)

In addition to the above listed events, Macon County experienced a drought starting in 2011 and proceeding through September, 2012. In July, 2012, the City began water restrictions and increased the restrictions to stage two in August, 2012. Heavy precipitation in September and October increased the levels in Lake Decatur ending the drought. (Source: Herald Review, 10/26/12). According to a USA Today report, Lake Decatur water levels were within 2 inches of use restrictions on ADM's operations.

3.6.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

The ISWS Supplemental Report has classified the drought vulnerability of the Decatur water supply system as "at risk". They conclude that during the worst droughts on record "there appears to be a roughly 20-percent probability that the system would experience a shortage of supply", a condition defined as the "lake's usable storage is exhausted." The report also identifies the estimated recurrence interval associated with the drought of record as once in 50 years or 2-percent annual chance.

Based on the historical record and the ISWS report, Macon County has about a 10-percent annual chance of experiencing drought conditions during a typical year. The 2-percent event (drought of record) has a 20-percent chance of exhausting all usable storage within Lake Decatur. Based on these findings, in any given year there is 0.4-percent chance that the City of Decatur could experience extreme shortages.

Specific economic impacts associated with these historic droughts were unavailable. Direct economic impacts would likely include agricultural losses, temporary business closures (e.g. car washes), external water delivery and industrial production cut-backs due to water restrictions. Further economic damages may include indirect costs associated with an overall slowdown of the local economy.

3.6.3 Future Development Risks

As previously discussed, drought severity has both climactic and human causes. Water usage rates have direct impacts on the available long-term water supply. Future development must consider the availability of water during drought periods. As a proactive measure, water conservation measures could be required within the local building and zoning codes for redevelopment, as well as new development.

In addition, the specific impacts of climate change are not fully understood; however, there is a significant probability that areas of the Midwest United States will see an increase in their risks for drought.

3.7 EXTREME HEAT

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat (Source: 2010 Illinois Natural Hazard Mitigation Plan). Extreme heat can result in heat exhaustion and acute cardio-respiratory distress among the most vulnerable populations. Other impacts include water and power

shortages and damage to infrastructure. **Appendix D** provides further information/resources on extreme heat.

3.7.1 Historic Events

Table 14 below provides a summary of extreme heat events listed within the NCDC database. A complete list of historic extreme heat events documented by NOAA since 1997 can be found in **Appendix C**. These entries, including the number of reported deaths, summarize the impacts to a broader region than Macon County.

Table 14. Summary of All Excessive Heat Events for Macon County

Hazards	Sum of Property Damage(s)	Sum of Crop Damages(s)	Sum of Deaths	Sum of Injuries
Excessive Heat	0	0	9	0
Heat	0	0	1	0
Total	**0**	**0**	**10**	**0**

3.7.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

According to NOAA, there have been 9 extreme heat events in the central portion of Illinois including Macon County since 1997 (please see **Appendix C**). These events have resulted in the deaths of ten people within the region, but no additional information was available regarding economic impacts.

The most substantial heat-related impacts to the public include potential difficulties with electrical power and drinking water availability. Usage of utilities (electric and water) to combat the effects of the heat cause a strain on the system due to air conditioners, fans, and water usage. In extreme cases, roads, bridges, and railroad tracks have been known to suffer damage from extreme heat conditions.

3.7.3 Future Development Risks

Due to the non-site-specific nature of this hazard, current development trends have no significant effects on the occurrence of extreme heat.

3.8 EARTHQUAKES

Earthquakes can affect hundreds of thousands of square miles; cause damage to property measured in the tens of billions of dollars; result in fatalities and injuries to widespread populations; and disrupt the social and economic functioning of the affected area. Earthquakes can collapse buildings and bridges, disrupt utilities, and sometimes trigger secondary disasters, such as landslides, avalanches, flash floods, and fires.

Appendix D provides further information/resources on earthquakes.

3.8.1 Historic Events

Illinois has had nearly 250 known earthquakes occur over the past two centuries (**Figure 10)**; though very few of them have caused damages or injuries. Approximately 80% of the recorded earthquakes occurred in southern Illinois, while there have been no recorded earthquakes centered in Macon County.

Figure 10. IEMA Earthquake Epicenter Map

3.8.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

As with flooding, the potential for dollars lost due to earthquakes was estimated using the HAZUS-MH software. An AAL simulation in HAZUS-MH calculates the expected damages to building stock, infrastructure and utilities for a series of 8 events with increasing return periods. These events include the 100-, 250-, 500-, 750-, 1000-, 1500-, 2000- and 2500-year return intervals. The results of each analysis is then transformed and combined to calculate a community's annual risk exposure or AAL.

The total AAL for earthquakes is $0.74 Million. This result reflects the relatively low risk of earthquakes for the Macon community; however, low risk should not be confused with "no" risk. Based on the simulations, a 500-year (0.2% annual chance) earthquake event could cause damages of approximately $63 Million and a 2500-year event (0.04% chance) approximately $513 Million. The results of the HAZUS analysis for earthquakes are included in **Appendix F**.

3.8.3 Future Development Risks

Earthquakes do not have a specific area or size that is usually associated with them. Therefore, all areas located within Macon County have a probability of being affected by a seismic event.

Since earthquakes are a non-site specific hazard, current development trends have no affect other than the potential increased population and greater building stock and infrastructure that would be susceptible to earthquakes within Macon County.

3.9 DAM / LEVEE FAILURE

A dam/levee failure can result in the uncontrolled release of floodwaters downstream of a facility. The resulting flood wave can cause significant damage to buildings and infrastructure downstream. The unexpected nature of the flood wave also increases the likelihood of life loss in the impacted area due to reduced warning times. **Appendix D** provides further information/resources on Dam / Levee Failure.

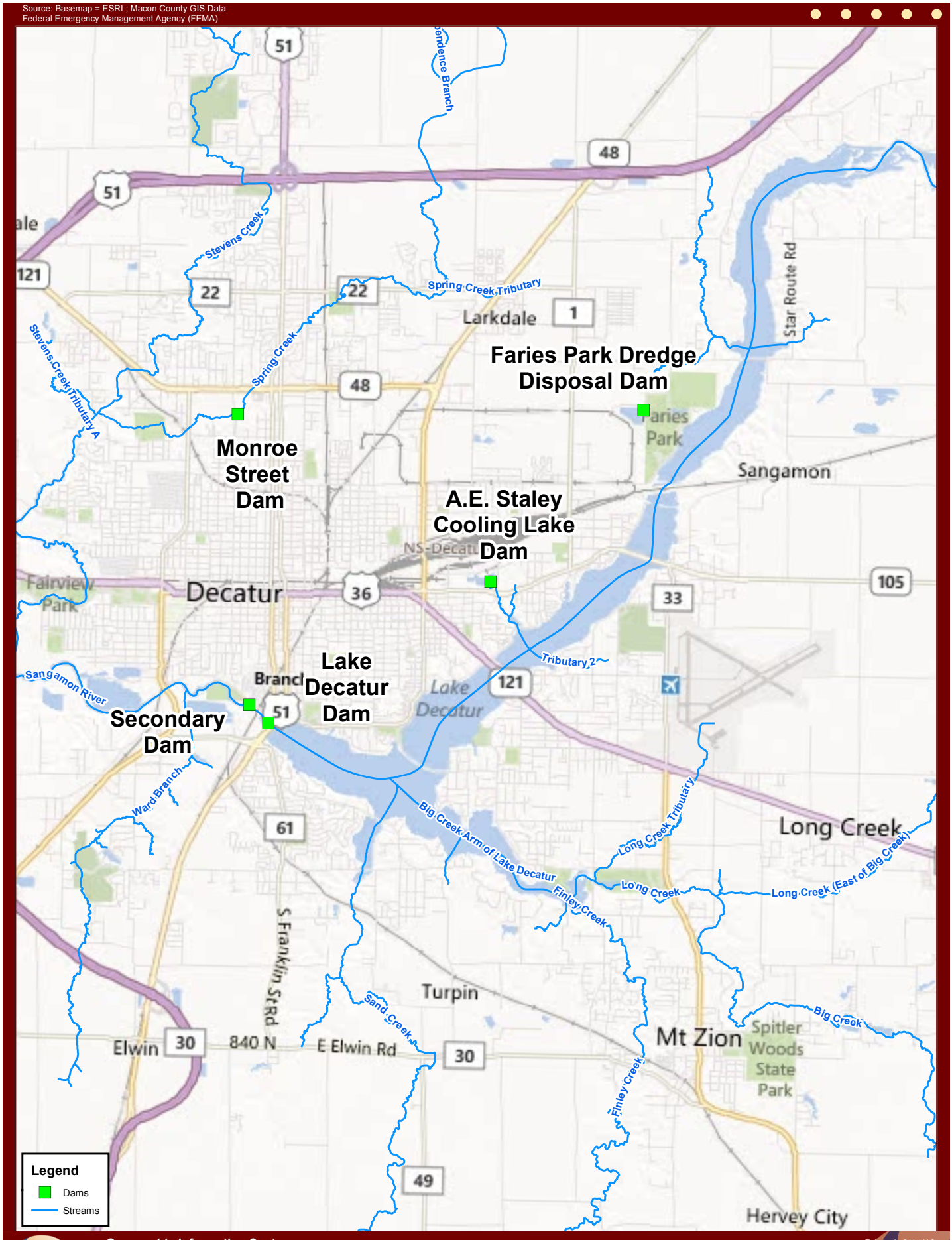
3.9.1 Historic Events

Macon County has no reported incidents of dam/levee failures.

3.9.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

According to the Upper Sangamon River RiskMAP Discovery Project, Macon has four (4) known dams; Lake Decatur Dam, A.E. Staley Cooling Lake Dam, Monroe Street Dam, and the Faries Park Dredge Disposal Dam. **Figure 11** shows the location of these dams.

The Lake Decatur Dam is a Class I structure as defined by the Illinois Department of Natural Resources; meaning a failure of the facility has a high probability for causing loss of life or substantial economic loss. Impacts from a dam failure could impact multiple railroad bridges, the State Route 48 bridge and West Lincoln Park Drive. Additional dam failure impacts may include


Source: Basemap = ESRI ; Macon County GIS Data
Federal Emergency Management Agency (FEMA)
Faries Park Dredge Disposal Dam
Monroe Street Dam
A.E. Staley Cooling Lake Dam
Lake Decatur Dam
Secondary Dam
Decatur
Sangamon
Larkdale
Long Creek
Mt Zion
Turpin
Hervey City
Elwin
Spitler Woods State Park
Fairview Park
Lake Decatur
Stevens Creek
Stevens Creek Tributary A
Spring Creek
Spring Creek Tributary
Sangamon River
Ward Branch
Tributary 2
Big Creek Arm of Lake Decatur
Long Creek Tributary
Long Creek (East of Big Creek)
Finley Creek
Sand Creek
Big Creek
S Franklin St Rd
E Elwin Rd
840 N
Star Route Rd
Legend
Dams
Streams
0
1 Miles
N
Geographic Information Systems
Printed: 2/14/13
Figure 11 Dams
Macon County Multi-Hazard Mitigation Plan
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

the Decatur Sewer Treatment Plant immediately downstream. A detailed breach analysis of the dam is required to further refine specific damages.

A failure of the AE Staley Cooling Lake Dam has the potential to impact two residential structures and State Route 105 before entering Lake Decatur.

The remaining facilities do not appear to place infrastructure or population at risk.

3.9.3 Future Development Risks

The risks associated with dam failure are directly related to the population and infrastructure located in the downstream breach path. Development should be limited in these potential impact areas. Infrastructure improvements should consider potential impacts.

3.10 NUCLEAR / HAZARDOUS MATERIALS ACCIDENTS

Hazardous materials hazards are technological (non-natural) events that involve large-scale accidental or intentional releases of chemical, biological, or radiological materials. The term "Hazardous Materials" usually refers generally to petroleum, natural gas, synthetic gas, and acutely toxic chemicals. The term Extremely Hazardous Substance (EHS) is used in Title III of the Superfund Amendments and Reauthorization Act of 1986 to refer to those chemicals that could cause serious health effects following short-term exposure from accidental releases.

Radiological materials are used in many commercial, medical and industrial applications. Accidents may include the release of small quantities of low level radiation or a catastrophic event associated with a nuclear power plant. **Appendix D** provides further information/resources on Nuclear / Hazardous Materials Accidents.

3.10.1 Historic Events

The planning team did not have a comprehensive list of historic hazardous material incidents available. Anecdotal accounts suggest that small scale releases, especially related to traffic accidents, are common but have limited impact. The Village of Forsyth did report a 1979 incident where a petroleum tank leaked into a storm sewer resulting in the evacuation of the north area of town.

3.10.2 Risk Assessment and Vulnerability Analysis \ Potential Dollars Lost

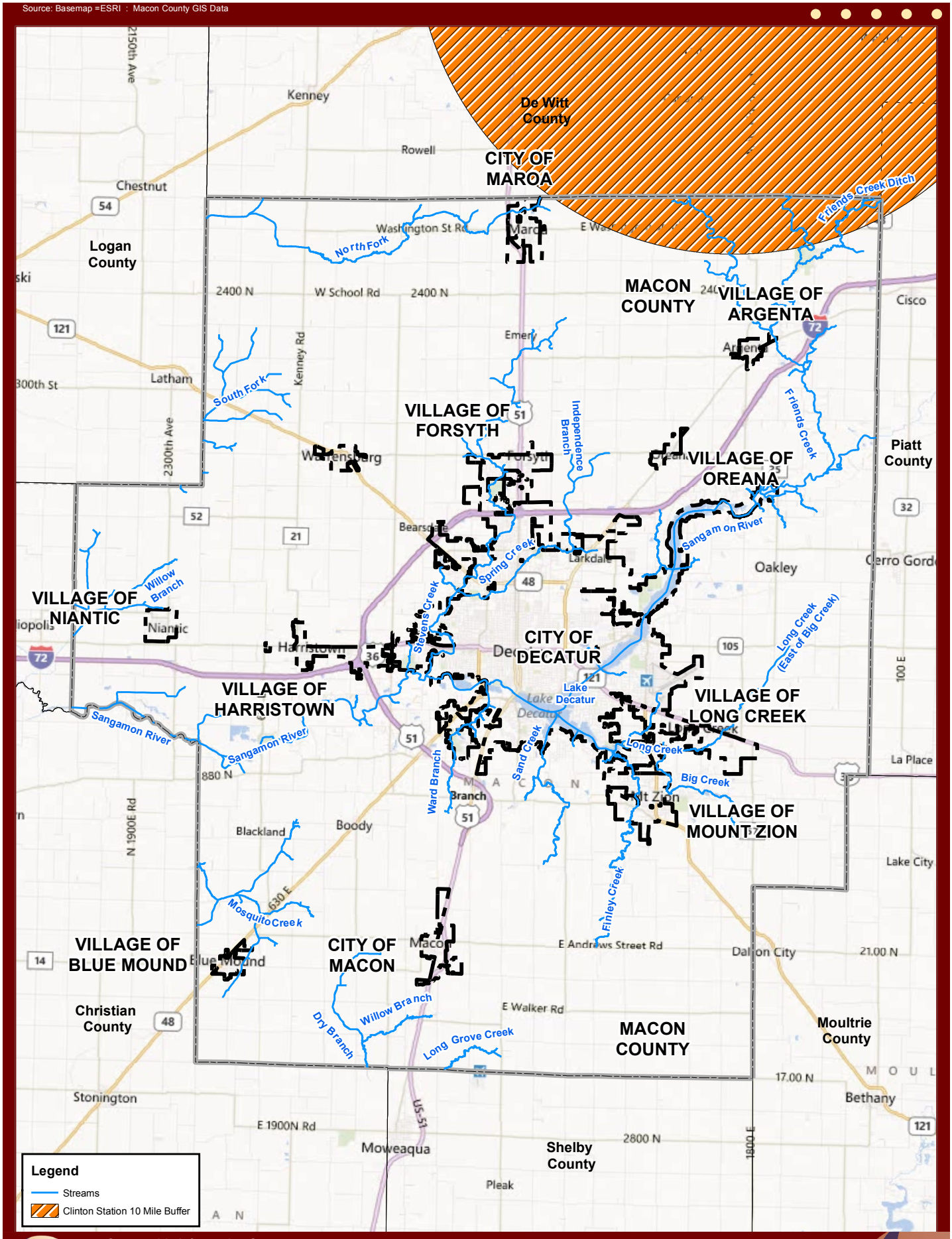
Due to the random, or unpredictable, nature of hazardous material accidents, specific probabilities of occurrence or return intervals were not developed for this hazard.

Macon County currently has a Hazardous Materials Contingency Plan. This plan is located in Annex L of the Decatur/Macon County Emergency Operations Plan. This plan is used as a guide for emergency response personnel to protect themselves and the general public against hazardous material accidents, to identify hazardous materials, and in case of accident or spillage, to know the proper agencies to contact to get assistance in clean up and removal.

Since many hazardous materials may react differently in various circumstances, additional safety precautions may be necessary.

A hazard vulnerability analysis is completed for each Extremely Hazardous Substance (EHS) facility on a yearly basis as part of Macon County's State Emergency Response Commission as required for the Hazardous Material Plan update.

In addition to hazards within the County, the Planning Team expressed concerns regarding the Nuclear Power Plant at Clinton Station. The plant distributes publicly emergency planning for the Clinton Area, which is in DeWitt County. However, significant impacts to Macon County could be expected from a large scale event. This plant is within 10 miles of the county. **Figure 12** shows the 10-mile radius.


Source: Basemap =ESRI : Macon County GIS Data
De Witt County
CITY OF MAROA
Kenney
Rowell
Chestnut
Logan County
MACON COUNTY
VILLAGE OF ARGENTA
Cisco
Emery
Latham
VILLAGE OF FORSYTH
VILLAGE OF OREANA
Piatt County
Oakley
Cerro Gordo
VILLAGE OF NIANTIC
Niantic
CITY OF DECATUR
VILLAGE OF HARRISTOWN
VILLAGE OF LONG CREEK
Lake Decatur
Boody
Blackland
VILLAGE OF MOUNT ZION
Lake City
La Place
Dalton City
VILLAGE OF BLUE MOUND
CITY OF MACON
Christian County
MACON COUNTY
Moultrie County
Stonington
Bethany
Moweaqua
Shelby County
Pleak
Friends Creek Ditch
North Fork
South Fork
Independence Branch
Friends Creek
Sangamon River
Spring Creek
Stevens Creek
Willow Branch
Long Creek (East of Big Creek)
Lake Decatur
Sand Creek
Ward Branch
Big Creek
Finley Creek
Mosquito Creek
Dry Branch
Long Grove Creek
Washington St Rd
W School Rd
Kenney Rd
2150th Ave
2300th Ave
N 1900E Rd
E Andrews Street Rd
E Walker Rd
E 1900N Rd
US-51
2400 N
880 N
630 E
100 E
1800 E
21.00 N
17.00 N
2800 N
Legend
Streams
Clinton Station 10 Mile Buffer
0
4.5 Miles
N
Geographic Information Systems
Printed: 2/14/13
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com
Figure 12
Hazardous Materials Sites
Clinton Station Nuclear Power Plant - 10 Mile Radius
Macon County Multi-Hazard Mitigation Plan

3.10.3 Future Development Risks

Future risks associated with hazardous materials relate to the proximity of human populations to transportation, storage and handling facilities. For mitigation of future development risks, the County could consider limitations on residential development adjacent to high risk EHS facilities.

3.11 HAZARD PRIORITIZATION

The prioritization/rankings were developed from each hazard analysis. These rankings were developed from three criteria: Probability, Vulnerability, and Severity of Impact. Table 15 provides a description of the three criteria. Once the initial prioritization/rankings were created for each hazard, the Planning Team provided these rankings to the Stakeholders and communities for review. Each community needed to validate the prioritization and provide feedback. The county-wide prioritization can be found in Table 16. The community prioritization can be found in Table 17. The higher the total score indicates a higher importance of that hazard.

Table 15. Probability, Vulnerability and Severity of Impact

Historical/Probability (frequency)	
Low (1)	0 to 10 occurrences in the last 50 years
Medium (2)	11 to 50 occurrences in the last 50 years
High (3)	More than 50 occurrences in the last 50 years
Vulnerability (percentage of people)	
Low (1)	Less than 10% of the total population of the jurisdiction
Medium (2)	10% to 25% of the total population of the jurisdiction
High (3)	More than 25% of the total population of the jurisdiction
Severity of Impact (injuries, fatalities, personal property & infrastructure)	
Low (1)	Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
Medium (2)	Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities
High (3)	Multiple deaths (more than 5), property destroyed or damaged beyond repair (more than $15,000,000), or more than 3 days of shutdown for essential facilities

3.11.1 Countywide and Community Specific Prioritizations

Table 16. County-Wide Prioritization

Hazard	Average Annualized Loss ($)	Probability	Vulnerability	Severity of Impact	Total
Flooding	9,170,000	2	2	2	6
Severe Storm	177,100	3	2	1	6
Severe Winter Storm	46,200	2	2	1	5
Tornadoes	347,400	2	2	1	5
Drought	Unknown	1	2	2	5
Extreme Heat	Unknown	1	2	1	4
Earthquakes	740,000	1	2	1	4
Dam/Levee Failure	Unknown	1	2	1	4
Nuclear/Hazard Materials Accidents	Unknown	1	2	1	4

Table 17. Each Community's Hazard Prioritization/Ranking

Community	Flooding	Severe Storm	Severe Winter Storm	Tornadoes	Drought*	Extreme Heat*	Earthquakes*	Dam/Levee Failure*	Nuclear / Hazard Material Accidents*
Decatur, City of	4	7	6	5	7	3	5	4	4
Macon, City of	3	7	4	6	3	3	3	3	3
Maroa, City of	3	7	4	6	3	3	3	3	3
Macon County	6	6	5	5	5	4	4	4	4
Argenta, Village of	3	7	6	6	4	3	3	5	3
Blue Mound, Village	3	7	4	6	3	3	3	3	3
Forsyth, Village of	4	7	4	6	3	3	3	3	3
Harristown, Village of	3	7	4	6	3	3	3	3	3
Long Creek, Village	3	7	4	6	3	3	3	3	3
Mount Zion, Village of	3	7	4	6	7	3	3	3	3
Niantic, Village of	3	7	4	6	3	3	3	3	3
Oreana, Village of	3	7	4	6	3	3	3	3	3
Warrensburg, Village	3	7	4	6	3	3	3	3	3

* Countywide Events were used in the ranking.

4.0 Mitigation Strategy

The Mitigation Strategy portion of this plan leverages the results of the hazard identification and vulnerability assessment to identify local risk reduction goals and actions. The process incorporated participation and coordination amongst the Planning Team to develop goals and actions that were Specific, Measurable, Achievable, Relevant and Time or schedule dependent (SMART).

The mitigation strategies developed within the Plan provide a blueprint for reducing the potential losses identified in the risk assessments and does not conflict with existing authorities, policies, programs and resources.

4.1 DEFINITION OF MITIGATION

FEMA defines mitigation as "sustained action that reduces or eliminates long-term risk to people and property from hazards and their effects." Mitigation is the ongoing effort at the federal, state, local and individual levels to decrease the impact of disasters upon families, homes, the jurisdiction and the economy. Mitigation also includes making existing and future development in hazard prone areas safer. A jurisdiction can steer growth to areas with fewer risks through non-structural measures such as regulations and land use plans. Preventing damages or loss to lives or property is the essence of mitigation. Incorporating mitigation into decisions relating to a jurisdiction's growth can result in a safer, more resilient jurisdiction, and one that is more attractive to families and businesses.

4.2 LOCAL HAZARD MITIGATION GOALS

The Mitigation Strategies were developed through work sessions, individual conversations, and meetings at the local level. The planning participants worked together to develop and complete a series of community mitigation worksheets. These worksheets encouraged communities to work with local resources to develop mitigation goals, activities, priorities, and capabilities. A copy of the worksheet provided to each community is attached as **Figure 13**.

During the August 17, 2012 stakeholder meeting, attendees reviewed the hazard profiles and results of the vulnerability assessments. The concept of risk mitigation activities was introduced and examples were discussed together, and then each community separated to develop individualized plans. As a result of the process, the group ultimately developed several mitigation goals to reduce or avoid long-term vulnerabilities for hazards within each jurisdiction. These goals are provided in **Appendix E**.

MACON COUNTY HAZARD MITIGATION PLAN
Mitigation Strategy
August 17, 2012

Community Name _____ **Contact Name** _____ **Contact Phone No.** _____

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
Example	*2*	*Purchase homes in the 100 year floodplain and convert the space to a park*	*County Planning Department – Bob Jones, Director*	*HMGP & General Funds*	*5 years*	*Medium*	*Medium*
1.							
2.							
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:

Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Figure 13. Mitigation Activity Development Worksheet

4.2.1 Mitigation Activities by Type

The group focused upon various types of activities that could be performed to reduce the risk of natural hazards throughout their communities. These activities were categorized as follows:

a. Prevention. (PA) Preventative activities are designed to keep current problems from getting worse and to eliminate the possibility of future problems. Preventative activities reduce a jurisdiction's vulnerability to hazard events. This type of activity is especially effective in hazard prone areas where development has not occurred. Preventative activity examples include the following:

   1) Planning and Zoning
   2) Floodplain regulations
   3) Local ordinances

b. Property Protection. (PP) Property protection activities are designed to adapt existing structures to withstand natural hazards or to remove structures away from hazard prone areas. Property protection activity examples include the following:

   1) Acquisition
   2) Relocation
   3) Foundation elevation
   4) Insurance – flood and homeowner's
   5) Retrofitting (includes activities such as wind proofing, flood proofing, and seismic design standards)

c. Emergency Services. (ES) Emergency services minimize the impact that a natural hazard has on the residents of a jurisdiction. Usually, actions are taken by emergency response services immediately before, during, or in response to a hazard event. Emergency service activity examples include the following:

   1) Warning systems
   2) Evacuation planning and management
   3) Sandbagging for flood protection

d. Structural Projects. (SP) Structural projects lessen the impact of a natural hazard by changing the natural progression of the hazard. These types of projects are usually designed by engineers. Structural projects include the following:

   1) Storm sewers
   2) Floodwalls
   3) Highway projects
   4) Tornado shelters

e. Public Information and Awareness. (PI) Public information and awareness activities are used to educate the residents of a jurisdiction about the potential hazards that affect their area, hazard prone areas, and mitigation strategies they can take part in to protect themselves and their property. Public information and awareness activity examples include the following:

1) Public speaking events
2) Outreach projects
3) Availability of hazard maps
4) School programs
5) Library materials

4.3 IMPLEMENTATION OF MITIGATION ACTIVITIES

Each jurisdiction's Plan Representative(s) worked with community resources to develop mitigation activities based upon local vulnerabilities and capabilities. These actions were identified and prioritized using a prioritization scheme, generalized benefit/cost approach, and funding identification strategy. For each action developed, an action administrator or authority was defined along with an estimated timeframe for completing the activity.

The hazard mitigation actions developed were prioritized based upon the capacity of an action to eliminate or reduce risk, the category of activity performed, the generalized benefit to cost of each activity, and it's potential for funding.

4.3.1 Activity Prioritization

The Planning Team prioritized each activity based upon its ability to eliminate or reduce risk associated with the mitigation goal. The community's hazard prioritizations and benefit/cost were incorporated into the activity prioritization.

4.3.2 Activity Benefit-Cost Review

The Planning Team also considered the return on investment for each activity. Both the benefits and the costs were examined on a qualitative basis (i.e. High, Medium, and Low). The three categories were divided based on the estimated value of the benefits derived or the cost of developing the action or project. If the costs or benefits were expected to be less than $100,000, the category was low. If the costs or benefits were expected to surpass $100,000 but be less than $500,000, the category was medium. If the costs or benefits were expected to exceed $500,000, the category was high. The result produced a generalized approach for assessing relative benefits to cost. The Planning Team agreed that more detailed benefit cost analysis would be performed as necessary prior to the implementation of each activity. In cases of activities identified for funding through FEMA mitigation programs, the group recognized that FEMA approved benefit-cost analysis would be required.

4.3.3 Activity Funding and Implementation

The Planning Team considered and identified the funding resources that may be available for each activity. At this stage, no specific plans were developed to fund projects, but probable sources of funding were identified. In general, the identified source of funding corresponded to the implementing agency. As part of the activity development process, each activity defined by a given jurisdiction was recommended to identify a lead agency or personnel responsible for implementing the activity.

Most sources of public funding will require a detailed cost-benefit analysis of the proposed mitigation activities, as well as an analysis of potential alternatives. Development of mitigation actions should also include a STAPLEE analysis. STAPLEE is an acronym standing for Social, Technical, Administrative, Political, Legal, Environmental, and Economic. Each of these criteria should be reviewed to determine the usefulness and potential for implementation. Difficulties in any of the seven criteria could potentially derail a mitigation action because of unforeseen opposition or ramifications.

4.4 LOCAL MITIGATION STRATEGY AND CAPABILITIES ASSESSMENT

This plan includes specific actions for each jurisdiction in Macon County. These actions are based on goals developed to address the risks identified throughout the region. It is the intent of each jurisdiction to implement these actions using practices that are cost-effective, environmentally sound, and technically feasible.

Following the Plan's adoption, the Planning Committee will continue to work with the Macon County government, departments and other regional organizations to implement mitigation strategies on a regional basis where feasible. While the commitment to implementing this strategy is strong, the potential for success is directly linked to each jurisdiction's capability.

The purpose of the capability assessment is to identify the potential hazard mitigation opportunities available to each jurisdiction that may already exist as part of each jurisdiction's daily operations (e.g. code enforcement, operations, maintenance, etc).

This assessment will highlight the positive measures already in place in the jurisdiction as well as identify weaknesses that could increase vulnerability in a jurisdiction. The capability assessment serves as the foundation for an effective hazard mitigation strategy. By establishing goals and objectives for jurisdictions to pursue under the Macon County Plan, it ensures that the goals and objectives that are decided upon are realistically attainable given local resources.

4.4.1 Local Mitigation Practices

The following defines local practices already in place throughout the county's jurisdictions that encourage or promote mitigation activities. These practices reside within existing policies, ordinances, programs, and other planning efforts.

Mitigation Management Policies. The Emergency Operations Plan (EOP) provides for an integrated countywide emergency preparedness and response plan, utilizing public, nonprofit, and private resources. The plan includes roles and responsibilities of persons/departments in charge of dispatching help during a natural hazard, rules that are followed, evacuation procedures dispersed by the transportation officer to be followed, etc.

Existing Plans. In general, the County's policies encourage cooperation and coordination within its jurisdictional agencies, as well as cooperation, including mutual aid compacts, between neighboring counties and municipalities within the region. The EOP provides for an integrated countywide emergency preparedness and response plan, utilizing public, nonprofit, and private resources.

Mitigation Programs. The main mitigation programs are the county's floodplain management regulations and participation in and administration of the NFIP. Additional programs include:

a. The County's Floodplain Regulations are aimed at restricting development in the floodplain. The County Zoning Ordinance restricts development to those uses which are unlikely to be severely impacted by floodwaters, such as agricultural fields, camps, parks, etc. In addition, the ordinance requires that any development in the floodplain not decrease the capacity of the floodplain to contain flood waters. The Subdivision Ordinance restricts most development in flood-prone areas.

b. Macon County severe weather warnings will be disseminated by broadcast radio and television stations. In addition, the emergency radio warning systems may be used to alert residents of the county.

4.4.2 Available Funding Resources

There are several sources of funding for both pre- and post-disaster hazard mitigation policies and projects. While all mitigation techniques will save money by avoiding different types of losses, the implementation of mitigation efforts can be costly and well beyond the local jurisdiction or county's capacity to fund the mitigation activity. There are existing federal and state funding programs that can be utilized for funding assistance. The list of some sources of funding presently available is provided in **Appendix E**. This list is not comprehensive, as new programs can be developed or existing programs can be eliminated or modified over time.

Macon County and its jurisdictions are well positioned to perform successful implementation of the activities identified within the Plan. As a result, the communities are better prepared to achieve their identified goals for mitigating local risk to natural hazards throughout the region.

5.0 Plan Maintenance

Plan Maintenance is the process in which the Macon County Plan will be monitored, evaluated, and updated within a five-year cycle. When updated, the plan will be reviewed, revised, and resubmitted to the State/IEMA within five years of the plan for approval by FEMA Region V. As appropriate, the plan will also be evaluated after a disaster, or after unexpected changes in land use or demographics in or near hazard areas. The Planning Committee also will be kept apprised of a change in federal regulations, programs and policies, such as a change in the allocation of FEMA's funding for mitigation grant programs. These evaluations will be addressed in the annual progress report for the plan and may affect the Action Plan for Mitigation goals and activities.

5.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

5.1.1 Monitoring

The Community Representatives will continue to monitor the status and track the progress of the plan elements on an annual basis. The Community Representatives will oversee the progress made on the implementation of the identified actions and update the plan as needed to reflect changing conditions. Representatives will also meet annually to evaluate plan progress and recommend updates.

5.1.2 Evaluating

Evaluation of the plan will not only include checking the implementation status of mitigation actions, but also assessing their degree of effectiveness and assessing whether other natural hazards need to be addressed and added to the plan (man-made hazards). This will be accomplished by reviewing the benefits (or avoided losses) of the mitigation activities that were in place within each jurisdiction and county. These will be compared to the goals the Plan has set to achieve. The team will also evaluate whether mitigation actions need to be discontinued or modified in light of new developments or changes within the community. Public comment on the plan and achievement of goals and objectives will also be solicited annually during the evaluation by the committee. The process will be documented by the Community Representatives and submitted to the County Emergency Management Agency and the County Board of Commissioners for review. Any updates will be included in the plan at the next update.

5.1.3 Updating

As required by part 201.6(c)(4)(i) of the Local Hazard Mitigation Plan Review Crosswalk, this plan will be updated within five years of the date of the FEMA approval of the plan. The plan may be updated earlier, at the discretion of the Planning Committee and its jurisdictions. Also, the Committee's ability to update the mitigation process by adding new data and incorporating it into the mitigation plan, will allow for the efficient use of available resources, staff, and

programs. Any changes in the Plan will be documented and appended in a section titled "Amendments". The Action Plan will be maintained as an Appendix so it can remain a living document.

5.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

The identified action projects address reducing the effects of hazards on new buildings and infrastructure as well as existing buildings and infrastructure. Activities also incorporate mitigation activities into other planning mechanisms and recommends mitigation projects that can be integrated into Master Plans, Flood Mitigation Plans, Capital Improvement Plans, Land Use Plans, Emergency Management Plans, Zoning Ordinances, Building Codes, and Post-Disaster Mitigation Policies and Procedures where appropriate. In addition, projects will be implemented through existing or ongoing programs.

5.3 CONTINUED PUBLIC PARTICIPATION

In order to have continued public support of the mitigation process, it is important that the public be involved not only in the preparation of the initial plan, but also in any modifications or updates to the plan. To ensure that public support is maintained, the following actions may be taken by the Community Representatives or Project Administrator:

- Develop informational mailings to be distributed to the public about mitigation efforts in the County and updates made to the Plan.
- Develop mitigation flyers or mailings that contain mitigation activities and actions that promote reducing damages and risks of natural hazards.
- Develop a survey following a Presidential, Emergency, or State Declaration to solicit public input about current or possible future mitigation activities, and place it on the County website.
- Hold a public meeting prior to plan updates.

5.4 ADDITIONAL STATE REQUIREMENTS

Illinois has additional requirements for local plans, as identified within the Illinois Natural Hazards Mitigation Plan. The state plan requests that local plans include the following tables and worksheets for each jurisdiction represented by the plan:

a. Worksheet 3A. Critical Facilities, Structures, and Population Information.

b. Potential Structure Losses for Floods.

c. Potential Structure Losses for Earthquakes.

The tables provided in **Appendix G** satisfy Illinois requirements and may be used to augment future natural hazard planning practices and risk mitigation approaches.

6.0 Conclusion

Macon County is vulnerable to most natural hazards, especially flooding. The small number of repetitive loss properties in the County can be easily mitigated with the assistance of federal grants. In addition, the planning participants developed a list of several actions that will mitigate the risks to the citizens and municipalities in the County, if they are enacted. By adopting the Macon Multi-Hazard Mitigation Plan and incorporating the results into other planning and regulatory mechanisms, the communities and Macon County can become a safer place to live and work.

Appendix A

Adoption Resolution and Executive Orders

Appendix B

Stakeholder Involvement and Meetings

Hazard Mitigation Plan
Macon County, Illinois

Initial Stakeholder Meeting
February 22, 2012

Introductions

Jim Root – Planning Lead
Coordinator, Macon County EMA
jroot@maconcountyema.org

John Menninger, PE – Plan Consultant
Stantec Consulting Services, Inc.
John.Menninger@stantec.com

Introductions

Local Participating Communities:

Macon County and Unincorporated Areas

Incorporated Areas:

- Village of Argenta
- Village of Blue Mound
- City of Decatur
- Village of Forsyth
- Village of Harristown
- Village of Long Creek
- City of Macon
- City of Maroa
- Village of Mount Zion
- Village of Niantic
- Village of Oreana
- Village of Warrensburg

Meeting Agenda

Outline

1. Introductions
2. Plan and Meeting Goals
3. Hazard Mitigation Plan - Overview
4. Hazard Identification – Discussion
5. Stakeholder Data Collection
6. Schedule / Path Forward
7. Questions / Comments

Goals

Hazard Mitigation Plan Goal

1. Protect lives and property through identification of Macon County specific hazards and development of sound mitigation projects
2. Allows for Federal funding for mitigation projects.

Today's Meeting Goal

1. Introduce stakeholders to the Hazard Mitigation Planning process and solicit input and feedback.
2. Identify the specific Hazards of Concern for the Plan.

Hazard Mitigation Plan - Overview

Primary Elements

1. Planning
2. Risk Assessment
3. Mitigation Strategies
4. Plan Review and Adoption
5. Plan Maintenance

Hazard Mitigation Plan - Overview

Today's Meeting Starts the Planning Process

- Present Plan Elements
- Discuss Prioritized Hazards
- Provide Project Timeline

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Hazard Mitigation Plan - Overview

Key Planning Tools

- 3 Stakeholder Coordination Meetings
- Website and Community Outreach
- Public and Stakeholder Involvement

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Hazard Mitigation Plan - Overview

Role of the Planning Committee

- Maintain Awareness of the Process
- Gather Information
- Utilize Local Expertise
- Provide Documents and Data
- Perform Draft Plan Reviews

PLEASE SIGN IN

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Hazard Mitigation Plan - Overview

Local Jurisdiction Participation Requirements

- Attend Planning Meetings
- Provide Documents and Data
- Identify Critical Facilities
- Submit List of Mitigation Actions
- Review and Comment on Plan
- Formally Adopt Plan

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Hazard Mitigation Plan - Overview

Risk Assessment

- Identify County Specific Hazards (Today)
- Review History of Occurrences
- Assess Vulnerabilities
  - Population
  - Critical Facilities
  - Economic

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Hazard Mitigation Plan - Overview

Mitigation Strategies

- Develop SMART Goals and Activities
  - Specific
  - Measurable
  - Attainable
  - Relevant
  - Time-Phased

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Hazard Mitigation Plan - Overview

Mitigation Strategies

- Develop Goals and Objectives
- Develop Alternatives and Costs
- Create Evaluation Criteria
- Prioritize Projects

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Hazard Mitigation Plan - Overview

Plan Review and Adoption

- Draft to be Reviewed by Committee and Public
- Incorporate Comments
- Submitted to State and FEMA for Review
- Adoption by Local Municipalities

IEMA
ILLINOIS EMERGENCY MANAGEMENT AGENCY

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Hazard Mitigation Plan - Overview

Plan Maintenance

- Implement Mitigation Strategies
- Perform Annual Meeting and Review Progress
- Update at Least Every 5 Years

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Hazard Mitigation Plan - Overview

Mitigation Examples

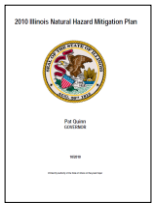
- Public Education
- Early Warning Systems
- Levees / Floodwalls
- Tornado Shelters
- Property Buyouts

CODE RED

Hazard Identification - Discussion

Primary Hazards – Illinois State Hazard Mitigation Plan

1. Severe Storms
2. Floods
3. Severe Winter Storms
4. Drought
5. Extreme Heat
6. Earthquake
7. Tornado



Hazard Identification - Discussion

Macon County Hazard Vulnerability
County Hazard Ratings

Severe Storms	Severe
Floods	High
Severe Winter Storms	Severe
Drought	High
Extreme Heat	High
Earthquake	Elevated
Tornado	Elevated

Source: [http://www.state.il.us/iema/planning/planning.htm]

Hazard Identification - Discussion

Macon County Hazard Vulnerability
Flood Insurance Policies and Data

Community	Flood Policies	Past Claims No. / Tot $	Repetitive Loss Properties
Village of Argenta*	0	0	0
Village of Blue Mound	0	0	0
City of Decatur	152	138/899,499.05	11
Village of Forsyth	18	6/28,430.99	0
Village of Harristown*	0	0	0
Village of Long Creek	1	0	0
Macon County	44	34/342,392.68	0
City of Macon*	0	0	0
City of Maroa*	0	0	0
Village of Mount Zion	3	0	0
Village of Niantic*	0	0	0
Village of Oreana*	0	0	0
Village of Warrensburg*	0	0	0
Totals	218	178/$1,270,322.72	11

** Indicates Non-Participation in the NFIP*

Stantec

Hazard Identification - Discussion

Macon County Hazard Vulnerability
Reported Weather Events

Event Type	No. Events	Deaths	Injuries	Damages
Blizzard	2	0	0	$100,000
Dense Fog	1	0	0	$0
Excessive Heat	9	10	0	$0
Extreme Cold	3	3	0	$0
Floods	29	0	1	$50,155,000
Frost/Freeze	1	0	0	$0
Hail	88	0	0	$0
High Wind	13	1	4	$177,000
Thunderstorms	165	0	12	$3,365,000
Winter Storm	27	7	35	$500,000
Totals	338	21	52	$54,297,000
National Climatic Data Center Reported Events Since 1956				

Stantec

Hazard Identification - Discussion

Macon County Hazard Vulnerability
Disaster Declarations

Event Type	Year	Category	Damages
Tornadoes	1974	Maj. Disaster	$589,571
Severe Storms / Flooding	1974	Maj. Disaster	$32,904,477
Severe Storms / Flooding	1979	Maj. Disaster	$34,840,105
Severe Storms / Flooding	1983	Maj. Disaster	
Severe Storms / Tornadoes / Flooding	1990	Maj. Disaster	
Severe Storms / Tornadoes / Flooding	1995	Maj. Disaster	
Severe Storms / Tornadoes	1996	Maj. Disaster	$4,107,388
Winter Storm	1999	Emergency Declaration	$42,048,452
Severe Storms / Tornadoes / Flooding	2002	Maj. Disaster	
Hurricane Katrina Evacuation	2005	Emergency Declaration	$5,956,516
Winter Storm	2007	Maj. Disaster	$28,399,250
Totals	11		$148,845,759

Stantec

Hazard Identification - Discussion

Additional Possible Hazards of Concern

1. Dam Failure
2. Expansive Soils
3. Levee Failure
4. Land Subsidence (Mines)
5. Landslide
6. Wildfire
7. Others?

Stantec

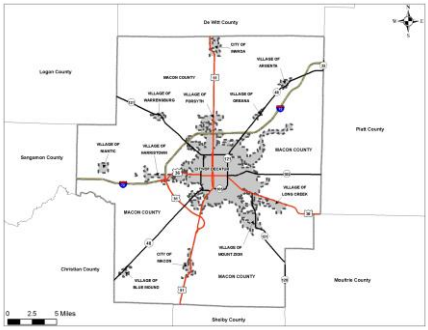
Stakeholder Data Collection

What We Need from You:

1. Data on Past Historic Events
2. Location of Critical Facilities
3. Regulatory and Planning Documents
4. Existing and Planned Mitigation Projects

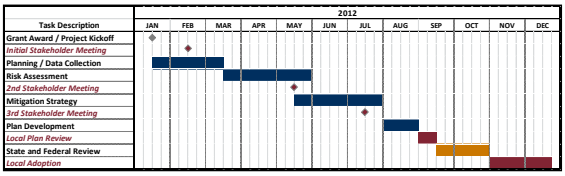
Stantec

Stakeholder Data Collection



Stantec

Schedule and Next Steps



Stantec

Questions

Jim Root – Planning Lead
Coordinator, Macon County EMA
jroot@maconcountyema.org

John Menninger, PE – Plan Consultant
Stantec Consulting Services, Inc.
John.Menninger@stantec.com

Stantec

Hazard Mitigation Plan
Macon County, Illinois

Risk Analysis Meeting
August 17, 2012

Stantec

Introductions

Jim Root – Planning Lead
Coordinator, Macon County EMA
jroot@maconcountyema.org

John Menninger, PE – Plan Consultant
Stantec Consulting Services, Inc.
John.Menninger@stantec.com

Stantec

Meeting Agenda

Outline

1. Introductions
2. Plan and Meeting Goals
3. Hazard Mitigation Plan - Overview
4. Risk Analysis Overview
5. Hazard Profiles
6. Vulnerability Rankings
7. Mitigation Project Development

Stantec

Hazard Mitigation Plan - Goals

Hazard Mitigation Plan Goal

1. Protect lives and property through identification of Macon County specific hazards and development of sound mitigation projects
2. Allows for Federal funding for mitigation projects.

Today's Meeting Goal

1. Review Hazard Profiles and Initial Vulnerability Rankings
2. Begin Development of Mitigation Actions

Stantec

Hazard Mitigation Plan - Overview

Primary Elements

1. Planning
2. Risk Assessment
3. Mitigation Strategies
4. Plan Review and Adoption
5. Plan Maintenance

Planning → Risk Assessment → Mitigation Strategies → Plan Review and Adoption → Plan Maintenance

Stantec

Data Needs Inventory

Community / Agency	Contact	Provided Information	Data Supplied	Data Received
City of Decatur	Mark Smith	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
City of Macon	Edward Aukamp	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
City of Maroa	Vincent Sims	N		N
Macon County	Jim Root / Melissa VanDolah / Joshua Tanner	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects. GIS data layers & property/building information.	Y
Village of Argenta	Dena Bowman	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
Village of Blue Mound	Tom Bingaman	Y	Tom Contacted John Menninger on 6/29/12. He will provide information.	N
Village of Forsyth	Harold Gilbert / Charles Hunsinger	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
Village of Harristown	Gordon Schlshuhn	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
Village of Long Creek	Cheryl Smith	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
Village of Mount Zion	Doug Dunn	Y	Provided a list of Critical Facilities.	Y
Village of Niantic	Lewis Claypool / Randy Hiser	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y
Village of Oreana	Dan Lightner	N		N
Village of Warrensburg	Stephen Mills / Keith Hackl	Y	Provided General Info., Historical Hazards, Critical Facilities, Planning Documents, Mitigation Projects.	Y

Stantec

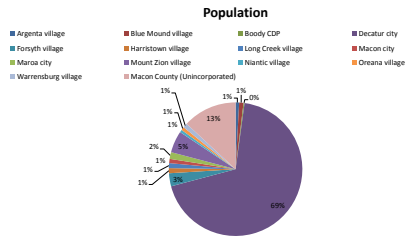
Critical Facilities

Community	Critical Facilities					Transportation			Utilities					Community Facilities / Government	Levees	Industry/ Manufacturing / Commerce Centers	Total
	Emergency Center and/or Warning Sirens	Schools	Police Station	Fire Stations	Medical / Nursing Facilities	Airports	Bridge	Dams	Electric Facility / Lines / Phone	Oil / Gas Facility / Pipeline	Water Treatment Plants	Water Sources	Wastewater Treatment Plants / Facilities (Pump Station)				
City of Decatur	0	41	1	3	2	1	100	2	0	0	2	1	1	1	1		156
City of Macon	0	1		1	0	0	3	0	2	0	1	4	4	3	0		19
City of Maroa	0	3	1	1	0	0	2	0	0	0					0		7
Macon County	0	0	0	0	0	3	335	0	0	0					1		339
Village of Argenta	0	3	1	0	0	0	0	0	0	0	1				0		5
Village of Blue Mound	0	2	0	1	0	0	0	0	0	0					0		3
Village of Forsyth	4	1	0	1	5	0	2	0	2	0	1	4	4	2	0	1	27
Village of Harristown	3	2	0	1	0	0	6	0	0	1	1	3	5	1	0		23
Village of Long Creek	2	0	0	1	0	0	7	0	0	0		1		2	0		13
Village of Mount Zion	0	5	1	1	2	0	4	0	0	2				4	0	1	20
Village of Niantic	0	1	0	1	0	0	1	0	0	0					0		3
Village of Oreana	0	1	0	1	0	0	1	0	0	0					0		3
Village of Warrensburg	1	3	1	1	0	0	1	0	1	0	1	4	3	2	0		18
City of Decatur	10	63	5	13	9	4	462	2	5	3	7	17	17	15	2	2	636

Stantec

Hazard Risk Analysis

Population Vulnerability – County-wide



Stantec

Hazard Risk Analysis

Population Vulnerability – County-wide

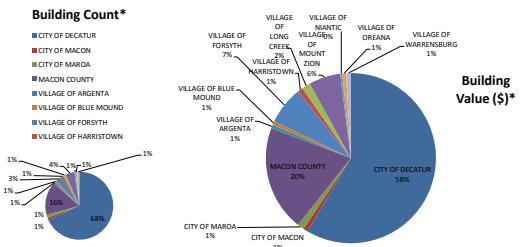
FIPS Code CO	FIPS Code PLACE	Municipalities/CDPs within a County	2000 – 2010 US Census 2000 Census Total Population	2010 Census Total Population	2000-2010 Change	2000-2010 % Change
115		Macon County	114,706	110,768	-3,938	-3.4
115	1972	Argenta, Village of	921	947	26	2.8
115	6756	Blue Mound, Village of	1,129	1,158	29	2.6
115	7315	Boody CDP	X	276	N/A	N/A
115	18823	Decatur, City of	81,860	76,122	-5,738	-7.0
115	27091	Forsyth, Village of	2,434	3,490	1,056	43.4
115	33227	Harristown, Village of	1,338	1,367	29	2.2
115	44498	Long Creek, Village of	1,364	1,328	-36	-2.6
115	45941	Macon, City of	1,213	1,138	-75	-6.2
115	47072	Maroa, City of	1,654	1,801	147	8.9
115	51206	Mount Zion, Village of	4,845	5,833	988	20.4
115	52961	Niantic, Village of	738	707	-31	-4.2
115	56471	Oreana, Village of	892	875	-17	-1.9
115	78916	Warrensburg, Village of	1,289	1,210	-79	-6.1

Source: http://www2.illinois.gov/census/Pages/Census2010Data.aspx

Stantec

Hazard Risk Analysis

Structural Vulnerability – County-wide *



Stantec

Hazard Risk Analysis

Structural Vulnerability – County-wide

Community	Residential		Commercial		Industrial		Religion/Government / Education = Exempt PUC/90 ; Unknown PUC; or Railroad PUC/5000		Agricultural		Total	
	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*
City of Decatur	29,162	584,836,956	1,592	193,495,404	173	55,234,551	1,286	250,574	20	1,929,603	32,233	835,747,088
City of Macon	462	10,718,077	40	1,732,477	2	170,767	19	0	4	151,913	527	12,773,234
City of Maroa	602	16,401,810	47	1,167,834	2	233,578	18	0	3	43,765	672	17,846,987
Macon County	6,151	231,210,448	180	11,538,910	60	8,782,490	129	69,896	963	35,087,628	7,483	286,689,372
Village of Argenta	360	9,275,464	16	528,534	2	24,105	8	0	1	88,907	387	9,917,010
Village of Blue Mound	411	9,458,230	31	720,847	4	15,356	14	0	0	0	460	10,194,433
Village of Forsyth	1,208	72,321,047	75	30,047,217	1	130,992	23	57,942	0	0	1,307	102,557,198
Village of Harristown	529	13,568,989	18	1,211,409	1	17,104	13	0	2	0	563	14,797,502
Village of Long Creek	538	19,838,321	43	2,618,287	3	128,537	15	0	11	473,092	610	23,058,237
Village of Mount Zion	1,861	77,004,043	103	8,599,349	2	1,615	28	102,774	4	199,601	1,998	85,907,382
Village of Niantic	227	4,649,204	19	679,788	2	10,657	10	0	4	144,138	262	5,483,787
Village of Oreana	339	9,675,428	10	337,546	2	428,390	8	0	0	0	359	10,441,364
Village of Warrensburg	426	11,544,306	23	799,291	7	388,430	13	0	1	0	470	12,732,027
Total	42,276	1,070,502,323	2,197	253,476,893	261	65,566,572	1,584	481,186	1,013	38,118,647	47,331	1,428,145,621

* Number and Value taken from Assessors building values. Value based on Parcel, which meant multiple structures with the same Parcel Number were not duplicated within the table. Total Addresses within Macon County is 56,163.(Provided by Macon County GIS department.)

Stantec

Hazard Risk Analysis

Hazards of Concern

1. Flooding
2. Severe Thunderstorms
3. Severe Winter Storms
4. Tornadoes
5. Drought
6. Extreme Heat
7. Earthquakes
8. Dam / Levee Failure
9. Nuclear / Hazardous Materials Accident

Stantec

Hazard Risk Analysis

Methodology

1. Calculate Event Probabilities
2. Determine Potential Impacts
   - Economic Damage, Population, Critical Facilities
3. Calculate Risks / Vulnerabilities

Stantec

Hazard Risk Analysis

Data Sources

1. FEMA's HAZUS-MH
   - Flooding and Earthquakes
2. Historic Events
   - Tornadoes, Severe Storms, Extreme Heat
3. Additional Studies
   - Drought
4. Qualitative Assessments
   - Dam Failure, Nuclear and Haz. Materials

Stantec

Hazard Risk Analysis – Flooding

Summary of Events & Future Probability

- 29 Events from 1992 -2011
  - Damages: Unavailable
  - Life Loss: 0
  - Injuries: 0
- Annual Chance of Occurrence = 75%
- HAZUS-MH:
  - Average Annualized Loss: $32,399,000
  - Need Better Data to Refine Analysis

Stantec

Hazard Risk Analysis – Flooding

Streams & Communities Affected

Stream	Communities Affected	Stream Miles Mapped
Big Creek	Long Creek, Macon County (Uninc.), Mount Zion	6.3
Big Creek Arm of Lake Decatur	Decatur, Macon County (Uninc.)	2.7
Big Creek Arm of Lake Decatur (Lake Shoreline)	Decatur, Macon County (Uninc.), Mount Zion	6.1
Dry Branch	Macon County (Uninc.)	4.4
Finley Creek	Decatur, Macon County (Uninc.), Mount Zion	11.5
Friends Creek	Argenta, Macon County (Uninc.)	15.1
Friends Creek Ditch	Macon County (Uninc.)	5.4
Independence Branch	Macon County (Uninc.)	1.1
Lake Decatur (Lake Shoreline)	Decatur, Macon County (Uninc.)	26.9
Long Creek	Decatur, Long Creek, Macon County (Uninc.)	1.7
Long Creek (East of Big Creek)	Long Creek, Macon County (Uninc.)	6.3
Long Creek Tributary	Long Creek, Decatur, Macon County (Uninc.)	2.9
Long Grove Creek	Macon County (Uninc.)	3.0
Long Point Slough	Macon County (Uninc.)	0.8

Stream	Communities Affected	Stream Miles Mapped
Mosquito Creek	Macon County (Uninc.)	5.3
North Fork	Macon County (Uninc.), Maroa	15.4
Sand Creek	Decatur, Macon County (Uninc.)	7.5
Sangamon River	Decatur, Macon County (Uninc.)	36.7
South Fork	Macon County (Uninc.)	3.0
South Spring Creek	Decatur, Macon County (Uninc.)	5.6
Spring Creek	Decatur, Macon County (Uninc.)	14.7
Spring Creek Tributary	Decatur, Macon County (Uninc.)	0.9
Stevens Creek	Decatur, Forsyth, Macon County (Uninc.)	19.9
Stevens Creek Tributary A	Decatur, Macon County (Uninc.)	1.4
Stevens Creek Tributary B	Decatur, Macon County (Uninc.)	1.6
Tributary to Sangamon River	Decatur, Macon County (Uninc.)	1.0
Willow Branch	Macon County (Uninc.)	1.1

Stantec

Critical Facilities – At Risk of Flooding

Community	Critical Facilities					Transportation			Utilities						Community Facilities / Government	Levees	Industry/ Manufacturing / Commerce Centers	Total
	Emergency Center and/or Warning Sirens	Schools	Police Station	Fire Stations	Medical / Nursing Facilities	Airports	Bridge	Dams	Electric Facility Lines / Phone	Oil / Gas Facility Pipelines	Water Treatment Plants	Water Sources	Wastewater Treatment Plants / Facilities (Pump Stations)					
City of Decatur		2					28						1			1		32
City of Macon																2		2
City of Maroa							3											3
Macon County							117			7								124
Village of Argenta							0											0
Village of Blue Mound							0											0
Village of Forsyth							1						1					2
Village of Harristown							0											0
Village of Long Creek							1											1
Village of Mount Zion							1											1
Village of Niantic							0											0
Village of Oreana							0											0
Village of Warrensburg							0											0
City of Decatur	0	2	0	0	0	0	151	0	0	7	0	0	2	0	3	0		165

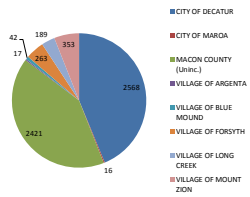
* There are 7 major pipelines running through the county; only 2 communities do not have a pipeline. Village of Niantic & City of Macon.

Hazard Risk Analysis – Flooding

Population Vulnerability – Community

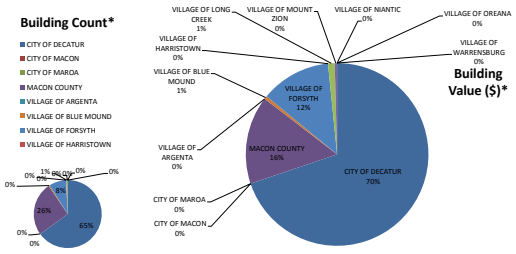
Community	# of 2010 Census Blocks *	2010 Census Population *	Total Population	Percentage Inside Community
City of Decatur	483	2568	76,122	3
City of Macon	0	0	1,138	0
City of Maroa	12	16	1,801	1
Macon County	764	2421	14,792	16
Village of Argenta	5	17	947	2
Village of Blue Mound	7	42	1,158	4
Village of Forsyth	19	263	3,490	8
Village of Harristown	0	0	1,367	0
Village of Long Creek	39	189	1,328	14
Village of Mount Zion	26	353	5,833	6
Village of Niantic	0	0	707	0
Village of Oreana	0	0	875	0
Village of Warrensburg	0	0	1,210	0

*** Flood Vulnerable Population - (Population identified using a weighted area calculation. The portion of the Census Block within a community that intersected the Floodplain was given an area percentage.)**



Hazard Risk Analysis – Flooding

Structural Vulnerability – Community



Hazard Risk Analysis – Flooding

Structural Vulnerability – Community

Structural Vulnerability by Type for the Floodplains Only

	Residential		Commercial		Industrial		Religion/Government/Education = Exempt PUC/90 ; Unknown PUC; or Railroad PUC/5000		Agricultural		Total	
Community	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*	Number*	Value ($)*
City of Decatur	204	9,486,529	7	428,045	3	1,658,491	32	0	1	0	247	11,573,065
City of Macon	0	0	0	0	0	0	0	0	0	0	0	0
City of Maroa	0	0	0	0	0	0	0	0	0	0	0	0
Macon County	71	1,626,742	7	490,020	1	0	4	0	14	469,084	97	2,585,846
Village of Argenta	0	0	0	0	0	0	0	0	0	0	0	0
Village of Blue Mound	2	93,611	0	0	0	0	0	0	0	0	2	93,611
Village of Forsyth	31	2,057,887	0	0	0	0	0	0	0	0	31	2,057,887
Village of Harristown	0	0	0	0	0	0	0	0	0	0	0	0
Village of Long Creek	2	195,049	0	0	0	0	0	0	0	0	2	195,049
Village of Mount Zion	1	69,210	0	0	0	0	0	0	0	0	1	69,210
Village of Niantic	0	0	0	0	0	0	0	0	0	0	0	0
Village of Oreana	0	0	0	0	0	0	0	0	0	0	0	0
Village of Warrensburg	0	0	0	0	0	0	0	0	0	0	0	0
Total	311	13,529,028	14	918,065	4	1,658,491	36	0	15	469,084	380	16,574,668

Hazard Risk Analysis – Severe Storms

Summary of Events & Future Probability

- 134 Events from 1992 -2011
  - Damages: $3,542,000
  - Life Loss: 1
  - Injuries: 13
- Annual Chance of Occurrence = 95%
- Annualized Risk
  - Damages: $177,100
  - Life Loss: 0.05
  - Injuries: 0.65

Ind. Annual Probabilities
Hail: 85%
Wind: 95%
Lightning: 7%

Hazard Risk Analysis – Severe Winter Storm

Summary of Events & Future Probability

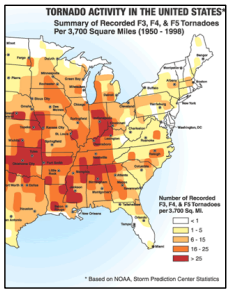
- 31 Events from 1992 -2011
  - Damages*: $600,000
  - Life Loss*: 10
  - Injuries*: 35
- Annual Chance of Occurrence = 65%

* Event data based on regional totals. Specific impacts to Macon County unknown.

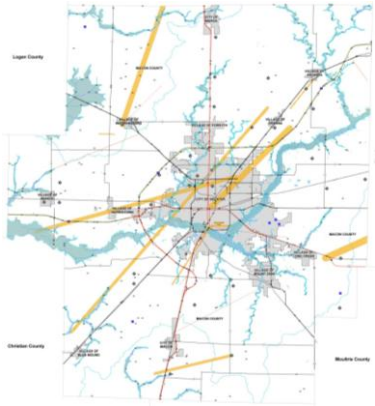
Hazard Risk Analysis – Tornadoes

Summary of Events & Future Probability

- 32 Events from 1956 -2011
  - Damages[1]: $19,108,000
  - Life Loss[1]: 1
  - Injuries[1]: 73
- Annual Chance of Occurrence = 40%
- Annualized Risk
  - Damages: $347,400
  - Life Loss: 0.02
  - Injuries: 1.33



Stantec

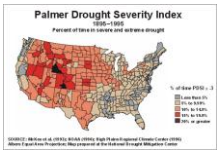


Stantec

Hazard Risk Analysis – Drought

Summary of Events & Future Probability

- 7 Events from 1914 -2011 (2012 Event Currently Ongoing)
  - Damages: Unknown
- Annual Chance of Occurrence = 10 -15% (PSDI)
- Illinois State Water Survey (June, 2012)
  - Water Supply System: At-Risk
  - ~ 0.4% Annual Chance Impact to South Water Plant Intakes
  - ~ 10% Annual Chance Impact to ADM Intake at Reas Bridge



Stantec

Hazard Risk Analysis – Extreme Heat

Summary of Events & Future Probability

- 9 Events from 1992 -2011
  - Damages*: $ 0
  - Life Loss*: 10
  - Injuries*: 0
- Annual Chance of Occurrence = 27%

* Event data based on regional totals. Specific impacts to Macon County unknown.

Stantec

Hazard Risk Analysis – Earthquakes

Summary of Events & Future Probability

- 0 Earthquakes from 1795 -2004
  - Damages[1]: $ 0
  - Life Loss[1]: 0
  - Injuries[1]: 0
- Annual Chance of Occurrence = Minimal
- HAZUS – MH:
  - Hypothetical Earthquake: 5.2 Magnitude
  - Estimated Damages: $30,000

Stantec

Hazard Risk Analysis – Dam / Levee Failure (Lake Decatur Dam)

Summary of Events & Future Probability

- No Historical Record
- Dam and Levee Breach Analyses Not Available
- Probability of Occurrence: Low
- Potential Impacts:
  - Loss of Drinking Water Source
  - Damage to Critical Infrastructure
    - Sewage Treatment Plant
    - Downstream Bridges

Stantec

Hazard Risk Analysis – Hazard Material / Nuclear Accidents

Summary of Events & Future Probability

- No Detailed Historical Record of Accidents
- Probability of Occurrence: Unknown
- Potential Impacts:
  - Hazardous materials are stored throughout the County
  - Additionally multiple pipelines, rail corridors and transportation routes bisect the County
  - Impacts associated with nuclear accident unknown

Stantec

Hazard Risk Analysis – Prioritization

Historical/Probability	
Low (1)	0 to 10 occurrences in the last 50 years
Medium (2)	11 to 50 occurrences in the last 50 years
High (3)	More than 50 occurrences in the last 50 years

Vulnerability	
Low (1)	Less than 10% of the total population of the jurisdiction
Medium (2)	10% to 25% of the total population of the jurisdiction
High (3)	More than 25% of the total population of the jurisdiction

Severity of Impact	
Low (1)	Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
Medium (2)	Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72 hour shutdown of essential facilities
High (3)	Multiple deaths (more than 5), property destroyed or damaged beyond repair (more than $15,000,000), or more than 3 days of shutdown for essential facilities

Stantec

Hazard Risk Analysis – Prioritization

Community	Severe Storm	Flooding	Severe Winter Storm	Drought*	Extreme Heat*	Earthquakes*	Tornadoes	Dam/Levee Failure*	Hazard Material / Nuclear Accidents*
CITY OF DECATUR	7	4	6	7	3	5	5	4	4
CITY OF MACON	7	3	4	3	3	3	6	3	3
CITY OF MAROA	7	3	4	3	3	3	6	3	3
MACON COUNTY	6	6	5	4	4	4	5	4	4
VILLAGE OF ARGENTA	7	3	4	3	3	3	6	3	3
VILLAGE OF BLUE MOUND	7	3	4	3	3	3	6	3	3
VILLAGE OF FORSYTH	7	4	4	3	3	3	6	3	3
VILLAGE OF HARRISTOWN	7	3	4	3	3	3	6	4	3
VILLAGE OF LONG CREEK	7	3	4	3	3	3	6	3	3
VILLAGE OF MOUNT ZION	7	3	4	3	3	3	6	3	3
VILLAGE OF NIANTIC	7	3	4	3	3	3	6	3	3
VILLAGE OF OREANA	7	3	4	3	3	3	6	3	3
VILLAGE OF WARRENSBURG	7	3	4	3	3	3	6	3	3

Low	3
Guarded	4
Elevated	5-6
High	7-8
Severe	9

Stantec

Mitigation Project Development

Mitigation Goals

1. Preventative Actiosn
2. Property Protection
3. Emergency Services
4. Structural Projects
5. Public Information

Stantec

Mitigation Project Worksheet

MACON COUNTY HAZARD MITIGATION PLAN
Mitigation Strategy
August 17, 2012

Community Name _____ **Contact Name** _____ **Contact Phone No.** _____

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits[1]	Estimated Costs[1]
Example	*2*	*Purchase homes in the 100 year floodplain and convert the space to a park*	*County Planning Department – Bob Jones, Director*	*HMGP & General Funds*	*5 years*	*Medium*	*Medium*
1.							
2.							

Stantec

Next Steps

Communities / Stakeholders

1. Review and Provide Input on Hazard Prioritization
2. Continue Development of Mitigation Goals

Planning Team

1. Follow Up Calls for Each Community
2. Complete Risk Analysis
3. Develop Mitigation Projects

Stantec

Questions

Jim Root – Planning Lead
Coordinator, Macon County EMA
jroot@maconcountyema.org

John Menninger, PE – Plan Consultant
Stantec Consulting Services, Inc.
John.Menninger@stantec.com

Stantec

Hazard Mitigation Plan
Macon County, Illinois

Mitigation Strategy Meeting
February 14, 2013

Stantec

Introductions

Jim Root – Planning Lead
Coordinator, Macon County EMA
jroot@maconcountyema.org

John Menninger, PE – Plan Consultant
Stantec Consulting Services, Inc.
John.Menninger@stantec.com

Stantec

Meeting Agenda

Outline

1. Introductions
2. Current Progress
3. Additional Plan Element Needs
4. Next Steps

Stantec

Hazard Mitigation Plan - Goals

Hazard Mitigation Plan Goal

1. Protect lives and property through identification of Macon County specific hazards and development of sound mitigation projects
2. Allows for Federal funding for mitigation projects.

Today's Meeting Goal

1. Identify additional mitigation actions
2. Outline remaining steps

Stantec

Hazard Mitigation Plan - Overview

Primary Elements

1. Planning
2. Risk Assessment
3. Mitigation Strategies
4. Plan Review and Adoption
5. Plan Maintenance

Stantec

Planning Process

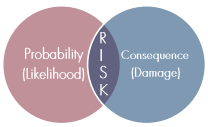
Stakeholder Involvement

1. Kickoff Meeting – 2/22/2012
2. Hazard Assessment Meeting – 8/20/2012
3. Mitigation Strategy Review – Today
4. Public Comment Period – March, 2013

Hazard Risk Assessment

How Do You Quantify Risk?

1. Calculate Event Probabilities
2. Determine Potential Impacts
   - Economic Damage, Population, Critical Facilities
3. Calculate Risks / Vulnerabilities



Hazard Risk Assessment

Hazard Prioritization Results

1. Flooding
2. Severe Storms
3. Drought
4. Winter Storms
5. Tornadoes
6. Extreme Heat
7. Nuclear / Hazardous Material Accidents
8. Dam Failure
9. Earthquakes

Mitigation Actions

Mitigation Project Types

1. Preventative Actions
2. Property Protection
3. Emergency Services
4. Structural Projects
5. Public Information

Mitigation Actions

Community	Actions Identified										
	Multi-Hazard	Severe Storms	Flooding	Winter Storms	Drought	Tornadoes	Earthquakes	Extreme Heat	Dam / Levee Failure	Hazardous Materials / Nuclear Accidents	
Argenta, Village of	x			x							x
Blue Mound, Village of											
Decatur, City of	x	x			x	x					x
Sanitary District of Decatur	x										x
Forsyth, Village of	x		x		x	x					x
Harristown, Village of					x						x
Long Creek, Village of											
Macon, City of			x			x					x
Maroa, City of											
Macon County	x		x		x	x					x
Mount Zion, Village of											
Niantic, Village of											
Oreana, Village of											
Warrensburg, Village of											
	x	x	x		x	x					

Mitigation Actions

Community	Actions Identified										
	Multi-Hazard	Severe Storms	Flooding	Winter Storms	Drought	Tornadoes	Earthquakes	Extreme Heat	Dam / Levee Failure	Hazardous Materials / Nuclear Accidents	
Argenta, Village of	x			x							x
Blue Mound, Village of											
Decatur, City of	x	x		x	x						x
Sanitary District of Decatur	x										x
Forsyth, Village of	x		x	x	x						x
Harristown, Village of				x							x
Long Creek, Village of											
Macon, City of			x		x						x
Maroa, City of											
Macon County	x		x	x	x						x
Mount Zion, Village of											
Niantic, Village of											
Oreana, Village of											
Warrensburg, Village of											
	x	x	x		x	x					

Mitigation Actions - Flooding

Identified Actions
1. Purchase and remove rep loss property
2. Drainage and stormwater improvements
3. New or updated flood studies
4. Retrofit and flood proofing projects

Potential Actions
1. Public education regarding flood mitigation techniques
2. Strengthen floodplain management regulations

Stantec

Mitigation Actions – Severe Storms

Identified Actions
1. Distribute NOAA Weather radios
2. Backup power generators

Potential Actions
1. Public awareness campaigns
2. Strengthen building codes
3. Maintain utility corridors to prevent power outages

Stantec

Mitigation Actions – Winter Storms

Identified Actions
1. Backup power generators

Potential Actions
1. Public awareness campaigns
2. Identify at-risk populations for long-term power outages
3. Maintain utility corridors to prevent power outages

Stantec

Mitigation Actions – Drought

Identified Actions
1. Silt dams on tribs to Lake Decatur
2. New water wells
3. Supplemental supply transmition lines

Potential Actions
1. Encourage / promote water conservation and reuse
2. Reduce erosion at source

Stantec

Mitigation Actions – Tornadoes

Identified Actions
1. Distribute weather radios
2. Install / upgrade warning sirens

Potential Actions
1. Install individual or community storm shelters or safe rooms
2. Public awareness campaigns

Stantec

Mitigation Actions – Earthquakes

Potential Actions
1. Adopt and enforce building codes
2. Public awareness campaigns
3. Identify and map earthquake prone areas

Stantec

Mitigation Actions – Extreme Heat

Potential Actions

1. Reduce urban heat island effect
2. Identify and assist vulnerable populations
3. Public awareness campaigns

Stantec

Mitigation Actions – Dam Failure

Potential Actions

1. Implement Operations and Maintenance Plan
2. Develop an Emergency Action Plan including breach analysis
3. Perform annual inspections
4. Public awareness campaigns

Stantec

Mitigation Actions – Hazardous Material and Nuclear Accidents

Potential Actions

1. Prepare accident response plans
2. Continue implementation of Hazardous Material Plan
3. Public awareness campaigns

Stantec

Mitigation Plan Maintenance

Maintenance and Update Schedule

1. Continuous updates
2. Annual reviews
3. 5-year update cycle

Stantec

Next Steps

Remaining Schedule

1. Final mitigation projects incorporated – 3/1
2. Public review and comment period – 3/1 to 4/1
3. IEMA Review – 4/1 to 5/1
4. FEMA Review – 5/15 to 6/15
5. Plan Adoption

Stantec

Questions

Jim Root – Planning Lead
Coordinator, Macon County EMA
jroot@maconcountyema.org

John Menninger, PE – Plan Consultant
Stantec Consulting Services, Inc.
John.Menninger@stantec.com

Stantec

Macon County Illinois Hazard Mitigation Plan

Kickoff Meeting / FILE 175631017

Date/Time:	January 25, 2012 10:00 AM CST
Place:	Conference Call
Attendees:	James Root, Macon County EMA
	Melissa Van Dolah, Macon County EMA
	Josh Turner, Macon County GIS
	Jennifer Hoffman, Macon County Planning and Zoning
	Tony Van Notta, Macon County Planning and Zoning
	John Menninger, Stantec Consulting Services

INTRODUCTION

Introductions were performed for the group. Following introductions, John Menninger provided a brief overview of the Hazard Mitigation Plan Process.

PLANNING PROCESS REVIEW

Mr. Menninger identified the key components of the planning process and provided further detail on each task. These elements included:

- Advisory Committee Meeting / Data Collection
- Hazard Identification
- Risk Assessment
- Mitigation Planning
- Plan Review and Adoption

The project team agreed to hold three advisory committee meetings open to the general public. These meetings along with their general goals are listed below.

- Initial Advisory Committee Meeting: Outline the planning process. Request further local data. Identify the relevant county-specific hazards of concern.
- Risk Review and Hazard Mitigation Meeting: Review the results of the risk assessment. Outline mitigation ranking framework. Identify potential mitigation projects.

- Draft Mitigation Plan Review: Discuss the Draft Mitigation Plan. Outline the process for revision and adoption.

Mr. Menninger will provide the County with a initial data request list by the end of the week.

INITIAL ADVISORY COMMITTEE MEETING

The project team identified the key participants of the Advisory Committee. It is anticipated that each participating community will provide a representative. Additional participants may include incorporated townships, police and fire departments, the local Red Cross, and local businesses including ADM and CAT.

Public notice for the meeting will be provided in the local newspaper. The public will be invited to attend and will have the opportunity to provide comment and ask questions. Stantec will check with the State on whether the public notification can be located in the local section of the paper or must be an official legal notice.

The first meeting is scheduled for Wednesday, February 22nd at 1:30 PM CST at the Macon County Board Room at 141 South Main Street, Decatur, Illinois.

PROJECT SCHEDULE AND FINANCIALS

The project is expected to last for 12 months with an initial Draft Report complete within 8 months and review and approval finalized by the end of the year. Mr. Menninger will forward a formal schedule.

Invoicing procedures were discussed. Mr. Menninger will review the current agreement and respond to Mr. Root.

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

STANTEC CONSULTING SERVICES INC.

John Menninger, PE
Project Manager
John.Menninger@stantec.com

Macon County Illinois Hazard Mitigation Plan

Steering Committee Meeting / FILE 175631017

Date/Time:	February 22, 2012 10:00 AM CST
Place:	Macon County Planning and Zoning 5th floor 141 S. Main Street Decatur, Il
Attendees:	James Root, Macon County EMA
	Melissa Van Dolah, Macon County EMA
	Josh Turner, Macon County GIS
	Jennifer Hoffman, Macon County Planning and Zoning
	Tony Van Notta, Macon County Planning and Zoning
	Jay Dunn, Macon County Board
	Mark Smith, City of Decatur
	John Menninger, Stantec Consulting Services

INTRODUCTION

Introductions were performed for the group. Following introductions, John Menninger provided an overview of the planning process and went through the Stakeholder Meeting Presentation.

PRESENTATION REVIEW

The primary elements of the presentation included:

- Introductions
- Plan and Meeting Goals
- Hazard Mitigation Plan – Overview
- Hazard Identification – Discussion
- Stakeholder Data Collection
- Schedule / Path Forward
- Questions / Comments

No significant changes were identified to the presentation. Additional key elements discussed included:

- Potential participation of local business groups including ADM, Tate & Lyle and PPG. The County would contact the local businesses and invite them to participate.
- A nuclear power plant is located 25 miles north of Macon County. The potential for a disaster at the plant may be included within the plan.
- The County recently underwent the Map Modernization process with FEMA. They are currently scheduled for further Risk MAP work including new detailed models of each of the major streams/rivers.
- The sewer district water treatment plant is located behind a levee.
- The dam that forms Lake Decatur is owned and maintained by the City.
- The steering committee is in general agreement with the proposed primary hazards including:
    - Severe storms, floods, drought/extreme heat, earthquakes and tornados.
    - Flooding was noted on several tributaries and multiple parcels were identified as being frequently affected
    - The City is particularly vulnerable to droughts due to siltation of the Lake Decatur reservoir and the large water needs of local industry.

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

STANTEC CONSULTING SERVICES INC.

John Menninger, PE
Project Manager
John.Menninger@stantec.com

Hazard Mitigation Plan
February 22, 2012
1:30PM
Macon County Board Room
141 South Main, Room #514

Jim Root, Coordinator of the Macon County EMA, introduced himself to the attendees. He is the one that is spearheading this project. He stated they have hired a consulting firm to assist them through this process.

Jim Root introduced John Menninger, PE – Plan Consultant. He is with Stantec Consulting, Services. Inc.

Local Participating Communities present were from the Villages of Harristown, Long Creek, Niantic, Mt. Zion and Warrensburg and from the Cities of Macon and Maroa. John Menninger stated Jim Root will be representing Macon County and the unincorporated areas. He felt there was a good representation of the local communities.

Mr. Menninger introduced the Hazard Mitigation Planning Process to the group. The people in this room represent the Planning Committee. He stated it is their plan and will. His firm will help them put the plan together. The plan will need to meet FEMA guidelines, and his firm will help the committee with that. This plan will need to speak to the community's needs and concerns. The input from the local residents is the most important piece of it.

The primary goal of this plan is to identify the specific natural hazards that threaten the County. The plan will determine your vulnerability to these hazards and start planning projects or activities to reduce that risk over time. The main goal is to reduce the risk to life loss and property damage. Benefits that comes by developing a Mitigation Plan would be the eligibility for additional federal funding through the Hazard Mitigation Program and to get grants from FEMA to help implement this plan. Generally it is almost 75% comes from the federal government and 25% for the local community during this grant program.

At today's meeting, we will start the discussion of what are the specific hazards that concern Macon County, and by the end of meeting a list of the hazard will be compiled so the committee can go forward to develop the risk assessment and mitigation process.

Mr. Menninger went over what is involved with a mitigation plan. FEMA provides the framework for the plan. The plan will need to follow FEMA regulation to meet their requirements for a federal approved plan. The specific content of the plan will all be directed to Macon County, but the generally outline and framework of the plan is FEMA's.

The Primary Elements are the Initial Planning Group and Local Input, the risk assessment, mitigation strategies, plan review and adoption by the locals and finally maintenance and implementation of their plan.

Today's meeting is the first of three meeting that will be held with the planning group. The second meeting will discuss the vulnerability assessment for the community and start to discuss the potential

mitigation projects. The third meeting will be discussion on how the communities rank this mitigation projects and prioritize them.

Throughout the process they will be communicating with the committee thorough mail and email. There will be information published on the County EMA's website for the public to access this information.

The role of the Planning Committee is 1) maintaining awareness of the process 2) gathering local information and reporting it to Jim Root and himself for the development of the plan. 3) Utilize local expertise 4) Provide documents and data 5) review the draft plan.

The local jurisdiction participation requirements are 1) attend planned meetings. 2) provide local data. He stated if you don't have a lot of local data that is ok, but they would love to have as much information as you can provide.3) identify the critical facilities within your town.4) review the mitigation actions and then review the plan.5) adopt the plan by City or village by passing a resolution. This is the final step needed for FEMA approval.

Next step is Risk Assessment. Risk Assessment is the understanding the vulnerabilities of the communities in Macon County to each individual hazard. What this means is to determine how much damage would a certain event cause to that community and how likely this event would occur. Next you will need to assess vulnerabilities such as the threat to human population, potential to life loss, and the potential to economic damage.

He stated now at this point, you have determined what hazards you are really vulnerable to. Now the process starts to identify the specific mitigation actions for the community to implement to reduce risk. This could be either to reduce your chance for damages or reducing the probability of something occurring. This could be a flood control basin that would reduce the occurrence of flooding downstream. You are looking for either one. Some hazards you cannot reduce that probability so you would have to look at what is vulnerable and how you would be provide better hardiness for that disaster.

In the hazard mitigation plan you will need to be very specific and measurable. FEMA wants you to provide an update on your plan in 5 years and they will look at your progress. It is important when you start to develop the mitigation process that you are realistic in your goals and expectations. You will need to take into account, special fundings. In other words, you don't want to make a goal a number one priority, if it is not going to be funded immediately. It could be a high priority to the community, but you could put it into a longer time frame to be completed. There will be more discussion on this at a later meeting.

The mitigation strategies are to 1) develop goals and objectives. 2) develop alternatives and costs. 3) create evaluation criteria. 4) Prioritize projects.

The next step of the plan is the review and adoption. Every member of the planning committee will be provided a draft copy of the plan for review. They encourage the committee to provide comments on items that are specific to their community, as well as, the overall plan. They will take into account the comments and incorporate and roll them in a plan that will be submitted to the State and FEMA for review. If the State and FEMA approves it; it is approved pending local adoption. At that point, the local community takes over and it is up to them to accept the plan under their ordinances.

At this point, it is now time to implement the strategies that were identified. Annual meeting will be held to access the plan and make sure it is working for the community. If things need to be changed, identify them and schedule a time to update. The plan needs to be updated every 5 years.

Examples of mitigation projects are public awareness; early warning systems (Macon County is currently implementing this); levees/floodwalls; and tornado shelters.

He asked if anyone had any questions. No questions noted.

The next part of this meeting will be the discussion of the 7 hazards that are identified in the State plan. He suggested in order to be in compliance with the State, Macon County will need to include these same hazards. These hazards are severe storms, floods, severe winter storms, drought, extreme heat, earthquakes and tornados.

In the 2010 update of the State plan, Macon County vulnerability is ranked as severe hazards are severe storms and severe winter storms. Floods, drought and extreme heat are ranked high, and earthquake and tornado are ranked as elevated. He stated these could change in their ranking to a higher level of concern.

He provided the Committee with a list of Macon County Hazard Vulnerability Flood Insurance Policies and Data and a list of Macon County Hazard Vulnerability Reported Weather Events to review. He stated the most damages Macon County has had is from Thunderstorms.

He shared with the Committee a Disaster Declarations for Macon County over the last 50 years. The majority of these are severe storms and flooding.

He asked if anyone had any questions or comments regarding the first seven hazards.

Jim Root said Macon County has 147 hazardous material facilities within the County. He thought maybe a Hazardous Chemical Assessment should be done, because of the number of facilities the County has.

John Menninger agreed with Mr. Root. He stated this should be discussed and considered within the plan.

After this meeting Mr. Menninger will look at the data listed and other data provided by the communities and develop a vulnerability rating.

Additional Possible Hazards of Concerns other than the first seven are: 1) Dam Failure, 2) Expansive Soils – this may not be an issue in Macon County. 3) Levee Failure 4) Land Subsidence (Mines) 5. Landslide. 6) Wildfires. He asked the Committee which of these they felt should be listed as additional hazards or concerns.

Jim Root stated Dam Failure and Levee Failure should be considered in the plan.

?? asked what is an expansive soil.

John Menninger stated this is clay soil which basically changes when water is added to the content of the soil. He said this could cause structure damages to roads and bridges.

??stated he feels one of the concerns with villages are the transportation of hazard waste through rail yards. There is a lot of truck traffic that hauls hazardous waste through most of the villages, because most villages have railways that go through them.

John Meninger stated one of the mitigation plans they assisted with, included train derailment as a concern. It was associated with hazard material being transported by trains. He stated this is not

considered a natural hazard, but it may be something that they should look at. He will talk with the State to make sure that fits within their framework.

??Greg Pyles stated the area has a nuclear power plant. It is not located in Macon County, but if a disaster happened it could affect Macon County.

John Meninger said they will look at the transportation and storage of hazard materials, nuclear power plant, dam failure and levee failure. This will be included in the plan.

John Meninger stated what they need from the Committees are 1) Data on Past Historic Events 2) Locations of Critical Facilities 3) Regulatory and Planning Documents 4) Existing and Planned Mitigation Projects. Please submit this information via email to Jim Root or John Meninger. You can also bring it by Jim's office and he will make copies of it and forward it on.

Jim Root gave an example of an existing and planned mitigation project. He stated the Village of Long Creek is doing water drainage for the roads which will eliminate some of the flash flooding problems in their area.

John Menninger reviewed with the Committee the time line and completion of the project. He stated right now the data is being collected until the middle or end of March. The risk assessment is also taken place now. He would like the Committee to discuss with their communities of which mitigation projects they would like to see included in the plan. At the next meeting they will lay out the mitigation strategy, and at the third meeting they will have the plan development.

John Menninger said the Mitigation Plan is important if you want to apply for funding from FEMA.

By the end of August, his firm will have a draft plan developed for the communities to review.

John Menninger asked for any questions or comments.

He said next meeting is scheduled for May. They would like the data back from the communities before they scheduled the date in May. He will notify them in plenty of time when the meeting will be held in May. Most of the meeting will be held here at the Macon County Office Building.

He stated they would like to have a representative from each community at each meeting.

He thanked everyone and stated he was looking forward to working with them.

Meeting was adjourned at approximately at 2:15PM.

Angela Sarver, Planning and Zoning Dept.

Hazard Mitigation Plan
August 17, 2012
9:30AM
Macon County Board Room
141 South Main, Room #514

Jim Root, Coordinator of the Macon County EMA, introduced himself to the attendees. Stated that they are running a little behind on the schedule of the plan, making sure all the jurisdictions have had an opportunity to provide data for the plan.

John Menninger, PE- Plan Consultant with Stantec Consulting, Services. Inc.

Local Participating Communities present were the City of Decatur, Villages of Harristown, Long Creek, Niantic, Mt. Zion, Blue Mound, Argenta, and Forsyth and from the City of Maroa. Jim Root, Jennifer Hoffman, and Josh Tanner will be representing Macon County and the unincorporated areas.

Mr. Menninger went over the purpose for the plan which is to protect lives and properties through identification of specific hazards of the county. The goals of the meeting today are to review the hazard profiles and rankings and begin the mitigation development

The Primary Elements are planning; which we have undertaken, Risk Assessment; which we are starting to wrap up now, Mitigation Strategies, Plan Review and Adoption, and Plan Maintenance.

With the data collection he felt like they received a lot of good data from the local communities. He stated they got a listing of over 600 critical facilities within the communities, 460 of them are bridges, and 170 are other infrastructures such as utilities, buildings, schools. He gathered the population data and census data and in addition to that GIS data from the county which provided structure values for each individual parcel within the county and utilized that to determine the vulnerability between the specific buildings within the community.

In the last meeting the hazards that are of most concern were narrowed down to nine specific hazards that will be included in the plan. They are Flooding, Severe Thunderstorms, Severe Winter Storms, Tornadoes, Drought, Extreme Heat, Earthquakes, Dam/Levee Failure, and Nuclear/Hazardous Materials Accident.

Discussion on Risk Analysis is basically two parts, how likely an event will occur and what is its impact. For each of the events they calculated the probability of those occurring for the

communities and the potential damages associated with it and calculated that risk so you can compare each of the hazards together and figure out where your communities specifically wants to devote their mitigation efforts towards.

How data was collected was FEMA has two modules within their HAZUS programs to help develop a detailed look to what would happen in a disaster event. Another was just looking back on historical events (National Weather Service keeps that information). Additional studies by the state with the drought, and then Qualitative Assessments with Dam Failure and Nuclear and Hazardous Materials.

On the Hazard Risk Analysis-Flooding, Mark Smith had a question asking; why in those 29 events are damages unavailable? John Menninger said that they were not in the databases and the data collection that was collected. Mark Smith then asked if FEMA had them and you would have at least the claims for those events. John Menninger said we can go back and look at that and update the number from claims database.

John Menninger discussed the critical facilities that are located within the map flood plains 151 of them are bridges, 14 structures that have been noted are not bridges.

Hazard Risk Analysis-Severe Storms, he stated that there are records for severe storms that are really spotty from 1955-1990, they calculated the probability to a 20 year period. Within the last 20 years there have been 134 events within Macon County of severe storms, mostly hail, wind, damaging lightening. Mark Smith asked why he only went back 20 years. Mr. Menninger stated that the record was not complete. There was not enough information that was reported in those previous years. Gordon Schrishuhn asked if tornadoes are separate from the severe storms, John Menninger stated yes they were.

Severe Winter Storms-the data that is available to us it breaks out in larger regional storm events generally when there is a winter storm that rolls through it affects multiple counties unfortunately NOAA adds the data all up into one number. It is hard to get a handle on the specific impacts on a local community without detail records from the locals. Chuck Hunsinger asked what kind of database Mr. Menninger was using for the weather data, the database is National Climatic Data Center (NOAA).

Hazard Risk Analysis-Tornadoes, the databases that he collected for tornadoes, they went back 55 years, and there were 32 events recorded and 22 individual years within that 55 year period had tornadoes in them. 40% of those 55 years there was a tornado in the county.

Hazard Risk Analysis-Drought, The Illinois State Water Survey did develop a survey on water available for the city of Decatur that came out this year. Menninger said they tried to distill that

information for the data on droughts. According to the Palmer Drought Severity Index this region of the country over the last 100 years has been in drought 10-15% of the time on average. The Illinois State Water Survey took a look at the water available in Lake Decatur, so it did not cover all of the supplemental water supplies there was not a lot of information on that. So if any local communities have information on specific drought plans themselves please let Menninger know. They also mentioned that if the 1930 drought were to occur again there was a 20% chance that Macon County can have severe impact to the water supply.

Hazard Risk Analysis-Extreme Heat, John Menninger stated that it is hard to specifically identify what is the impact to the local area because it is reported over such a broad area. This data was through the last 20 years. Josh Tanner asked what kind of damages occurs with Extreme Heat. John Menninger said not likely to have damages, looking more at life loss.

Hazard Risk Analysis-Earthquakes, There has never been an earthquake with its epicenter in Macon County, with that being said it is hard to determine if it will occur since it has not yet occurred. HAZUS can perform a hypothetical earthquake in the general area and even with a 5.2 magnitude there is only $30,000 to the county. Basically what it is saying is that earthquakes are pretty far down on the priority list.

Hazard Risk Analysis-Dam/Levee Failure (Lake Decatur Dam), during the data collection they gathered the Operations of Maintenance Plan of Lake Decatur but they do not have information of what would happen if the dam were to breach. They looked down stream to see if there were any vulnerable areas. The more significant impact with the failure of the dam would be the loss of water for the community. He stated that what they are going to consider in the plan is the potential issue with the levee around the treatment plant. Besides just looking at the specific value of the infrastructure there is no real probable realistic way to figure out what the likely hood of the levee failing would be. Chuck Hunsinger stated that if the dam were to go it would go over the top of the levees at the Sewage Treatment Plant. He also stated that the Sewage Treatment Plant has statistics on damages inside the plant for the flooding of the plant. Mark Smith asked what about structure damage if the dam were to fail. Menninger stated that looking down stream there are two bridges that would likely be impacted and those will be included in the plan.

Hazard Risk Analysis- Hazard Material/ Nuclear Accidents, there is not a lot of information on that, John Menninger and Jim Root will work on that for the specific risks involved with it. He stated in a Mitigation Plan they would for this hazard identify the risk and discuss the general locations of the hazardous materials and their potential impacts of the surrounding communities and focus more on the mitigation piece of it. To determine the likely hood of a spill occurring would be more guess work. Chuck Hunsinger asked if he had talked to the city of Decatur about

some of their water supply hazardous spill studies in Lake Decatur. John Menninger mentioned he does not have that plan but can incorporate that into the report.
John Menninger then talked about the prioritization of each individual community as far as what hazard would impact them. It breaks it up into historical probability, vulnerability, and severity of impact. The chart is not final and some adjustments will be made. Mark Smith asked him to explain the vulnerability, John Menninger stated that each of the three categories have a score 1-3 so your highest score possible for a hazard is a 9 and the lowest score is a 3. Julie Miller asked shouldn't we have the communities that their water source is Decatur as the same as Decatur, for example Mt. Zion should be a 7 the same as Decatur because that is where Mt. Zion gets their water. Also she stated among the data we had were only in the last 20 years but in the historic probability were using 50 years, should that be adjusted to be a more accurate reflection since we do not have 50 years of data on several of the categories. John Menninger stated that she is correct, but they like to look back 50 years because you can always have variation in climates and weather patterns. Initially looking at 50 years because they were leaning on the locals on the historic knowledge of the events, but they will fix that.

Jim Root asked on the risk analysis, say there is a problem area where there are a couple houses that get flooded, when we develop our mitigation plan and apply for the grant money do they go back and look at our risk analysis to determine whether or not we would be eligible for those funds? Mr. Menninger stated: No, because you might not have the information currently to determine the probability of that area is. If you do not have that information now, it would be a good idea to put in the mitigation plan that you would like to find out more about that problem. The project that you include in the plan should be projects you want to move forward in.

The next part of the plan is the Mitigation Projects themselves. He encourages each community to develop a list of mitigation projects that they would like to implement and incorporate into the plan.

Mitigation Project Goals are; Preventative Action, Property Protection, Emergency Services, Structural Projects, and Public Information. A mitigation project either reduces the probability or reduces the impacts associated with an event.

Jim Root asked if John Menninger would be assisting us with providing the information on the estimated benefits, he stated yes they will help develop it.

A question was asked on the projects that are listed on the handout, what benefit is that for the community to have it in the mitigation plan. John Menninger stated; (1) it helps to go through the planning process, (2) if it is in the plan it has a better chance of getting FEMA Mitigation dollars. In general the grant programs that FEMA does provide have a 75-25 split, so that 75 would come from FEMA and 25 would come from Local.

Next step is for the communities/Stakeholders to review and provide input on Hazard Prioritization and continue Development of Mitigation Goals. John Menninger and his team will make follow up calls to each community, complete the Risk Analysis, and Develop Mitigation Projects.

Meeting was adjourned at approximately 10:35AM.

Hazard Mitigation Plan
February 14, 2013
9:30 am
Macon County Board Room
141 South Main, Room #514

Jim Root, Coordinator of the Macon County EMA, welcomed everyone and thanked them for coming. He introduced himself and John Menninger from Stantec Consulting. John is going to give a presentation on where we stand with the projects at this time. First a couple of housekeeping items: mostly everyone's time is back on how much they have invested in the plan. If you have additional items as far as mitigation projects are concerned, please get those in to Jim. He will go back and start doing the books again and see who has not given their time. We have a match to meet. Right now we are at about half way through what is needed for the match. So anything that you contribute to the plan please let him know so that it can be included, so that we can meet our match.

Jim turned the meeting over to John Menniger, PE-Plan Consultant with Stantec Consulting Services, Inc.
John wanted to know how many people had already been to a Mitigation meeting. Most of the attendees had attended a previous meeting, with a few new people. He discussed what had been done so far in the planning process. Then he will discuss what we need to do to go forward on and to wrap things up, basically the goals of the plan.

John will be going over the current progress of the plan, stepping through each individual action item that has been completed to date. Then we will go forward and look at what still needs completed. The next step is to go through the approval process.

Today's meeting goal is to cover the aspects of identifying and fulfilling mitigation actions for each community, as well as for each hazard that has been previously identified. We have about half completed so far, about half of the communities have built at least one mitigation item for the plan, and about half of the hazards have been identified within those mitigation actions. We would really like to have one item per community and one per hazard type.

This is what he intends to talk about today and will provide some examples. Maybe we can get some ideas going in the group on specific action items we can include in the plan.

John has also included a power point presentation to go along with his talking points. The first slide is the primary aspects of the mitigation plan. He showed the draft of the plan he has put together.

Section 1-discusses the planning process that we went through to develop the plan. Basically it includes summaries of stakeholder input and interaction. Who helped to develop the plan, what resources were used to develop the plan and what the timeline is for plan development. The next piece then, was to identify specific hazards that are a concern for the community. This was done at the first meeting.

The group decided there were nine hazard events. Then risk assessment was done of those nine hazards. The probability of each hazard which could occur and the potential impact the hazard might have on Macon County. Combine those two elements and you get risk. Those hazards were then prioritized as one through nine. Based on what was most important per community and then Macon County as a whole.

Mitigation Strategies were the next piece this was started at the last meeting. Different types of mitigation projects and specific action items were identified. Over the last six months we have had communities providing mitigation actions that they would like to see included in the plan.

Plan review and adoption is next. We will have a thirty day comment period for the public, as well as each jurisdiction, to take a look at the plan, provide comment and then those comments will be incorporated. Finally, it will be sent to the State for review and then to FEMA for review. The final piece then will be adoption of the plan.

Plan Maintenance-Once the plan is adopted, we will proceed to the maintenance portion of the plan. Basically, the idea is for the plan to be a living, working document. Once a mitigation item is completed, we will go back in and fill in an action item sheet, within the plan, stating this is what has been completed to date. We have one living document and we can either update it on a more regular basis or as FEMA requires complete updates every five years.

For the planning process this is the third stakeholder meeting. The first two were the kick-off meeting, where specific hazards of concern were identified. The next was the risk assessment meeting and then this one will round it out with mitigation strategies. A key piece of stakeholder involvement will be review of the plan from local agencies and communities as well as the general public.

Previously we took a look at the probabilities and the vulnerabilities of Macon County to these specific hazards and then we ranked them. There are the nine hazards that were identified in previous meetings. These are Macon County's rankings but in the plan each community actually provided feedback on their specific concerns. Each community has a separate ranking system but for the presentation Macon County rankings are shown.

The remainder of the meeting will focus on mitigation projects. Listed are five general types of mitigation projects that can be included in the plan. The idea is to reduce risk. This can be done in a number of ways.

Removing people out of harm's way, reduces the probability of them being impacted and also reduce damages is one method. Helping people become more prepared so that they can remove themselves out of harm's way ahead of time, will also reduce their vulnerability during an event. Property protection, hardening of structures such as flood proofing would be an example, as would higher wind-rated shingles on homes. Structural projects, for instance flood walls would also be a good method. Also, an Emergency Operations Plan to ensure that during an event we can get the appropriate resources to appropriate locations can help to minimize impacts.

Plan Matrix-The next slide (slide 10) is the matrix that we have so far. We have communities or different agencies on one side and then across the top are the specific hazards that we know of. We would like to have at least one mitigation action identified for you to implement during the planning process. It doesn't have to be expensive like a flood buyout of 20 homes along the creek. It could be public information that you put out in a newsletter. It could be a bulletin board at your local town center where you could put up information. Those types of aspects are elements that you can do that aren't high funding value type projects.

We got a lot of information on flooding from various communities. As you would expect it was the highest hazard of concern and the highest priority that we got the most mitigation projects for. Drought was a big one as were severe storms. We got a lot of good information on those.

The rest of the meeting will be stepping through each hazard. Examples will be given of what has been provided. Some other examples of potential mitigation actions will also be given. Input on either Macon County as a whole or an individual community is encouraged, if you think any of those fit. We are going to need more detail on each action item; we would like to have specific elements. We'll get bullet points today and then follow up in the next week or two to get those incorporated for the plan.

Harristown's Mayor Gordon Schrishuhn, wanted to know if mitigation actions were new actions or could it include things already in place? If they are ongoing, something you will be doing over the next five years: example a maintenance program cleaning out ditches for storm water to prevent backups onto the street and that is something you do annually is a great example of what you can keep doing. Something that is already done with no more funding going to it can be mentioned in the plan; it is good information to show how proactive a community is being but we would really like to have future events within the plan. For the action items we would really like to have what you are going to do for the next five years.

Flooding-The first action is flooding. We had a lot of information from Macon County, Forsyth, and City of Decatur. One action is to purchase and remove repetitive loss properties. This is one of the most common FEMA mitigation-type projects. The hazard mitigation grant program through FEMA
Funding for repetitive loss can be upwards 90% of a project but if you go through the Hazard Mitigation program itself it's a 75/25, so 25% is the local match. That can be in kind services or straight funding sources. It is what it sounds like it is demolition of homes within a flood plain and preservation of that space as green space forever. It is written into the deed that there is a conservation easement and that no permanent structure can be built. The idea is that if you can show a benefit cost to FEMA, that it is cheaper for them to buy the home and tear it down than it is to keep paying flood insurance claims.

Drainage and storm water improvements, this could be storm sewers, drainage tile projects and detention/retention basins; these were all identified within the plan from different communities.

Another project that is not structural is conducting new or updated flood studies. Steven's Creek is one that may be currently studied. This will help provide better information to mitigate in the

future. An identifying study gives a better idea of risks and is a type of mitigation project that is included within the plan.

The last one is Retrofits for flood-proofing type projects. An example is a historical building that you don't want to demo because it has specific value to your community. Flood proofing often involves homes with basements installing glass block-in windows, backflow preventers on the outgoing sewage lines to a street, the raising of the furnace and other aspects off of the ground to prevent damages if a flood were to occur.

Those are all great projects and those also have quite a bit of funding tied to them. Strengthen floodplain management regulations. Prevent future development within flood prone areas. This will reduce vulnerability over time, but is not an immediate benefit. For communities that don't necessarily have significant flooding issues or don't have the funding right now to pursue these types of projects, the presentation shows a couple of other action items.

Then there is Public Education. Letting people know and be aware of what to do during flood events identifying areas of high water, for roadways that overtop frequently, signage can be put up on that roadway warning individuals of high water events during storms.

Severe Storms- includes flooding and tornadoes but those have been isolated as separate events and we want to focus on other damage from severe storms. Hail, high winds and lightning are the three pieces that are addressed here.

Identified actions: distribution of NOAA weather radios as well as backup power generators at critical facilities. A note about NOAA weather radios: they are a good resource but many times they are handed out and people either don't know how to program correctly or have them set up for alerts they do not need. They end up woken in the middle of the night for fog and then turn the radio off.

Another potential mitigation action may be multi-tiered notification systems. Last year Macon County EMA did a project with Walgreens. They sold NOAA radios and our office went to their location and programmed them for those who purchased the radios. We are willing to do that for communities if they want to put something like that into their projects. The community would let us know the time and place and we would try to get staffing out to do the programming. If your community is interested in doing this as part of your Severe Weather/Storms public awareness, our agency is willing to provide that service.

Other options may be with your cell phone where you can sign up for notifications from the National Weather Service, there is also a Weather Radio App for smart phones that can you can download, cost varies for this service. The general public may not be aware of these mobile alert programs if they have not been told. That would be a public awareness piece for the plan. Cost varies. The Weather Radio App can be set up for the types of events you would like to be notified for. It could be set just for tornadoes, severe storms or flooding. It narrows the band down to a specific polygon that the National Weather Service has identified. So it is not just a county wide or community wide aspect, it is stretched to the impact area of that severe storm warning. It actually utilizes the GPS feature on the phone.

Question for Jim, is Code Red used for tornadoes? No they don't because the amount of time that it takes to get information into the program. It is possible that it can be done but it is a registry database and a lot of people aren't aware that it exists so they don't register for it. It may give a false sense of security that people will expect to get notifications of this kind.

There is a new system that is coming out in Illinois that is called IPAWS. It is basically an alert system that will have the ability to actually hit a cell tower and send a message out to that tower specifically and any phones that are connected to it will receive a warning alert informing them there of a hazardous materials spill, tornado or other emergency event. Those are capabilities that will be available to the public in the future.

There are other pieces for severe storms that may be of interest to certain communities that they may have programs that are in place. These include maintaining utility corridors, keeping trees trimmed, making sure that during high wind events that power is not knocked out by tree limbs falling onto the lines.

Winter Storms-The mitigation actions for winter storms are, a lot of times, very similar to severe storms. A lot of the public awareness notification type aspects and the power outage mitigation pieces are very similar for severe storms to winter storms.

One thing that was identified is the potential for long term power outages during cold weather. This is a concern that a lot of communities have. One thing that could be done to begin mitigating for that is to create a public awareness campaign. Identification of vulnerable populations and critical facilities such as nursing homes or other types of medical facilities that require power are good examples.

A Power Restoration Priority Plan, identifying and helping to coordinate with utilities on making sure that the most vulnerable, at risk facilities, are the ones restored first or are put in priority along with other high priority locations. Jim stated that was usually done through the Emergency Operations Center. We have a representative from Ameren, which is our power supply distributor. They look at specifically the number of people out in an area and decide if they can replace a certain transformer that can get 300 people back on line. A lot of times there will be a location that needs power before that and it can put into higher priority. We already have that avenue available to us. A Public Awareness Campaign could give these types of facilities a point of contact to report to and inform them about how to get added to the list.

Drought-Drought is a primary concern here locally, especially the City of Decatur and those that use the City as a water source. There have been several mitigation projects that are going to be included within the plan regarding emergency water source transmission from other sources. Silt is an issue as it reduces lake capacity. Helping to reduce silt loads into the lake would both improve its capacity and reduce how often dredging is needed. Silt dams to capture runoff going into Lake Decatur, could be an option.

Additional potential actions are Public Awareness Campaigns on reducing consumption of water. Not just during a drought but as a continuous basis. Another potential could be working with local soil and water conservation districts upstream, in the Upper Sangamon River Basin, to reduce erosion at the source. Working with farmers to implement erosion conservation practices could be another piece. Also, extreme restoration projects to reduce bank erosion. The primary concern with erosion is capacity. That as erosion ends up in the water shed brings sediment down into Lake Decatur, it fills up the lake making it lose capacity for storage during droughts. Does your Community, if not dependent on Lake Decatur for their water source, have any concerns? New wells, more wells, backup water supplies for the well supplied communities. These have been identified.

An action does not have to be narrowed specifically to a hazard if a mitigation action fits multiple categories it can be listed as multiple actions. Some of the Public Awareness campaigns will cover multiple mitigation action items. It will show in the matrix which action area it falls in. We will then try to apply it to these other projects.

Tornadoes-This fits together with severe storms. Weather radios are identified specifically for tornadoes. Another is Warning sirens either installing new or maintaining/updating existing sirens.
Some additional options included are community tornado shelters which can be located at public parks or other outdoor areas, possibly mobile home parks. This would provide shelter for areas that do not have them incorporated within their buildings. FEMA has provided funding in the recent past for individual safe rooms for homes. It is a program that has been available on and off. Every now and then they have funding for it. The applications typically far outnumber the funding.

Earthquakes-we don't have any mitigation actions identified yet, either at the local or county level for an earthquake hazard. As previously discussed in meetings, Macon County has never had an earthquake with its epicenter within the county. There have been some felt from outside of the county. Especially from Southern Illinois which has quite a bit of earthquake activity on the New Madrid Fault that goes down toward St. Louis. Hazard analysis identified the risk as pretty low in terms of average annual loss associated with this event. However, in the far extreme it is a 1 in 2500 yr. event. If one were to occur we could have considerable damage within the county. Don't say it will never happen. The best mitigation action here would be to let the community know that it is a possibility and damages could be significant if this very remote possibility were to occur. The best way would probably be as a Public Awareness campaign. Also, doing drills with the state next year such as "the great shake-out".

This could be done on the website, EMA's website or through an individual community website. Some other options could be to take a look at the local geology and identify potentially higher risk earthquake zones. Given the remote likelihood of an earthquake zoning and limiting development within high faction areas would be needed but are options.

A question was asked if we have had any issues with mine subsidization or mapping of the mines. Could the mines be an issue in the event of an earthquake? It is possible. Subsidence was discussed during identification of hazards that were going to be included in the plan. At the

time, the consensus was that there wasn't identification of any events that had occurred with mine subsidence; not that it can't happen but was not identified as high risk. There is a section within the plan that discusses the risk associated with each event and it can be included in there.

A question of whether FEMA has funding for the filling of old mines? John had heard there are organizations/groups funding the filling of old/abandoned mines. He believes the funding actually came from the Department of Transportation, the primary concern being highways. There may be some if there is a nexus within a certain infrastructure that might be where that would come in account. Would there be funding where you could fill the mines with the silt from the lake? You might not get funding for the project but that may be the best place to put the silt. That could be an option.

Extreme Heat-danger is primarily for those who don't have air conditioning, or in the event of a power outage, those that have health issues that would be exacerbated by extreme heat. There could be some infrastructure damage issues with extreme heat such as road buckling and sagging power lines that have the potential of causing a power outage.

Some mitigation options would be implementing green space, reducing pavement within urban areas to reduce urban heat island effect. Identifying and assisting vulnerable populations. Getting out and letting people know the risk associated with this hazard through Public Awareness campaigns.

It was brought up that there are programs for fan giveaways in our community. The fan giveaways sponsored in part by Ameren, community organizations and local churches. The local media gets involved by requesting that citizens get involved by purchasing fans and donating them. They usually have a truck set up at a location for collection of the new fans, usually Walmart or Kmart. This is not a local government program. Mostly it is charitable organizations and local businesses.

Dam Failure-four dams were identified for potential impacts of dam failure primarily the Lake Decatur dam. AE Staley cooling pond dam was another dam that was looked at. This is a rare event but it could have extreme consequences should it occur. Potential mitigation actions could be continuing to implement the operations and maintenance plan associated with the facility. This includes annual inspections to make sure that problems are identified prior to a disaster.

Another piece is an emergency action plan for a dam failure. Jim indicated that the City of Decatur has an Emergency Action Plan for the Lake Decatur Dam. An emergency action plan develops a notification chart on identifying the specific entities in response to a failure occurring. This would include involving local police and fire departments to help with evacuation. It usually also includes a breach analysis of the dam. A model is done of what would happen if the lake were to release. It identifies who might be at risk and it provides a time to impact. Usually there is an extended period simulation that identifies that this roadway will overtop in 30 minutes. It gives an idea for the emergency response team on when they would have to get roadway closure signs out. This is a good mitigation type project.

Public Awareness would be beneficial since a lot communities don't even know that they live downstream from a dam or that they could be impacted by a dam failure. A campaign to help them to understand the risks associated with a failure has public relations issues that need to be thought through, you don't want to create panic but do want to make that population aware of the risks.

Hazardous Material and Nuclear Accidents- The last item identified was concern about the nuclear plant north of Macon County as well as the release of other hazardous materials. One we could include is documenting the implementation of the existing hazardous materials plan.

Other potential actions if your specific community is concerned could be developing response plans specific to your jurisdiction. Potentially, if you have a high hazard facility located near potential residential development areas, you would want to add a buffer to your zoning to reduce risks to having population adjacent to a high risk facility.

Another piece would be the creation of a public awareness campaign to inform people of what to do during different types of potential incidents. There are different responses that you should have for a chemical release as opposed to a radiological release.

Something else to consider may be hazardous material disposal days and pickups thus promoting the safe disposal of hazardous materials such as household items. This would be small scale but would affect local individuals.

These were the mitigation items identified and feedback from individual community's interest in one of the items or if you have an idea that you would like to include. We would like see each community have at least one action item for the plan. The state is going to want to see at least one mitigation item, per community, to approve the plan.

If you are a community that does not have an item, you don't have to have it today but you do need to get it submitted soon. Jim stated that if you have already submitted items and you want to add by all means submit another sheet and we will include it with what you have already submitted. We will be including another item for Harristown since an additional item has been identified within the last couple of weeks.

The last part of the plan deals with what you're going to do with the plan during the next five years. We will include a sheet in the back of the plan to track mitigation items as they are implemented. A lot of communities like to do a yearly review by getting stakeholders back together and discuss what was in the plan and what the plans are for going forward. This helps to reduce the level of effort at the five year cycle when the plan has to be updated again. This eliminates back tracking to get all of the information again.

It is a good idea to maintain the plan on a website. This gives people a place to reference it throughout the cycle. This will be done by the Macon County Emergency Management office.

Remaining schedule for the mitigation plan- this is a draft and the numbers can be adjusted. Ideally we would like to get all of the remaining action items incorporated by March 1st. Then we can begin a Public Review of the plan during the month of March. We plan on having 30 days of public comment and review. We need to have that completed before it is off to the State.

Assuming that we don't get a hundred comments on the last day of March we should be able to be updating the parts of the plan we get comments on. We will try to get it sent out to the State the first week of April. There are 30 days for the State to review it and provide comment. Then it will take a couple of weeks to incorporate the State's comments. There will then be 30 days for FEMA to review the plan. We will be looking at plan adoption sometime in the summer.

Jim questioned whether the adoption of the plan is part of the closeout for the grant? We have a deadline of June 30th for completion. If adoption includes that then we need to allow for, the jurisdictions that have monthly meetings in the first part of June, to make sure those adoptions are included in the first part of June. This is something we will have to check with State about. Jim is thinking that's going to be part of it. The primary concern is funding and getting reimbursement. If we can get most of the local match and the funding complete by that point and at least the County approval, John believes we will be fine.
That is Johns understanding of the process. Once you get the county approval you've got a plan and each individual jurisdiction that wants to be included in the plan has to pass a resolution to get added to the plan. The resolutions from individual jurisdictions are actually put in the plan.

The plan document looks to be large, however, the body of the plan is a small portion of the document, with the remainder of the document being the appendices and backup information. The first appendix is the resolutions or executive orders associated with adoption of the plan. Then there are meeting minutes, other planning process documentation as well as backup information on the hazard analysis and other items. Not all of that needs to be read during the review period, there are about 50 pages and a couple sheets in the appendix for action items to be reviewed.

A question was posed as to whether a model ordinance could be prepared for adoption by the smaller communities involved? Yes, that will be provided. It will be provided in Microsoft Word so that adjustments can be made to fit specific needs. That language will be provided.

John is available for questions as is Jim. Please continue to keep track of your time and if you have something that you still need to submit send Jim an email or give him a call and let him know what you have invested, as far as time, so that we can get it recorded for the match. That time should include today's meeting but also when you go back to your community and are looking up information or talking with individuals about the plan.

If anyone needs to go back and look at previous presentations, those are available on the Macon County EMA website. The minutes are also posted there.

This concludes today's meeting.

Appendix C

National Climatic Data Center Event Records

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
1 MACON	Tornado	4/29/1956	5	F1	0	0	25000	0
2 MACON	Tstm Wind	7/27/1958	1730	0 kts.	0	0	0	0
3 MACON	Tstm Wind	7/27/1958	1730	0 kts.	0	0	0	0
4 MACON	Hail	9/28/1959	1800	1.75 in.	0	0	0	0
5 MACON	Tornado	5/6/1960	940	F1	0	0	3000	0
6 MACON	Tstm Wind	6/4/1960	2340	65 kts.	0	0	0	0
7 MACON	Hail	6/22/1960	1920	3.50 in.	0	0	0	0
8 MACON	Hail	6/23/1960	200	3.50 in.	0	0	0	0
9 MACON	Hail	5/6/1961	1700	1.00 in.	0	0	0	0
10 MACON	Tstm Wind	5/6/1961	1700	0 kts.	0	0	0	0
11 MACON	Tstm Wind	9/30/1961	1433	61 kts.	0	0	0	0
12 MACON	Hail	4/22/1963	1730	2.00 in.	0	0	0	0
13 MACON	Tornado	4/22/1963	1737	F3	0	0	250000	0
14 MACON	Tornado	4/22/1963	1800	F3	0	0	250000	0
16 MACON	Hail	6/10/1963	1625	1.00 in.	0	0	0	0
17 MACON	Tornado	6/10/1963	1625	F1	0	0	0	0
15 MACON	Tstm Wind	6/10/1963	1600	66 kts.	0	0	0	0
18 MACON	Tstm Wind	8/25/1965	2153	0 kts.	0	0	0	0
19 MACON	Tstm Wind	10/11/1969	10	0 kts.	0	0	0	0
20 MACON	Tstm Wind	4/12/1970	2140	0 kts.	0	0	0	0
21 MACON	Tstm Wind	5/13/1970	445	0 kts.	0	0	0	0
22 MACON	Hail	5/27/1973	1900	0.75 in.	0	0	0	0
23 MACON	Tstm Wind	3/4/1974	1630	0 kts.	0	0	0	0
24 MACON	Tornado	4/3/1974	1330	F3	1	26	2500000	0
25 MACON	Tornado	4/3/1974	1345	F3	0	0	2500000	0
26 MACON	Hail	5/30/1974	1530	0.75 in.	0	0	0	0
27 MACON	Tstm Wind	5/30/1974	1530	0 kts.	0	0	0	0
28 MACON	Tstm Wind	5/30/1974	1530	0 kts.	0	0	0	0
29 MACON	Tornado	6/8/1974	1855	F0	0	0	0	0
30 MACON	Tstm Wind	6/21/1974	2047	50 kts.	0	0	0	0
31 MACON	Tornado	8/10/1974	1340	F0	0	0	0	0
32 MACON	Tornado	8/10/1974	1430	F0	0	0	0	0
33 MACON	Tornado	8/10/1974	1430	F0	0	0	0	0
34 MACON	Tornado	8/10/1974	1445	F0	0	0	0	0
35 MACON	Tornado	8/10/1974	1445	F0	0	0	0	0
36 MACON	Tornado	8/10/1974	1500	F0	0	0	0	0
37 MACON	Tornado	8/10/1974	1500	F0	0	0	0	0
38 MACON	Tornado	8/10/1974	1520	F0	0	0	0	0
39 MACON	Tornado	8/10/1974	1540	F0	0	0	0	0
40 MACON	Tornado	8/10/1974	1540	F0	0	0	0	0
41 MACON	Tornado	8/10/1974	1600	F0	0	0	0	0
42 MACON	Tornado	8/10/1974	1600	F0	0	0	3000	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
43 MACON	Tornado	8/10/1974	1640	F0	0	0	0	0
44 MACON	Tstm Wind	5/26/1975	1230	0 kts.	0	0	0	0
45 MACON	Tstm Wind	5/26/1975	1245	0 kts.	0	0	0	0
46 MACON	Tstm Wind	8/5/1975	1640	50 kts.	0	0	0	0
47 MACON	Tornado	11/30/1975	7	F2	0	0	2500000	0
48 MACON	Tornado	3/20/1976	1315	F4	0	2	2500000	0
49 MACON	Tstm Wind	6/5/1977	1649	50 kts.	0	0	0	0
50 MACON	Tstm Wind	10/1/1977	130	0 kts.	0	0	0	0
51 MACON	Tstm Wind	4/18/1978	212	52 kts.	0	0	0	0
52 MACON	Tornado	5/12/1978	1800	F2	0	3	250000	0
53 MACON	Tstm Wind	7/1/1978	1909	64 kts.	0	0	0	0
55 MACON	Hail	7/31/1979	1133	1.50 in.	0	0	0	0
54 MACON	Tstm Wind	7/31/1979	1102	52 kts.	0	0	0	0
56 MACON	Tstm Wind	6/1/1980	730	0 kts.	0	0	0	0
57 MACON	Tstm Wind	6/15/1980	10	50 kts.	0	0	0	0
58 MACON	Tstm Wind	7/5/1980	300	0 kts.	0	0	0	0
59 MACON	Tornado	9/16/1980	1825	F0	0	0	0	0
60 MACON	Tstm Wind	4/4/1981	2	55 kts.	0	0	0	0
61 MACON	Tstm Wind	4/13/1981	2332	0 kts.	0	0	0	0
62 MACON	Tstm Wind	6/15/1981	1915	0 kts.	0	0	0	0
63 MACON	Tstm Wind	6/24/1981	1807	57 kts.	0	0	0	0
64 MACON	Tstm Wind	10/17/1981	1940	50 kts.	0	0	0	0
65 MACON	Tstm Wind	3/12/1982	2130	0 kts.	0	0	0	0
66 MACON	Tstm Wind	4/2/1982	2220	0 kts.	0	0	0	0
67 MACON	Tstm Wind	8/5/1982	1350	0 kts.	0	0	0	0
69 MACON	Hail	9/17/1982	1741	0.75 in.	0	0	0	0
68 MACON	Tstm Wind	9/17/1982	1719	52 kts.	0	0	0	0
70 MACON	Tstm Wind	5/1/1983	1915	0 kts.	0	0	0	0
71 MACON	Tstm Wind	6/29/1983	1323	0 kts.	0	0	0	0
72 MACON	Tornado	11/1/1984	621	F0	0	0	250000	0
73 MACON	Tstm Wind	11/10/1984	1235	0 kts.	0	0	0	0
74 MACON	Tstm Wind	11/10/1984	1253	0 kts.	0	0	0	0
75 MACON	Tornado	11/11/1984	1156	F1	0	0	25000	0
76 MACON	Tstm Wind	4/26/1985	1533	0 kts.	0	0	0	0
77 MACON	Tstm Wind	4/26/1985	2110	0 kts.	0	0	0	0
78 MACON	Tstm Wind	3/10/1986	1200	50 kts.	0	0	0	0
79 MACON	Tstm Wind	4/30/1986	1800	0 kts.	0	0	0	0
80 MACON	Hail	5/16/1986	1600	1.00 in.	0	0	0	0
82 MACON	Hail	5/16/1986	1720	0.75 in.	0	0	0	0
81 MACON	Tornado	5/16/1986	1620	F0	0	0	0	0
83 MACON	Hail	7/10/1986	1825	1.00 in.	0	0	0	0
84 MACON	Tstm Wind	7/10/1986	1841	0 kts.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
85 MACON	Tstm Wind	7/10/1986	1851	0 kts.	0	0	0	0
86 MACON	Tstm Wind	7/10/1986	1910	0 kts.	0	0	0	0
87 MACON	Tstm Wind	7/10/1986	1925	0 kts.	0	0	0	0
88 MACON	Tstm Wind	7/10/1986	2015	0 kts.	0	0	0	0
90 MACON	Hail	7/31/1986	313	0.75 in.	0	0	0	0
89 MACON	Tstm Wind	7/31/1986	225	0 kts.	0	0	0	0
91 MACON	Tstm Wind	7/31/1986	430	0 kts.	0	0	0	0
92 MACON	Tstm Wind	5/21/1987	2200	0 kts.	0	0	0	0
93 MACON	Tstm Wind	6/13/1987	1900	0 kts.	0	0	0	0
94 MACON	Tstm Wind	7/9/1987	1100	0 kts.	0	0	0	0
95 MACON	Tstm Wind	4/5/1988	1947	60 kts.	0	0	0	0
96 MACON	Tstm Wind	5/8/1988	1730	52 kts.	0	0	0	0
97 MACON	Tstm Wind	6/20/1990	35	0 kts.	0	3	0	0
98 MACON	Tstm Wind	6/20/1990	54	65 kts.	0	0	0	0
99 MACON	Tstm Wind	10/3/1990	1645	0 kts.	0	0	0	0
100 MACON	Tstm Wind	4/28/1991	535	0 kts.	0	0	0	0
101 MACON	Tstm Wind	5/17/1991	2143	0 kts.	0	0	0	0
102 MACON	Tstm Wind	7/1/1991	1700	58 kts.	0	0	0	0
103 MACON	Tstm Wind	7/1/1991	1734	0 kts.	0	0	0	0
104 MACON	Tstm Wind	7/1/1991	1800	0 kts.	0	0	0	0
105 MACON	Tstm Wind	7/1/1991	1859	0 kts.	0	0	0	0
106 MACON	Tstm Wind	10/4/1991	1845	55 kts.	0	0	0	0
107 MACON	Hail	6/17/1992	1530	1.75 in.	0	0	0	0
108 MACON	Hail	6/17/1992	1549	1.75 in.	0	0	0	0
109 MACON	Tstm Wind	6/17/1992	1549	0 kts.	0	0	0	0
110 MACON	Hail	7/9/1992	1200	1.75 in.	0	0	0	0
111 MACON	Hail	7/9/1992	1215	1.75 in.	0	0	0	0
112 MACON	Tstm Wind	7/29/1992	2331	0 kts.	0	0	0	0
113 MACON	Tstm Wind	7/29/1992	2340	0 kts.	0	0	0	0
114 Central Il	Flooding	4/12/1994	1200	N/A	0	0	########	0
115 Niantic	Hail	4/26/1994	1855	1.75 in.	0	0	0	0
116 Decatur	Lightning	6/24/1994	1330	N/A	0	1	50000	0
117 Harristown	Thunderstorm Winds	7/19/1994	815	0 kts.	0	0	0	0
118 Forsyth	Thunderstorm Winds	5/13/1995	2045	0 kts.	0	0	1400000	0
121 MACON	Flash Flood	5/16/1995	2033	N/A	0	0	80000	0
119 MACON	Flood	5/16/1995	600	N/A	0	0	0	0
120 Decatur	Thunderstorm Winds	5/16/1995	2030	0 kts.	0	0	135000	0
122 Argenta	Thunderstorm Winds	5/16/1995	2045	0 kts.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
123 MACON	Flash Flood	5/18/1995	1130	N/A	0	0	0	0
124 Niantic	Tornado	5/27/1995	1905	F0	0	0	0	0
125 Decatur	Thunderstorm Winds	5/28/1995	100	0 kts.	0	0	0	0
126 MACON	Flood	6/1/1995	0	N/A	0	0	0	0
127 Central Illinois	Winter Storm	12/8/1995	700	N/A	1	0	0	0
128 Central Illinois	Winter Storm	12/18/1995	1900	N/A	1	0	0	0
129 ILZ043>046 - 052>057 - 061>063 - 066>068 - 071>073	Winter Storm	1/2/1996	2:00 AM	N/A	0	4	0	0
130 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Winter Storm	1/4/1996	3:00 AM	N/A	0	0	0	0
132 Warrensburg/forsyth	Tstm Wind	1/18/1996	11:00 AM	0 kts.	0	0	0	0
131 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Winter Storm	1/18/1996	10:00 AM	N/A	0	2	0	0
133 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Extreme Cold	2/2/1996	12:00 AM	N/A	2	0	0	0
134 Decatur	Tstm Wind	2/27/1996	3:30 AM	0 kts.	0	0	250000	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
135 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	High Wind	3/25/1996	4:00 AM	0 kts.	1	0	0	0
136 Niantic	Hail	4/18/1996	7:33 PM	1.75 in.	0	0	0	0
137 Niantic	Hail	4/18/1996	7:48 PM	2.25 in.	0	0	0	0
138 Decatur	Tornado	4/18/1996	8:05 PM	F1	0	9	1500000	0
139 Niantic	Tornado	4/19/1996	6:22 PM	F3	0	29	9000000	0
140 ILZ042 - 051>054 - 056 - 061>063 - 066>068	High Wind	4/28/1996	9:15 AM	53 kts.	0	0	0	0
141 Decatur	Hail	5/3/1996	9:15 PM	1.00 in.	0	0	0	0
142 Mt Zion	Tstm Wind	5/3/1996	9:25 PM	0 kts.	0	0	0	0
143 Countywide	Flash Flood	5/8/1996	11:15 AM	N/A	0	0	0	0
144 Niantic	Tstm Wind	6/17/1996	2:01 PM	0 kts.	0	0	0	0
145 Decatur	Tstm Wind	7/24/1996	1:35 PM	0 kts.	0	0	0	0
146 Blue Mound	Tstm Wind	10/29/1996	5:35 PM	0 kts.	0	0	0	0
147 Decatur	Tstm Wind	10/29/1996	5:58 PM	50 kts.	0	0	0	0
148 ILZ027>031 - 036>038 - 040>051 - 053	High Wind	10/30/1996	1:00 AM	56 kts.	0	0	0	0
149 ILZ044>046 - 052>057 - 061	Winter Storm	11/25/1996	10:00 AM	N/A	0	0	0	0
150 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Heavy Snow	1/8/1997	9:00 PM	N/A	0	6	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
151 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Winter Storm	1/15/1997	3:00 AM	N/A	1	7	0	0
152 ILZ027>031 - 036>038 - 040>043 - 047>053	Winter Storm	1/24/1997	7:00 AM	N/A	0	0	0	0
153 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Winter Storm	1/26/1997	5:00 AM	N/A	0	9	0	0
154 Niantic/forsyth	Hail	3/28/1997	4:12 PM	1.75 in.	0	0	0	0
155 Decatur	Tstm Wind	4/5/1997	4:10 PM	0 kts.	0	0	0	0
156 ILZ027>031 - 036>038 - 040>057 - 061>063	High Wind	4/6/1997	9:15 AM	56 kts.	0	0	0	0
157 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	High Wind	4/30/1997	2:00 PM	61 kts.	0	1	38000	0
158 Blue Mound	Tornado	4/30/1997	2:40 PM	F0	0	0	0	0
160 Oreana	Tornado	4/30/1997	2:53 PM	F0	0	0	0	0
159 Forsyth	Tstm Wind	4/30/1997	2:50 PM	0 kts.	0	0	0	0
161 Decatur	Hail	6/25/1997	4:00 PM	0.75 in.	0	0	0	0
162 Countywide	Flash Flood	6/30/1997	1:00 PM	N/A	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
163 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Excessive Heat	7/26/1997	9:00 AM	N/A	2	0	0	0
164 Harristown	Tstm Wind	8/24/1997	3:00 PM	0 kts.	0	0	0	0
165 ILZ027>031 - 036>038 - 040>053	High Wind	9/29/1997	10:00 AM	55 kts.	0	0	0	0
166 ILZ027>030 - 036>038 - 040>043 - 047>053	Winter Storm	1/14/1998	6:00 AM	N/A	0	0	0	0
167 ILZ027>031 - 036>038 - 040>057	Winter Storm	3/8/1998	10:00 PM	N/A	2	0	0	0
168 Forsyth	Hail	4/7/1998	7:18 PM	0.75 in.	0	0	0	0
169 Macon	Tornado	4/30/1998	3:47 PM	F0	0	0	0	0
170 Oreana	Hail	5/12/1998	9:42 PM	1.75 in.	0	0	0	0
171 Decatur	Tstm Wind	5/19/1998	7:07 PM	0 kts.	0	0	0	0
172 Macon	Hail	5/24/1998	1:41 AM	1.75 in.	0	0	0	0
173 Long Creek	Tstm Wind	6/14/1998	7:19 PM	0 kts.	0	0	0	0
174 Decatur	Tstm Wind	6/22/1998	7:00 PM	0 kts.	0	0	0	0
175 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Excessive Heat	6/26/1998	3:00 AM	N/A	1	0	0	0
176 Countywide	Tstm Wind	6/29/1998	4:25 PM	0 kts.	0	0	500000	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
177 ILZ027>031 - 036>038 - 040>057 - 061>063	High Wind	11/10/1998	4:30 AM	57 kts.	0	1	60000	0
178 Macon	Tstm Wind	11/10/1998	5:32 AM	50 kts.	0	1	0	0
179 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066	Heavy Snow	1/1/1999	12:00 PM	N/A	1	1	0	0
180 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Extreme Cold	1/5/1999	5:00 AM	N/A	0	0	0	0
181 ILZ044>046 - 052>054 - 056>057 - 061	Ice Storm	1/13/1999	4:00 AM	N/A	0	0	0	0
182 ILZ027>031 - 036>038 - 040>045 - 047>048 - 050>051 - 053	Heavy Snow	3/8/1999	12:00 PM	N/A	0	5	0	0
183 (dec)decatur Arpt	Hail	4/3/1999	7:06 AM	0.75 in.	0	0	0	0
184 Decatur	Tstm Wind	4/5/1999	6:45 PM	0 kts.	0	0	0	0
185 Decatur	Tstm Wind	4/8/1999	9:20 PM	0 kts.	0	0	0	0
186 (dec)decatur Arpt	Hail	4/10/1999	7:35 PM	1.00 in.	0	0	0	0
187 Mt Zion	Hail	4/10/1999	8:09 PM	0.75 in.	0	0	0	0
188 Warrensburg	Hail	4/20/1999	11:45 PM	1.75 in.	0	0	0	0
189 Blue Mound	Tstm Wind	6/1/1999	6:50 PM	52 kts.	0	1	0	0
192 Boody	Hail	6/4/1999	4:30 PM	1.00 in.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
190 Maroa	Tornado	6/4/1999	4:18 PM	F0	0	0	0	0
191 Decatur	Tornado	6/4/1999	4:28 PM	F0	0	0	0	0
194 Argenta	Tornado	6/4/1999	4:35 PM	F0	0	0	0	0
193 Boody	Tstm Wind	6/4/1999	4:30 PM	0 kts.	0	0	0	0
195 Decatur	Hail	6/8/1999	4:01 PM	0.75 in.	0	0	0	0
196 Bearsdale	Hail	6/8/1999	4:28 PM	0.88 in.	0	0	0	0
197 Decatur	Tstm Wind	6/8/1999	4:37 PM	0 kts.	0	0	0	0
198 Harristown	Tstm Wind	6/8/1999	5:10 PM	0 kts.	0	0	0	0
199 Argenta	Tstm Wind	6/11/1999	2:25 PM	0 kts.	0	0	0	0
200 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Excessive Heat	7/20/1999	10:00 AM	N/A	4	0	0	0
201 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Excessive Heat	7/28/1999	10:00 AM	N/A	1	0	0	0
203 Decatur	Hail	8/12/1999	8:57 PM	1.00 in.	0	0	0	0
202 Maroa	Tstm Wind	8/12/1999	8:00 PM	0 kts.	0	0	0	2200000
204 Maroa	Flash Flood	8/13/1999	1:00 AM	N/A	0	0	0	0
205 Mt Zion	Hail	4/16/2000	7:30 PM	0.75 in.	0	0	0	0
206 Forsyth	Tornado	4/20/2000	8:30 AM	F1	0	0	0	0
207 Oreana	Tornado	4/20/2000	8:30 AM	F1	0	0	0	0
209 Maroa	Hail	5/12/2000	4:15 PM	1.00 in.	0	0	0	0
210 Mt Zion	Hail	5/12/2000	6:30 PM	0.88 in.	0	0	0	0
208 Niantic	Tornado	5/12/2000	4:00 PM	F0	0	0	0	0
211 Niantic	Tstm Wind	6/14/2000	11:50 AM	0 kts.	0	0	0	0
212 Decatur	Tstm Wind	6/20/2000	1:05 PM	0 kts.	0	0	0	0
213 Warrensburg	Tstm Wind	6/20/2000	7:35 PM	0 kts.	0	0	0	0
214 Macon	Tstm Wind	6/23/2000	6:10 PM	0 kts.	0	0	0	0
215 Harristown	Tstm Wind	8/2/2000	6:40 PM	0 kts.	0	0	0	0
216 Warrensburg	Hail	8/17/2000	5:20 PM	2.00 in.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
217 Forsyth	Tstm Wind	8/17/2000	6:28 PM	0 kts.	0	0	0	0
218 ILZ038 - 043>047 - 052>057 - 061>063 - 066>068 - 071>073	Winter Storm	12/13/2000	5:00 PM	N/A	1	1	0	0
219 Decatur	Tstm Wind	2/9/2001	9:15 AM	50 kts.	0	0	0	0
220 Decatur	Hail	4/5/2001	2:57 PM	1.75 in.	0	0	0	0
221 Mt Zion	Hail	4/5/2001	3:40 PM	0.75 in.	0	0	0	0
222 Decatur	Tstm Wind	5/22/2001	12:35 PM	50 kts.	0	0	0	0
223 Countywide	Flash Flood	6/6/2001	4:00 AM	N/A	0	0	0	0
224 Niantic	Tstm Wind	7/4/2001	10:03 PM	50 kts.	0	0	0	0
225 Niantic	Tstm Wind	7/23/2001	5:05 PM	50 kts.	0	0	0	0
226 Decatur	Hail	8/18/2001	2:10 PM	1.75 in.	0	0	0	0
227 Argenta	Hail	8/18/2001	2:44 PM	0.75 in.	0	0	0	0
228 Argenta	Tstm Wind	8/18/2001	2:44 PM	50 kts.	0	0	0	0
230 Decatur	Flash Flood	8/30/2001	5:15 PM	N/A	0	0	0	0
229 Blue Mound	Tstm Wind	8/30/2001	5:00 PM	55 kts.	0	0	0	0
231 Decatur	Tstm Wind	9/6/2001	5:15 PM	50 kts.	0	0	0	0
232 Decatur	Hail	10/24/2001	11:10 AM	1.75 in.	0	0	0	0
234 Oakley	Tornado	10/24/2001	12:24 PM	F0	0	0	0	0
233 Countywide	Tstm Wind	10/24/2001	11:50 AM	56 kts.	0	0	0	0
235 ILZ027 - 030>031 - 037>038 - 042 - 045 - 051 - 053 - 055>056 - 061 - 068 - 073	High Wind	3/9/2002	2:00 AM	76 kts.	0	2	0	0
236 ILZ044>046 - 051>057 - 061>063	Winter Storm	3/25/2002	9:00 PM	N/A	0	0	0	0
237 Blue Mound	Hail	4/19/2002	5:50 PM	1.50 in.	0	0	0	0
239 Countywide	Flash Flood	5/7/2002	2:00 AM	N/A	0	0	0	0
238 Mt Zion	Hail	5/7/2002	1:25 AM	0.75 in.	0	0	0	0
240 Decatur	Tstm Wind	5/8/2002	11:51 PM	50 kts.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
241 Countywide	Flash Flood	5/12/2002	4:06 AM	N/A	0	0	0	0
242 ILZ044>046 - 050>056 - 061>063 - 066>068 - 071>073	Flood	5/12/2002	9:00 AM	N/A	0	1	0	0
243 Decatur	Tstm Wind	7/22/2002	7:00 PM	50 kts.	0	0	0	0
244 Decatur	Tstm Wind	7/27/2002	12:20 AM	55 kts.	0	0	0	0
245 ILZ041 - 043>044 - 046>047 - 053>057 - 061>063 - 066>068 - 071 - 073	Heavy Snow	12/24/2002	12:00 PM	N/A	0	0	0	0
246 ILZ042>053	Winter Storm	2/14/2003	11:00 PM	N/A	0	0	0	0
247 Decatur	Hail	4/4/2003	4:53 PM	0.75 in.	0	0	0	0
248 Decatur	Tstm Wind	4/4/2003	4:53 PM	52 kts.	0	0	0	0
249 Oreana	Hail	5/4/2003	6:07 PM	0.75 in.	0	0	0	0
250 Macon	Hail	5/6/2003	7:39 PM	0.75 in.	0	0	0	0
253 Countywide	Flash Flood	5/10/2003	9:30 AM	N/A	0	0	0	0
252 Macon	Hail	5/10/2003	7:43 AM	0.75 in.	0	0	0	0
251 Blue Mound	Tstm Wind	5/10/2003	7:33 AM	60 kts.	0	0	0	0
254 Niantic	Hail	5/28/2003	3:10 PM	1.75 in.	0	0	0	0
255 Niantic	Tornado	6/11/2003	5:30 PM	F0	0	0	0	0
256 Decatur	Hail	6/29/2003	5:02 PM	0.88 in.	0	0	0	0
257 Decatur	Hail	8/2/2003	3:15 PM	1.00 in.	0	0	0	0
258 Warrensburg	Tstm Wind	8/2/2003	3:15 PM	62 kts.	0	5	0	0
260 Oreana	Hail	5/25/2004	12:17 AM	1.75 in.	0	0	0	0
259 Countywide	Tstm Wind	5/25/2004	12:00 AM	60 kts.	0	0	0	0
261 Decatur	Flash Flood	6/15/2004	8:45 AM	N/A	0	0	0	0
262 Mt Zion	Tstm Wind	7/6/2004	5:55 PM	50 kts.	0	0	0	0
263 Harristown	Tstm Wind	7/11/2004	2:30 PM	60 kts.	0	0	0	0
264 Maroa	Hail	7/13/2004	4:20 PM	1.00 in.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
265 Maroa	Tstm Wind	7/22/2004	12:40 PM	50 kts.	0	0	0	0
266 Decatur Arpt	Tstm Wind	8/9/2004	8:49 PM	60 kts.	0	0	0	0
267 Argenta	Flash Flood	8/25/2004	6:40 PM	N/A	0	0	0	0
268 Forsyth	Tstm Wind	8/27/2004	8:35 PM	50 kts.	0	0	0	0
269 ILZ044>046 - 052>056 - 061	High Wind	11/24/2004	3:00 PM	52 kts.	0	0	0	0
270 Decatur	Flash Flood	1/11/2005	10:37 PM	N/A	0	0	0	0
271 Countywide	Flash Flood	1/13/2005	12:30 AM	N/A	0	0	0	0
272 Niantic	Hail	4/12/2005	1:25 PM	0.88 in.	0	0	0	0
273 Macon	Tornado	4/22/2005	2:06 PM	F0	0	0	0	0
274 Elwin	Tornado	4/22/2005	2:14 PM	F0	0	0	0	0
278 Southwest Portion	Flash Flood	5/11/2005	5:42 PM	N/A	0	0	0	0
275 Maroa	Hail	5/11/2005	4:23 PM	0.88 in.	0	0	0	0
276 Blue Mound	Hail	5/11/2005	4:50 PM	1.75 in.	0	0	0	0
277 Blue Mound	Tstm Wind	5/11/2005	5:00 PM	50 kts.	0	0	0	0
279 Niantic	Tstm Wind	6/13/2005	5:47 PM	60 kts.	0	0	0	0
280 Decatur	Flash Flood	6/14/2005	1:00 AM	N/A	0	0	0	0
281 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Excessive Heat	7/22/2005	12:00 PM	N/A	1	0	0	0
282 Forsyth	Tstm Wind	7/26/2005	5:15 PM	55 kts.	0	0	0	0
283 Decatur	Tstm Wind	7/26/2005	5:20 PM	50 kts.	0	0	0	0
284 Maroa	Tornado	3/12/2006	9:14 PM	F1	0	0	0	0
285 Maroa	Tornado	3/12/2006	9:16 PM	F1	0	0	0	0
286 Decatur	Tstm Wind	3/13/2006	3:32 AM	52 kts.	0	0	0	0
291 Decatur	Hail	4/2/2006	5:40 PM	1.00 in.	0	0	0	0
287 Macon	Tornado	4/2/2006	5:30 PM	F2	0	0	0	0
288 Niantic	Tornado	4/2/2006	5:30 PM	F0	0	0	0	0
290 Elwin	Tornado	4/2/2006	5:36 PM	F1	0	3	0	0
289 Warrensburg	Tstm Wind	4/2/2006	5:35 PM	65 kts.	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
292 Central Portion	Flash Flood	4/6/2006	8:00 AM	N/A	0	0	0	0
293 Warrensburg	Hail	4/14/2006	9:31 AM	0.88 in.	0	0	0	0
297 Decatur	Hail	4/16/2006	2:38 PM	0.75 in.	0	0	0	0
298 (dec)decatur Arpt	Hail	4/16/2006	3:30 PM	0.75 in.	0	0	0	0
294 Warrensburg	Tornado	4/16/2006	1:35 PM	F1	0	0	0	0
295 Warrensburg	Tstm Wind	4/16/2006	1:48 PM	50 kts.	0	0	0	0
296 Harristown	Tstm Wind	4/16/2006	2:09 PM	60 kts.	0	0	0	0
299 Oakley	Tstm Wind	4/16/2006	4:10 PM	95 kts.	0	0	0	0
300 Argenta	Hail	4/19/2006	12:01 AM	0.88 in.	0	0	0	0
302 Oreana	Hail	4/19/2006	12:04 AM	1.00 in.	0	0	0	0
301 Argenta	Tstm Wind	4/19/2006	12:01 AM	52 kts.	0	0	0	0
303 Decatur	Lightning	5/31/2006	2:13 PM	N/A	0	1	0	0
304 Niantic	Hail	6/26/2006	2:58 PM	0.88 in.	0	0	0	0
305 Argenta	Tornado	7/12/2006	1:32 PM	F0	0	0	0	0
308 Argenta	Flash Flood	7/26/2006	9:15 PM	N/A	0	0	0	0
307 Argenta	Hail	7/26/2006	6:17 PM	1.25 in.	0	0	0	0
306 Oreana	Tornado	7/26/2006	6:00 PM	F0	0	0	0	0
309 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Heat	7/30/2006	11:00 AM	N/A	1	0	0	0
310 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	Heat	8/1/2006	12:00 AM	N/A	0	0	0	0
311 ILZ043 - 053>054 - 061	Winter Storm	11/30/2006	14:00 PM	N/A	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
312 ILZ027>031 - 036>038 - 040>045 - 047>054 - 061	Winter Storm	12/1/2006	12:00 AM	N/A	0	0	0	0
313 ILZ040 - 044 - 047>057 - 061	Blizzard	2/12/2007	22:00 PM	N/A	0	0	0	0
314 ILZ040 - 044 - 047>057 - 061	Winter Storm	2/12/2007	22:00 PM	N/A	0	0	0	0
315 Decatur	Hail	3/1/2007	12:41 PM	0.75 in.	0	0	0	0
317 Decatur	Thunderstorm Wind	3/1/2007	12:55 PM	61 kts.	0	0	0	0
316 Elwin	Tornado	3/1/2007	12:47 PM	F0	0	1	37000	0
318 Maroa	Flash Flood	3/28/2007	18:50 PM	N/A	0	0	0	0
319 Knights	Hail	4/3/2007	10:28 AM	0.88 in.	0	0	0	0
320 Elwin	Hail	4/3/2007	10:40 AM	0.88 in.	0	0	0	0
321 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071	Frost/freeze	4/5/2007	12:00 AM	N/A	0	0	0	0
322 Mt Zion	Hail	4/26/2007	12:30 PM	0.75 in.	0	0	0	0
323 Decatur	Thunderstorm Wind	5/15/2007	12:59 PM	56 kts.	0	0	3000	0
325 Decatur	Hail	10/18/2007	16:26 PM	1.75 in.	0	0	0	0
326 Argenta	Hail	10/18/2007	16:35 PM	1.00 in.	0	0	0	0
324 Decatur	Thunderstorm Wind	10/18/2007	16:25 PM	61 kts.	0	0	60000	0
327 ILZ049>053	Heavy Snow	12/15/2007	3:00 AM	N/A	0	0	0	0
328 ILZ029 - 036 - 041>042 - 044>048 - 053>055 - 061	Heavy Snow	1/31/2008	14:00 PM	N/A	0	0	0	0
329 ILZ029>031 - 036>038 - 041>055 - 061	Heavy Snow	2/1/2008	12:00 AM	N/A	0	0	0	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
330 ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071	Dense Fog	2/4/2008	2:00 AM	N/A	0	0	0	0
331 Niantic	Thunderstorm Wind	4/25/2008	18:30 PM	56 kts.	0	0	25000	0
332 Long Creek	Thunderstorm Wind	5/2/2008	9:07 AM	50 kts.	0	0	5000	0
333 ILZ053	High Wind	5/11/2008	9:15 AM	52 kts.	0	0	15000	0
334 Mt Zion	Thunderstorm Wind	5/25/2008	21:50 PM	61 kts.	0	0	12000	0
335 Boody	Hail	5/30/2008	18:19 PM	0.75 in.	0	0	0	0
336 Boody	Thunderstorm Wind	5/30/2008	18:19 PM	61 kts.	0	0	15000	0
337 Blue Mound	Hail	6/3/2008	2:04 AM	0.88 in.	0	0	0	0
338 Forsyth	Thunderstorm Wind	6/3/2008	10:00 AM	56 kts.	0	0	8000	0
339 Niantic	Hail	6/15/2008	15:10 PM	0.88 in.	0	0	0	0
340 Decatur	Thunderstorm Wind	7/8/2008	16:30 PM	52 kts.	0	0	20000	0
341 Decatur	Hail	7/21/2008	20:45 PM	1.00 in.	0	0	0	0
342 Decatur	Hail	7/21/2008	20:52 PM	1.75 in.	0	0	0	0
343 Decatur	Hail	7/21/2008	20:53 PM	0.75 in.	0	0	0	0
344 Decatur	Thunderstorm Wind	7/21/2008	20:57 PM	61 kts.	0	0	20000	0
345 Warrensburg	Thunderstorm Wind	12/27/2008	12:52 PM	52 kts.	0	0	12000	0
346 Mt Zion	Thunderstorm Wind	12/27/2008	13:28 PM	52 kts.	0	0	40000	0
347 ILZ027>031 - 036>038 - 040>048 - 053 - 055	Extreme Cold/wind Chill	1/15/2009	12:00 AM	N/A	1	0	0	0
348 Forsyth	Lightning	2/26/2009	9:00 AM	N/A	0	0	50000	0
349 ILZ053	High Wind	3/8/2009	14:00 PM	52 kts.	0	0	40000	0
350 ILZ053	High Wind	3/24/2009	12:44 PM	52 kts.	0	0	12000	0
351 Mt Zion	Thunderstorm Wind	5/13/2009	22:35 PM	65 kts.	0	0	110000	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
352 Niantic	Flash Flood	5/14/2009	12:00 AM	N/A	0	0	0	0
353 Heman	Flash Flood	5/15/2009	18:30 PM	N/A	0	0	0	0
354 Decatur	Thunderstorm Wind	6/18/2009	5:16 AM	61 kts.	0	0	0	0
355 Decatur	Thunderstorm Wind	8/4/2009	8:15 AM	61 kts.	0	0	40000	0
356 Decatur	Thunderstorm Wind	8/19/2009	15:05 PM	52 kts.	0	0	15000	0
357 Decatur	Thunderstorm Wind	8/19/2009	15:05 PM	52 kts.	0	0	15000	0
358 Heman	Flash Flood	9/6/2009	15:30 PM	N/A	0	0	0	0
359 ILZ029 - 038 - 050 - 053 - 055	Winter Weather	12/25/2009	18:00 PM	N/A	0	0	0	0
360 Long Creek	Hail	4/5/2010	16:31 PM	0.75 in.	0	0	0	0
361 Decatur	Hail	4/7/2010	13:29 PM	0.75 in.	0	0	0	0
362 ILZ053	High Wind	4/29/2010	13:30 PM	52 kts.	0	0	12000	0
363 Oakley	Hail	5/3/2010	13:24 PM	1.00 in.	0	0	0	0
364 Mt Zion	Hail	6/2/2010	1:59 AM	0.75 in.	0	0	0	0
367 Niantic	Flash Flood	6/12/2010	15:45 PM	N/A	0	0	0	0
365 Decatur	Hail	6/12/2010	13:39 PM	1.00 in.	0	0	0	0
366 Niantic	Thunderstorm Wind	6/12/2010	15:00 PM	52 kts.	0	0	55000	0
368 Bearsdale	Lightning	6/13/2010	15:16 PM	N/A	0	0	25000	0
369 Mt Zion	Hail	6/21/2010	2:56 AM	0.75 in.	0	0	0	0
370 Heman	Flash Flood	6/22/2010	9:30 AM	N/A	0	0	0	0
371 Blue Mound	Thunderstorm Wind	6/23/2010	20:00 PM	52 kts.	0	0	15000	0
372 Blue Mound	Thunderstorm Wind	7/19/2010	12:30 PM	61 kts.	0	0	25000	0
373 Niantic	Flash Flood	7/24/2010	21:00 PM	N/A	0	0	75000	0
374 ILZ040>057 - 061>063 - 066>068 - 071	Excessive Heat	8/3/2010	12:00 PM	N/A	0	0	0	0
375 ILZ042 - 053>057 - 062	Excessive Heat	8/9/2010	14:00 PM	N/A	0	0	0	0
376 Elwin	Thunderstorm Wind	9/2/2010	18:05 PM	52 kts.	0	0	30000	0
377 Knights	Thunderstorm Wind	9/2/2010	18:10 PM	52 kts.	0	0	25000	0

National Climatic Data Center Event Records

County / Location	Type	Date	Time	Magnitude	Fatalities	Injuries	Property Damage (S)	Crop Damage (S)
378 Decatur	Thunderstorm Wind	10/26/2010	4:50 AM	52 kts.	0	0	5000	0
379 Decatur	Thunderstorm Wind	10/26/2010	4:50 AM	52 kts.	0	0	10000	0
380 Decatur	Thunderstorm Wind	10/26/2010	4:50 AM	52 kts.	0	0	75000	0
381 ILZ040 - 053 - 061	Blizzard	2/1/2011	10:30 AM	N/A	0	0	100000	0
382 ILZ040 - 053 - 061	Winter Storm	2/1/2011	10:30 AM	N/A	0	0	500000	0
385 Mt Zion	Hail	4/19/2011	17:50 PM	0.88 in.	0	0	0	0
383 Elwin	Thunderstorm Wind	4/19/2011	17:48 PM	61 kts.	0	0	40000	0
384 Decatur	Thunderstorm Wind	4/19/2011	17:50 PM	61 kts.	0	0	45000	0
386 Oakley	Thunderstorm Wind	4/19/2011	17:55 PM	61 kts.	0	0	125000	0
387 Sangamon	Tornado	5/25/2011	6:35 AM	F1	0	0	165000	0
388 Oakley	Tornado	5/25/2011	6:39 AM	F1	0	0	100000	0
389 Maroa	Hail	6/4/2011	19:15 PM	1.25 in.	0	0	0	0
390 Niantic	Thunderstorm Wind	6/21/2011	17:10 PM	61 kts.	0	0	95000	0
391 Mt Zion	Hail	7/26/2011	14:48 PM	0.75 in.	0	0	0	0
392 ILZ043 - 045 - 053	Strong Wind	11/13/2011	9:00 AM	48 kts.	0	0	10000	0
393 Argenta	Hail	11/14/2011	13:14 PM	0.88 in.	0	0	0	0
				Totals:	22	125	76155000	2200000

Appendix D

Hazard Fact Sheets

FLOODING

Macon County, Illinois

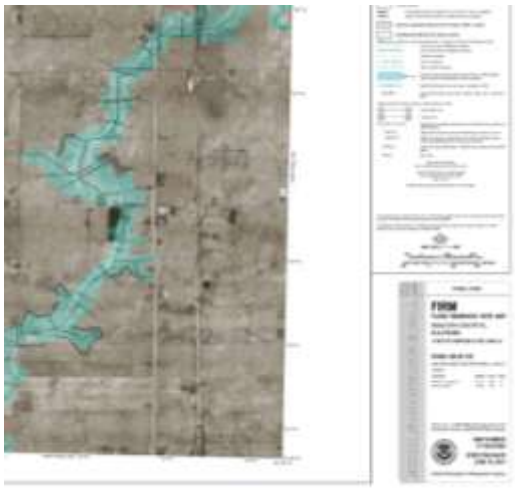
*Overview-*Flooding is the most frequent and costly natural hazard in the State of Illinois. The periodic flooding of land adjacent to rivers and streams is a hazard to all communities. Flooding results from excessive amounts of precipitation over a given area. This causes the flow of water to exceed capacity within the stream channel and overflow. Two common types of flooding are flash and general flooding. Flash flooding events occur within minutes or hours of heavy amounts of rainfall, from a dam or levee failure, or from a sudden release of water held by an ice jam. They occur quickly and with little warning. General floods are longer-term events and may last for several days. In Macon County, floods along the Sangamon River and its tributaries are of frequent occurrence. The Sangamon River has been known to flood as many as four times a year. Stevens Creek is also very flood prone and has caused considerable damage to hillsides, roadways, and parks within the City of Decatur.

*Risks-*Flood risk doesn't just occur around rivers and streams. Basements can become susceptible to flooding when the soil around your property becomes saturated with water, seeping into your basement foundation. Costly flood damage can happen in as little as just one inch of water. Depending on the flooding location, depths and velocities can vary dramatically. High-risk flood areas have at least a 1 in 4 chance of flooding during a 30-year mortgage. Expressing flood frequency or probability is the annual chance of the occurrence, or the percentage of the probability of flooding each year. For example, a 100-year flood has a one-percent annual chance of occurring (1 in 100 chance per year), whereas a 50-year flood has a two-percent annual chance of occurring (1 in 50 chance per year).

Probability of flooding

Return period	AEP	In any 1 year period	In any 10 year period	In any 30 year period	In any 70 year period
1 in 50 year	2%	1 chance in 50	1 chance in 5.5 (18%)	1 chance in 2.2 (45%)	1 chance in 1.3 (76%)
1 in 100 year	1%	1 chance in 100	1 chance in 10 (10%)	1 chance in 4 (26%)	1 chance in 2 (51%)
1 in 200 year	0.5%	1 chance in 200	1 chance in 20 (5%)	1 chance in 7 (14%)	1 chance in 3.3 (30%)
1 in 500 year	0.2%	1 chance in 500	1 chance in 50 (2%)	1 chance in 17 (6%)	1 chance in 7.7 (13%)

*Protection-*Understanding the extent of flooding in your community helps to decide where communities should prioritize mitigation activities. Communities should consult their current FEMA Flood Insurance Rate Map to identify any high risk areas. Anyone can view this information from the FEMA Map Service Center. Flood damage is not covered under any homeowner's policy. It would be recommended that you consult a licensed insurance agent to purchase flood insurance if your property is located in or around a floodplain. If a flood should happen in your area, determine a safe evacuation route in cases you need to move to higher ground. Communities need to assess critical facilities to make sure that these structures have as little vulnerability to flooding as possible. Any new construction should be built out of any floodplain.

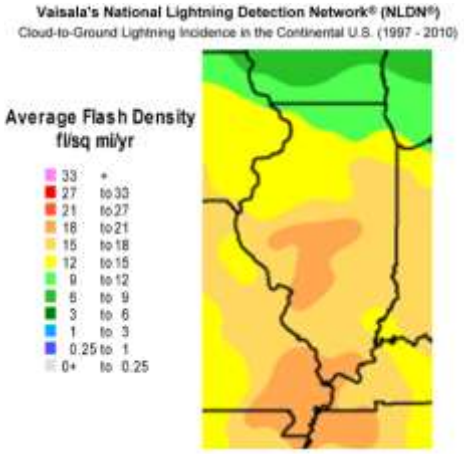


Data Sources: 1) *https://msc.fema.gov* 2) *http://ecan.govt.nz*

SEVERE STORMS

Macon County, Illinois

*Overview-*Severe storms refer to a broad range of meteorological activity that has the serious threat of causing serious damage and the loss of life. The type of severe storms communities experience can vary from region to region. However, thunderstorms are the most common throughout Illinois which often bring lightning and hail. These storms can be unpredictable and develop fast. Thunderstorms can typically be 15 miles in diameter and produce heavy rains anywhere from 30 minutes to an hour. Thunderstorms are capable of producing heavy winds causing serious damage similar to a tornado. These storms can also carry lightning which is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm. A bolt of lightning can reach temperatures approaching 50,000°F. This rapid heating and cooling of the surrounding air causes the thunder which often accompanies lightning strikes. Hail can also be a product of these severe storms. Hail starts to form due to the rapid rising of warm air and the subsequent cooling of the air mass. Frozen droplets gradually accumulate until they develop to a sufficient weight and fall as precipitation. Most hail is small, usually less than two inches in diameter but can be as big as softballs.



*Risks-*Lightning strikes occur in very small localized areas. Lightning occurs randomly, therefore it is impossible to accurately predict where and at what frequency it will strike. Only about 10% of people who are struck by lightning are killed. Most lightning deaths and injuries occur when people are caught outside during summer afternoons and evenings especially when they have no shelter available. Lightning can cause wildfires, fires to structures, damage to electrical equipment and infrastructure, and business disruption. Because the lightning hazard does not have a geographically-definable boundary, all people, structures, critical facilities, infrastructure, and other important assets in the community have the potential to be struck. Storms that produce even small-sized hail can destroy crops by slicing plant leaves to shreds in only a few minutes. Hailstones can dent vehicles, break windows and windshields, and damage roofs and building siding. Just like lightning, the hail hazard does not have a geographically-definable boundary, all people, structures, crops, commercial and residential centers, and other important assets in the community have the potential to be impacted.

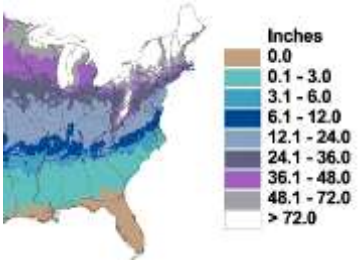
*Protection-*When you're outdoors, watch the sky for signs of approaching thunderstorms. The signs of rain or the darkening of skies can be an indication of an approaching storm. Tune into radio, television, or internet as media types broadcast severe storm alerts. When severe storms approach take shelter immediately, try to get indoors. If you cannot get inside, move from higher to lower elevations. Avoid large open spaces where you are taller than anything else around you. If hail starts to form, stay away from windows and skylights. Reframe from using electronics and driving until the storm has passed.

Data Sources: 1) *http://www.state.il.us/iema* 2) *http://www.fema.gov*

WINTER STORMS

Macon County, Illinois

*Overview-*Everyone that lives in Illinois is at risk when it comes to winter storms. Winter storms are not necessarily restricted to the winter season, but may occur in the late autumn and early spring. Conditions include freezing temperatures, heavy snowfall or freezing rain. Classifications of winter storms are blizzards, heavy snow storms, and ice storms. A blizzard is the most dangerous, combing low temperatures, heavy snowfall and winds of at least 35 miles per hour, reducing visibility to only a few yards. Heavy snow storms can produce six inches or more of snow in 48 hours or less. Lastly, ice storms occur when moisture falls and freezes immediately upon impact. Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Ice can accumulates on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storm conditions can immobilize entire regions for long periods of time.



*Risks-*Winter storms can result in traffic accidents, flooding, closed highways, blocked roads, downed power lines and trees, carbon monoxide poisoning, and hypothermia. These impacts have the potential to last for days causing a serious risk to communities and responders. Severe winter weather can also have a devastating effect on agricultural damaging crops and loss of livestock. During winter storms visibility can be limited and extremely difficult at night and staying off the road is advised. Homes can be at risk with heavy snow thus causing roofs to collapse if the weight becomes too much.

*Protection-*By monitoring the radio, television, and internet you can be prepared for an incoming winter storm. Ways to protect yourself from a winter storm would be having an extra supply of water and food that does not require cooking or refrigeration. Ensure that you have plenty of warm clothes and a flash light in case the power goes out for a long period of time. Try to stay indoors and avoid overexertion such as when shoveling snow. Dress warm as frostbite and hypothermia are common injuries. Stay off the roads unless it is absolutely necessary to avoid an accident. Major roads in communities should try to remain plowed and salted in case there is a need for evacuation, medical attention, or to restore power. In areas where power outages are frequent the use of portable generators can provide some comfort and ease the long term power outages.

Data Sources: 1) *http://www.state.il.us/iema* 2) *http://www.fema.gov*

TORNADOES

Macon County, Illinois

*Overview-*Tornadoes pose a risk to Illinois and can appear with little to no warning. A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the National Weather Service, tornado wind speeds normally range from 40 miles per hour to more than 300 miles per hour. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long.

*Risks-*Some tornadoes are clearly visible while rain or nearby low-hanging clouds obscure them. Tornadoes can develop so rapidly that advance warning is not possible. Tornados are more likely to occur during the months of March through May in the late afternoon and early evening. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings, particularly mobile homes. Locations where a tornado may touchdown are completely random and sometimes it's difficult to predict specific areas. Low flat areas are more susceptible to tornado activity then mountainous ones. Tornadoes often damage structures, power and gas lines, and electrical systems, therefore risk of fire, electrocution, or an explosion is possible. Once wind enters a structure, the likelihood of severe structural damage increases and the contents of the building will be exposed to the elements. Tornados can disrupt businesses, damage crops and property, or cause injury and death.

EF-SCALE NUMBER	INTENSITY PHRASE	3 SECOND GUST (MPH)	TYPE OF DAMAGE DONE
F0	GALE	65–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
F1	MODERATE	86–110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	SIGNIFICANT	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	SEVERE	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
F4	DEVASTATING	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	INCREDIBLE	Over 200	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.

*Protection-*The less time there is to warn and evacuate, the more important it is to protect people from tornado dangers with long-term mitigation solutions. Locate all safe rooms and potential safe rooms throughout the community. A safe room is a room or structure specifically designed and constructed to resist wind pressures and wind-borne debris impacts during an extreme-wind event. Make sure to validate these safe rooms comply with current safety standards. Make sure local building codes are adequate to withstand current wind resistant safety standards. Communities that are prone to tornados can install tornado sirens to warn residents of any activity in the area.

Data Sources: 1) *http://www.fema.gov* 2) *http://www.spc.noaa.gov/efscale*

*Overview-*A drought originates from a deficiency of precipitation over an extended period of time causing a serious hydrologic imbalance. This deficiency can result in a water shortage for many residents. High temperatures, high winds, and low humidity can exacerbate drought conditions. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. The first half of 2012 was the sixth driest on record for the State of Illinois. Precipitation throughout the state averaged just 12.6 inches for the January through June period, or nearly seven inches below normal.

*Risks-*Droughts are slow on-set hazards, but, over time, can have very damaging affects to crops, municipal water supplies, recreational uses, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impact can be significant. Drought typically covers a large area and cannot be confined to any geographic boundaries. However, local areas may experience much more severe and/or frequent drought events. If a drought is severe, communities may experience health problems related to low water flow, poor water quality, or dust.

Drought Classification Definitions

Meteorological Drought	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
Hydrologic Drought	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
Agricultural Drought	Soil moisture deficiencies relative to water demands of plant life, usually crops.
Socioeconomic Drought	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

Source: Federal Emergency Management Agency

Drought conditions can result in:

- Degradation or destruction of natural resources and wildlife habitats
- Loss of wetlands
- Increased desertification
- Lower water levels in reservoirs, lakes, and ponds
- Poor soil quality
- Damaged crops
- Inflation of food prices
- Increased rates of erosion
- Wildfires
- Increased stress to endangered species and migration of wildlife.

*Protection-*Water conservation is one of the most common mitigation actions needed from a drought period. This is especially a hardship for people who rely on wells for their water supply. The only way well water is replenished is through precipitation, so conservation is the only defense. If on well water avoid doing activities that require large water consumption such as using the dishwasher or washing machine. It's to everyone's benefit to conserve water together since it's unpredictable when precipitation might occur again. Communities need to be on alert that during drought conditions, things become more susceptible to wildfires.

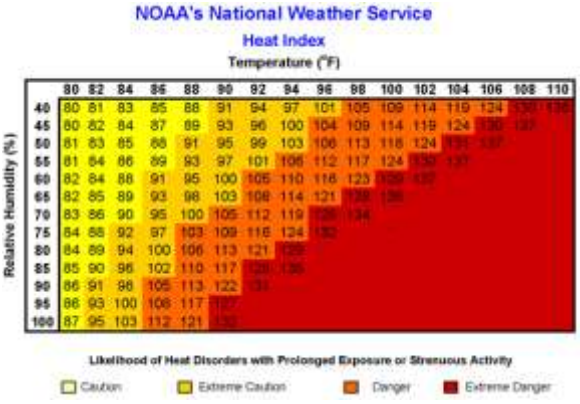
Data Sources: 1) *http://droughtmonitor.unl.edu* 2) *http://www.fema.gov* 3) *http://www2.illinois.gov/gov/drought*

EXTREME HEAT

Macon County, Illinois

*Overview-*Extreme heat is often called a “heat wave.” The standard U.S. definition for a heat wave is, any event lasting at least three days where temperatures reach 90°F or higher. Heat waves are typically accompanied by humidity but may also be very dry. A **Heat/Health Watch** is issued when conditions are favorable for an excessive heat event in the next 12 to 48 hours. A **Heat Warning** is issued when an excessive heat event is expected in the next 36 hours. Urban areas participate in the Heat/Health Watch Warning System because urban areas are at greater risk to heat affects due to stagnant atmospheric conditions, trap pollutants, thus adding unhealthy air to excessively hot temperatures. In addition, the “urban heat island effect” can produce significantly higher nighttime temperatures because asphalt and concrete (which store heat longer) gradually release heat throughout the night.

*Risks-*Extreme heat can have a significant impact on human health. When individuals are exposed to excessive heat, their body temperature will rise and heat-related illness may develop. Heat illnesses and disorders include fatigue, heat cramps, heat exhaustion, and heat stroke the most fatal. Studies have shown that the severity of a heat disorder tends to increase with a person’s age; however, infants and people who are sick or overweight are also more vulnerable. The Heat Index chart shown to the side uses air temperature and humidity to determine the heat index or apparent temperature. Extreme heat can cause blackouts/power losses which can intensify discomfort and pose safety concerns. When the body heats up too quickly to cool it safely or when you lose too much fluid or salt through dehydration or sweating, your body temperature rises and heat-related illness may develop. Urban and suburban areas can be "heat islands," a zone 2-10 degrees Fahrenheit warmer than the surrounding rural countryside.



*Protection-*Heat disorders share one common trait; the individual has been in the heat too long or exercised too much for his or her age and physical condition. Individuals should stay out of direct sunlight and in a cool location during extreme heat periods. Communities can set-up shelters where individuals can go to cool down. Long-term strategies for preventing heat illness are:

- Promoting or installing cool or vegetated "green" roofs.
- Planting more trees and vegetation.
- Switching to cooler paving materials.
- **Wear lightweight, light-colored clothing to reflect heat and sunlight.**
- **Drink plenty of water, non-alcoholic and decaffeinated fluids.**
- **During excessive heat periods, spend more time in air-conditioned places.**
- **Don't get too much sun. Sunburn reduces your body's ability to dissipate heat.**

Data Sources: 1) *http://www.state.il.us/iema* 2) *http://www.fema.gov* 3) *http://www.nws.noaa.gov/os/heat*

EARTHQUAKES

Macon County, Illinois

*Overview-*An earthquake is caused by a crack or rupture in Earth's tectonic plates, or when tectonic plates push against each other. This causes movement or trembling of the ground producing a sudden displacement of rock in the Earth's crust. This process can last tens of seconds up to a few minutes depending on the magnitude of the event, what kinds of rock is being penetrated, and the stiffness or lack of stiffness of the soils at a site. Earthquakes can affect hundreds of thousands of square miles. Over 250 small to moderate earthquakes are known to have occurred in Illinois during the past two centuries.

*Risks-*The Richter Scale has been the most commonly and familiar earthquake scale for measuring magnitude. It's important to know that earthquake magnitude increases by a factor of 10 as magnitude increases by one whole number. Earthquakes can cause damage to property measured in the tens of billions of dollars. Most property damage and earthquake-related injuries and deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage can depend on the level of magnitude and duration of the shaking. Other damaging earthquake effects include landslides and liquefaction of soil (much like quicksand). During an earthquake, people can be injured or killed by falling or collapsing objects, objects thrown into the air, or by earthquake-induced fires or flooding. Direct losses can include damage to infrastructure and buildings, power and content losses, fire, and gas leaks.

Richter Scale

RICHTER MAGNITUDES	EARTHQUAKE EFFECTS
< 3.5	Generally not felt, but recorded.
3.5 - 5.4	Often felt, but rarely causes damage.
5.4 - 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 - 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 - 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or >	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: Federal Emergency Management Agency

*Protection-*Currently, there is no reliable way to predict when an earthquake will occur at any given location. All people in an earthquake-stricken area are potentially at risk at any moment. Below are methods to protect individuals in case of an earthquake:

If Indoors

- **DROP** to the ground; take **COVER** by getting under a sturdy table or other piece of furniture; and **HOLD ON** until the shaking stops.
- Stay away from elevators, glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.
- Stay inside until the shaking stops and it is safe to go outside.

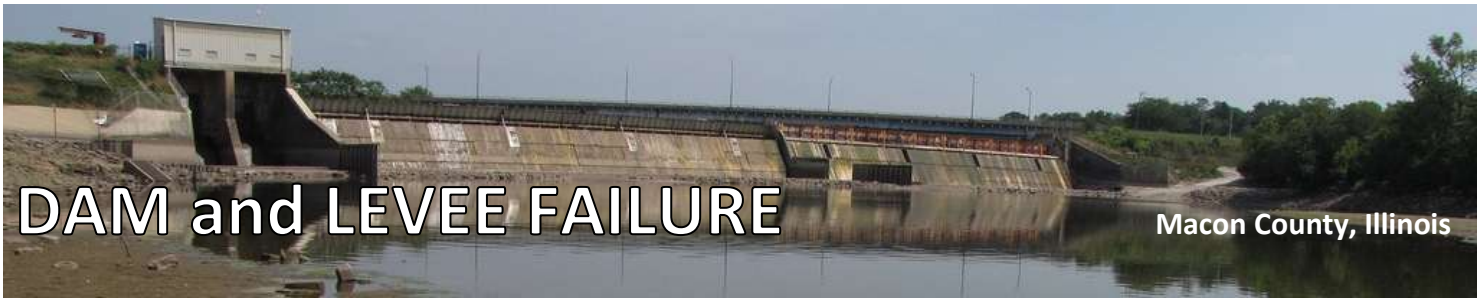
If Outdoors – Stay there

- Move away from buildings, streetlights, and utility wires.
- Once in the open, stay there until the shaking stops.

If in a Moving Vehicle

- Stop as quickly as safety permits and stay in the vehicle.
- Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that might have been damaged by the earthquake.

Data Sources: 1) *http://www.state.il.us/iema* 2) *http://www.fema.gov*



DAM and LEVEE FAILURE

Macon County, Illinois

*Overview-*A dam is a barrier that impounds water or underground streams. Dams generally serve the primary purpose of retaining water, while other structures such as floodgates or levees are used to manage or prevent water flow into specific land regions. Dams range in size from small (less than 40 feet), intermediate (40-100 feet), and Large (more than 100 feet). In 2011 Illinois had 1,594 state regulated dams. Macon County's biggest dam is the Lake Decatur Dam. The Federal Emergency Management Agency (FEMA) defines a levee as "a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water in order to reduce the risk from temporary flooding." City of Decatur Sanitary Sewer Treatment Plant levee is Macon County's biggest levee system.

*Risks-*Dams are categorized according to the degree of threat to life and property in case of failure. Illinois recognizes three dam classifications. Class I dams are those for which failure has a high probability of causing loss of life or substantial economic loss. Class II dams are those for which failure has a moderate probability for causing loss of life or substantial economic loss. Class III dams are those for which failure has a low probability for causing loss of life or substantial economic loss. Levees can fail in a number of ways; these include overtopping, piping, seepage and saturation, erosion, and structural failure. When levees fail or overtop the consequence to safety and property is much higher than in a typical flooding event. No levee provides full protection from flooding.

*Protection-*In the case of a dam or levee failure the consequences are very serious. Identify the dams and levees in your community and notify citizens who live in these areas of the potential risk. Performing normal maintenance to any dam or levee is vital. Plan and know your evacuation route in the event of a failure. Encourage sustainable economic development for businesses. By knowing the potential risk, business owners can take proactive measures to be better prepared should a catastrophic event occur. Consult your local floodplain manager or Illinois Emergency Management Agency to see if your property is at risk in case of a dam of levee failure. If so, it would be encouraged to purchase flood insurance to cover any losses. Communities should prepare an Emergency Action Plans to protect citizens in the event of a levee or dam failure.

Data Sources: 1) *http://damsafety.org* 2) *http://www.fema.gov*

NUCLEAR and HAZARDOUS MATERIAL ACCIDENTS

Macon County, Illinois

Overview- Hazardous waste is waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes. The term **Extremely Hazardous Substance** (EHS) refers to those chemicals that could cause serious health effects following short-term exposure from accidental releases. Illinois has more than 7,000 fixed facility locations that report the presence of an EHS in federally mandated threshold amounts. Hazardous materials can occur naturally in the earth or atmosphere; others are synthetic, or human-made. When we use and dispose of them properly, they enhance our quality of life.

*Risks-*Hazardous materials when used or disposed of improperly can have harmful effects on humans, plants, and animals. Any activity that produces or uses radioactive materials generates radioactive waste. A nuclear accident would be catastrophic to any community, potentially affecting tens of thousands of people. The closest Nuclear Power Plant is in the neighboring county of De Witt, known as Clinton Station. Radioactive waste can be in gas, liquid or solid form, and its level of radioactivity can vary. The waste can remain radioactive for a few hours or several months or even hundreds of thousands of years. Human tissue exposed to hazardous materials over a long period of time can disrupt the body's natural repair processes, permitting the uncontrolled growth of cells, also known as cancer. Very high-levels of exposure to any hazardous material within a short time can be even more serious.

*Protection-*Nuclear and hazardous accidents are unpredictable so it's important to always be prepared. The best ways to protect yourself is to be familiar with any potential dangers, know the warning system in your community (if equipped), and be prepared to evacuate or take shelter in a safe location. Proper disposal of any hazardous material is essential to protecting the health and safety of the public and environment. Radioactive waste disposal practices have improved substantially over the last twenty years. Hazardous waste designs for new disposal facilities and disposal methods have become stricter over the years. Become aware about any possible hazardous materials threats in your area, this will help you remain alert to these threats and contribute to your well-being. For example, learning to detect the presence of a hazardous substance, researching response and evacuation plans, and becoming familiar with local warning systems will help you protect yourself and those around you.

Data Sources: 1) *http://www.state.il.us/iema* 2) *http://www.fema.gov* 3) *http://www.epa.gov/osw/hazard* 4) *http://texaseden.org/disaster-resources*

Appendix E

Mitigation Actions Community Identified And Funding Sources

1.1 JURISDICTIONAL MITIGATION ACTIVITIES

Mitigation goals and actions for each community are summarized in the following tables. Actions identified by each community will be reviewed annually for purposes of tracking progress and or revising implementation approaches.

The following tables list mitigation actions for each jurisdiction. These actions would mitigate the associated hazard and support the corresponding goals of the community. Below are descriptions and definitions of each category within the following tables.

- **Priority:** The priority rankings for each activity. Priority based on benefit / cost and hazard prioritization for each community.
- **Activity Description / Hazard:** This category is a description of the identified project and the primary hazard addressed by each mitigation activity.
- **Agency(s):** The lead department or agency responsible for each action listed.
- **Target Date / Funding Source:** The proposed schedule or time frame for completion of each action or project. Potential funding source of the identified action item.
- **Type:** The type of goal which the project was designed to achieve. These activities are defined below and in Section 4.2.1.
- **Benefit / Cost:** A qualitative description of the expected benefits and costs of implementation of the project. The benefits and costs were defined as described in Section 4.3.2.

The group focused upon various types of activities that could be performed to reduce the risk of natural hazards throughout their communities. These activities were categorized as follows:

a. Prevention. (PA) Preventative activities are designed to keep current problems from getting worse and to eliminate the possibility of future problems.

b. Property Protection. (PP) Property protection activities are designed to adapt existing structures to withstand natural hazards or to remove structures away from hazard prone areas.

c. Emergency Services. (ES) Emergency services minimize the impact that a natural hazard has on the residents of a jurisdiction.

d. Structural Projects. (SP) Structural projects lessen the impact of a natural hazard by changing the natural progression of the hazard

e. Public Information and Awareness. (PI) Public information and awareness activities are used to educate the residents of a jurisdiction about the potential hazards that affect their area, hazard prone areas, and mitigation strategies they can take part in to protect themselves and their property.

Table E-1 Macon Countywide Action Plan

Priority	Activity Description / Hazard	Agency(s)	Target Date / Funding Source	Type	Benefit / Cost
1	Purchase and remove repetitive loss properties. **Flooding**	County of Macon	2018 HMGP & Local	PP	High / Medium
2	Develop silt dams on water systems that supply Lake Decatur **Drought**	County of Macon	2015 HMGP & Local	SP	High / Medium
3	Distribute NOAA Weather radios to homes not covered by tornado sirens. **All Hazards**	County of Macon	2014 HMGP & Local	ES	Medium / Low
4	Support groups that supply fans during extreme heat events. Provide cooling centers during heat events. **Extreme Heat**	County of Macon	2014 - 2018 Local	ES	Medium / Low
5	Maintain and update the Hazardous Materials Contingency Plan on a yearly basis. **Nuclear /Hazardous Materials Accidents**	County of Macon	2014 - 2018 Local	PA	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-2 Macon County (Unincorporated) Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Flood Study of Candlebrook Subdivision. **Flooding**	Macon County	2014-2015 HMGP	PP	Medium / Low
2	Acquire Flood Plain & homes in Kruse Road area. **Flooding**	Macon County	2014-2016 HMGP	PP	Medium / Medium
3	Storm water project for Blue Mound Township. **Flooding**	Macon County	2014-2018 HMGP	SP	Medium / Low
4	Provide back-up generators to water supply systems in unincorporated areas. **Severe Storms / Winter Storms**	Macon County & Long Creek Water District	2014-2015 HMGP	SP	Medium / Medium

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-3 Macon County Conservation District Action Plan

Priority	Activity Description / Hazard	Agency(s)	Target Date / Funding Source	Type	Benefit / Cost
1	Retro-fit Sangamon River Bike Bridge to withstand flood impacts. **Flooding**	Macon County Conservation District	2018 HMGP & Local	PP	Medium / Medium
2	Flood Proof Historic Rock Springs Bottling House to withstand flooding of Sangamon River. **Flooding**	Macon County Conservation District	2018 HMGP & Local	PP	Medium / Medium

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-4 Village of Argenta Action Plan

Priority	Activity Description / Hazard	Agency(s)	Target Date / Funding Source	Type	Benefit / Cost
1	Purchase NOAA radios for each household. **All Hazards**	Village of Argenta	2014 HMGP & Local	ES	Medium / Low
2	Security & Monitoring system for Village Hall. **All Hazards**	Village of Argenta	2014 HMGP & Local	ES	Medium / Medium
3	Generator as back-up for water tower & Village Hall. **Severe Storms / Winter Storms**	Village of Argenta	2014 HMGP & Local	SP	Low / Low
4	Purchase 2 rain barrels for each household. **Drought**	Village of Argenta	2014 HMGP & Local	PA	Low / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-5 Village of Blue Mound Action Plan

Priority	Activity Description / Hazard	Agency(s)	Target Date / Funding Source	Type	Benefit / Cost
1	Purchase generator of Village Hall and Other Critical Infrastructure. **Severe Storms**	Village of Blue Mound Board	2018 Local	SP	Low / Low
2	Provide Education Materials – Town Meeting - Brochures **All Hazards**	Village of Blue Mound Police Department	2018 Local	PI	Low / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-6 City of Decatur Action Plan

Priority	Activity Description / Hazard	Agency(s)	Target Date / Funding Source	Type	Benefit / Cost
1	Silt dams on Big Creek. **Drought**	City of Decatur & Macon County SWCD	2015-2016 HMGP & Local	SP	Medium / Medium
2	Emergency Water Wells (4). **Drought**	City of Decatur	2014-2015 HMGP & Local	SP	High / High
3	Piping DeWitt Well field water to Lake Decatur. **Drought**	City of Decatur	2015-2017 HMGP & Local	SP	High / High
4	Piping water from Lake Tokowazarwa 1.5 miles to Lake Decatur. **Drought**	City of Decatur	2014-2015 HMGP & Local	SP	High / High
5	Flood prone property mitigation / buyout on E. Mound Rd. **Flooding**	City of Decatur & Macon County	2014-2015 HMGP & Local	PP	Medium / Medium
6	Major drainage & storm water work on, along & around Baltimore Ave. **Flooding**	City of Decatur Sanitary District & Macon County Hwy. Dept.	2015-2018 HMGP & Local	SP	High / High
7	Adequate storm water drainage and retention to reduce repetitive damages to 3 houses in Decatur. **Flooding**	City of Decatur & Macon County San. Dist.	2014-2015 HMGP & Local	SP	Medium / Low
8	Detailed profile and BFE study of the Stevens Creek watershed. **Flooding**	City of Decatur, Village of Forsyth, & Macon County San. Dist.	2014-2015 HMGP & Local	PA / PI	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-6 City of Decatur Action Plan (Continued)

Priority	Activity Description / Hazard	Agency(s)	Target Date / Funding Source	Type	Benefit / Cost
9	Storm water work along & around Baltimore Ave., between 44th & Baltimore. **Flooding**	City of Decatur & Macon County Hwy Dept.	2015-2018 HMGP & Local	SP	High / High
10	Flood Study of Stevens creek between Forsyth and Decatur. **Flooding**	City of Decatur, Decatur Park District, Village of Forsyth	2014-2015 HMGP & Local	PP	Medium / Low
11	Create a Lake Decatur Dam Emergency Action Plan **Dam Failure**	City of Decatur, Director of Water Management	1/1/2014 – 12/31/2014 HMGP & Local	PA / ES / PI	High / Low
12	Install additional sirens within the City of Decatur to cover area not currently covered by existing sirens. **Tornadoes**	City of Decatur	2014-2016 HMGP & Local	SP	Medium / Low
13	Site planning for disaster incident at South Water St. water plant. **All Hazards**	City of Decatur & Macon County EMA	2014-2015 HMGP & Local	ES	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-7 Sanitary District of Decatur Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Level improvement and Certification. **All Hazards**	Sanitary District – Safety Coordinator	2014-2018 General Funds	ES / PA	High / Low
2	Mobile Pumping. **All Hazards**	Sanitary District – Safety Coordinator	2014-2018 General Funds	SP	High / Low
3	Plant Security. **All Hazards**	Sanitary District – Safety Coordinator	2014-2018 General Funds	PA	High / Medium
4	Internet / Computer / SCADA security improvements. **All Hazards**	Sanitary District – Safety Coordinator	2016-2019 General Funds	PP	High / Medium
5	Develop an alternate energy strategy for SDD facilities. **All Hazards**	Sanitary District – Safety Coordinator	2016-2018 General Funds	PA	High / Medium
6	Develop a continuity of operations strategy for keeping SDD facilities operational in times of crisis. **All Hazards**	Sanitary District – Safety Coordinator	2016-2018 General Funds	ES	Medium / Low
7	Groundwater development project. **All Hazards**	Sanitary District – Safety Coordinator	2016-2020 General Funds	SP	High / High

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-8 Village of Forsyth Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Upgrade tornado sirens. **Tornadoes**	Village of Forysth	2015 HMGP & Local	SP	Medium / Low
2	Acquire future water supply site. **Drought**	Village of Forysth	2018 HMGP & Local	SP	High / Low
3	CH 20 Storm Sewer PH 1, Reduce flooding in Beaver Creek Estates. **Flooding**	Village of Forysth	2018 HMGP & Local	SP	Medium / High
4	Timber Lane Flood Berm. **Flooding**	Village of Forysth	2028 HMGP & Local	SP	Low / Low
5	Reduce flooding along Stevens Creek. **Flooding**	Village of Forysth	2023 HMGP & Local	PP	High / High
6	Coordinate planning with Mall for disaster readiness. **All Hazards**	Village of Forysth	2015 HMGP & Local	PA	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-9 Village of Harristown Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	3 Backup Generators for Sewer & Water Pumps. **Severe Storms / Winter Storms**	Village of Harristown	2015 HMGP	SP	Medium / Low
2	Tree Removal to maintain utility path. **Severe Storms / Winter Storms**	Village of Harristown	2016 HMGP	PA	Medium / Low
3	Establish Potable Water Well. **Drought**	Village of Harristown	2018 HMGP	SP	Medium / Medium
4	Ditching to ensure storm drainage. **Flooding**	Village of Harristown	2016 HMGP	SP	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-10 Village of Long Creek Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Provide back-up generators to water supply systems in the Village of Long Creek. **Drought / Severe Storms / Winter Storms**	Long Creek Water District	2018 HMGP & Local	ES / SP	High / Medium

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-11 City of Macon Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Tornado Sirens – Walsh Park & Hogan Hills. **Tornadoes**	City of Macon	2018 HMGP	SP	High / Low
2	Implement a tile system for storm water drainage. **Flooding**	City of Macon	2018 HMGP	SP	Medium / Medium

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-12 City of Maroa Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Provide back-up generators to city hall. **All Hazards**	City of Maroa	2014-2015 HMGP	SP	High / Medium
2	Install additional sirens within The city. **Tornadoes**	City of Maroa	2018 HMGP	SP	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-13 Village of Mount Zion Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Promote use of weather radios. **Severe Storms / Winter Storms**	Village of Mt. Zion	2013 Local	PI	Low / Low
2	Upgrade warning sirens. **Severe Storms / Winter Storms**	Village of Mt. Zion	2016 HMGP & Local	SP	Low / Low
3	Elevate Section of Sulphur Springs Rd. that floods. **Flooding**	Village of Mt. Zion	2018 HMGP & Local	SP	Medium / Medium

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-14 Village of Niantic Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Build Storm Shelter Structure. **Severe Storms / Winter Storms**	Village of Niantic	2018 HMGP &General Funds	SP	Medium / Medium
2	Update Tornado Sirens. **Tornado**	Village of Niantic	2018 HMGP &General Funds	SP	Medium / Low

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Table E-15 Village of Warrensburg Action Plan

Priority	Activity Description / Hazard	Agency	Target Date / Funding Source	Type	Benefit / Cost
1	Purchase another tornado alert siren. **Tornadoes**	Village of Warrensburg - Board	2018 General Funds	SP	Medium / Low
2	Back-up generator for new water plant. **Severe Storms / Winter Storms**	Village of Warrensburg - Board	2018 General Funds	SP	Medium / Medium
3	Back-up generators for sewer lift stations. **Severe Storms / Winter Storms**	Village of Warrensburg - Board	2018 General Funds	SP	Medium / Low
4	Electronic public information sign. **All Hazards**	Village of Warrensburg - Board	2018 General Funds	PI	Medium / Medium

Prevention. (PA); Property Protection. (PP); Emergency Services. (ES); Structural Projects. (SP); Public Information and Awareness. (PI)

Federal Sources:

1) *Pre-disaster Mitigation Program: Federal Emergency Management Agency (FEMA)*: Through the Disaster Mitigation Act of 2000, Congress approved the creation of a national program to provide a funding mechanism that is not dependent on a Presidential disaster declaration. The Pre-Disaster Mitigation (PDM) Program provides funding to states and communities for cost-effective hazard mitigation activities that complement a comprehensive mitigation program, as well as reduce injuries, loss of life, and damage and destruction of property.

2) *Emergency Management Performance Grant*: *Federal Emergency Management Agency (FEMA):* The Emergency Management Performance Grant (EMPG) encourages the development of comprehensive emergency management at the State and local level in order to improve emergency management planning, preparedness, mitigation, response, and recovery capabilities. Funding is provided to the State, which can be used to educate people and protect lives and structures from natural and technological hazards.

3) *Public Assistance Grant Program: Federal Emergency Management Agency (FEMA):* The Public Assistance (PA) Grant Program provides supplemental assistance to states, local governments, and certain private non-profit organizations to alleviate sufferings and hardship resulting from major disasters or emergencies declared by the President. These grants allow state and local government to respond to disasters, recover from their impact, and mitigate impact from future disasters.

4) *Flood Mitigation Assistance Program*: *Federal Emergency Management Agency (FEMA):* FEMA's Flood Mitigation Assistance (FMA) Program provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the NFIP. FMA is a pre-disaster grant program, and is made available to states on an annual basis. This funding is exclusively available for mitigation planning and implementation of mitigation measures.

   The community must be a participant in NFIP and the project must be cost-effective, beneficial to the NFIP fund, and technically feasible. The project must conform to the minimum standards of the NFIP Floodplain Management Regulations, the applicant's Flood Mitigation Plan, and all applicable laws and regulations.

5) *Hazard Mitigation Grant Program: Federal Emergency Management Agency (FEMA):* The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP assists states and local communities in implementing long-term mitigation measures following a Presidential disaster declaration.

   A project must conform to the State's Hazard Mitigation Plan, provide a beneficial impact on the disaster area, meet environmental requirements, solve a problem independently, and be cost-effective.

6) *Community Development Block Grants: US Department of Housing and Urban Development*: The Community Development Block Grant (CDBG) program provides grants to local governments for community and economic development projects that primarily benefit low- and moderate-income people. The CDBG program also provides grants for post-disaster hazard mitigation and recovery following a Presidential disaster declaration. To be eligible for a CDBG, a community must have a population less than 50,000 (200,000 for counties) and be located within a Presidential disaster declaration area.

7) *Sustainable Development Assistance: Department of Energy*: A Sustainable Development Assistance team works with communities to help them define and implement sustainable development strategies as part of their comprehensive community planning efforts. The team provides technical assistance to disaster-affected communities as they plan for long-term recovery by introducing a wide array of environmental technologies and sustainable redevelopment planning practices.

8) *Emergency Watershed Protection: Department of Agriculture*: Natural Resources Conservation Service *(NRCS)*: The Emergency Watershed Protection (EWP) Program provides financial assistance to sponsors and individuals in implementing emergency measures to relieve imminent hazards to life and property created by a disaster. Activities include providing financial and technical assistance to remove debris from streams, protect destabilized stream banks, and purchase floodplain easements. The program is designed for the implementation of recovery measures. It is not necessary for a national emergency to be declared to be eligible for assistance.

9) *Emergency Relief Program (Transportation Infrastructure): Department of Transportation, Federal Highway Administration*: The Emergency Relief (ER) Program provides assistance for repair of Federal-aid roads. This funding is allocated to rebuild transportation facilities that are damaged extensively, causing a "disastrous impact" on transportation services. States must request ER funding in order to initiate this assistance program.

10) *United States Army Corps of Engineers*: Congress delegates to the United States Army Corps of Engineers (USACE) the authority and appropriations for projects through the Water Resources and Development Act (WRDA). Projects eligible for funding include the following: disaster response, water supply, shore protection, navigation, facilities design & construction, installation support, hydropower, recreation, flood damage reduction, environmental infrastructure, ecosystem restoration, master planning, regulatory projects, and the rehabilitation of flood control structures

State Funding:

1) *Section 208 Snagging and Clearing for Flood Control: United States Corps of Engineers*: USACE designs and constructs the project. Each project must be engineering feasible, complete within itself, and economically justified. The nonfederal sponsor must provide all lands, easements, and rights of way. Non-Federal sponsor pays all project costs in excess of the Federal limit of $500,000. Sponsor agrees to maintain the project.

2) *Volunteer Labor Force (G): Illinois Department of Corrections*: Prisoners can be used to sandbag, construct levees and flood fight. Prisoners are also occasionally used to clean streams of brush and debris or clean up following a flood disaster.

3) *Community Development Assistance Program (Community Development Block Grant: Illinois Department of Commerce and Community Affairs:* Eligible projects must include activities that improve community welfare, specifically in moderate or low-income areas. Conservation related projects can possibly include the acquisition of real property (e.g., flood-prone areas), construction of water or sewer facilities, and initiatives for energy conservation. Funding competition is intense. Application deadlines vary; no match required.

4) *Hazard Mitigation Assistance Program: IEMA Agency:* Governments must be enrolled and in good standing with the NFIP. Eligible initiatives are eligible for projects that include acquisition of insured structures and underlying real property for open space use. Provides up to 75% of project costs, 25% match required.

5) *Greenways and Trails Planning Assistance Program: Illinois Department of Natural Resources*: IDNR provides community-wide or individual assistance and training to communities trying to regulate floodplain development activities and reduce existing flood problems. Can provide communities with training manuals, model floodplain and storm water ordinances, technical assistance, risk assessment, and floodplain mapping.

6) *Open Space Lands Acquisition and Development (OSLAD) Program and Open Lands Trust Program: Illinois Department of Natural Resources*: Eligible products include money for acquisition and development of public parks for passive recreation/open spaces. Application deadlines vary. Conservation easement required with both programs. Funding is reimbursable up to 50% of project costs, reimbursable up to $2 million for the Trust Grant.

There are several sources of available funding for hazard mitigation projects. Those identified here, while they are significant, do not comprise all potential sources of funding. It should be noted that new programs can become available while existing programs can be modified or dropped. Many funds available are leveraged with “local” matching funds at various contribution percentages. Should any of the above funding sources be utilized, a detailed cost-benefit analysis should be completed prior to application. Diligence in keeping abreast of changes in funding opportunities will be necessary to institute hazard mitigation projects that take advantage of non-local funds.

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Macon, County of **Contact Name** James Root **Contact Phone No.** [redacted]
Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	2	"Storm water work on, along & around Baltimore Ave. between 441 @ Baltimore".	City of Decatur	Federal & Local	2015-2018	Significant drainage Improvements and reduced surface erosion & flooding	High
2.	1	Flood Study of Candlebrook sub-division.	City of Decatur	Federal & Local	2014-2015	Identify future mitigation Possibilities	Low
3.	1	Flood Study of Stevens Creek between Forsyth and Decatur.	City of Decatur County of Macon Decatur Park District	Federal & Local	2014-2015	Identify future mitigation Possibilities	Low
4.	4	Develop silt dams on water systems that supply Lake Decatur.	County of Macon	Federal & Local	2015-2018	Sizeable reduction in the amount of slit into the lake to reduce	Medium
5.	3	Provide back-up generators to water supply systems in unincorporated area.	County of Macon Long Creek Water District	Federal & Local	2014-2015	Supplemental water supply in the event of another severe drought	Medium

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Macon, County of **Contact Name** James Root **Contact Phone No.** [redacted]
Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
6.	2	Acquire flood plan Homes in Kruse Rd. area.	County of Macon	Federal & Local	2014-2018	Eliminate repetitive loss due to flooding.	Medium
7.	1	Distribute NOAA Weather radios to homes not covered by tornado sirens.	County of Macon	Federal & Local	2014-2018	Reduce the risk to life to those not covered by Warning sirens.	Low
8.	1	Storm Water project for Blue Mound Township to correct flash flood problems over roads.	County of Macon – Meredith Miller	Federal & Local	2014-2018	Reduce traffic problems Created by water.	Low
9.	4	Install additional sirens within The city of Decatur to cover area not currently covered by existing sirens.	City of Decatur	Federal & Local	2014-2016	Correct shortfalls in the City siren coverage.	Low
10.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Macon County Conservation District **Contact Name** Kathleen Merner **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	2	Retro-fit Sangamon River Bike Bridge to withstand flood impacts.	Macon County Conservation District	HMGP & General Funds	2018	Medium	$250,000
2.	2	Flood Proof Historic Rock Springs Bottling House to withstand flooding from Sangamon River.	Macon County Conservation District	HMGP & General Funds	2018	Medium	$175,000
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:

Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Argenta, Village of **Contact Name** Cindy Luedke, Sherry Koszezo **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	3	Generator as Back-up for water tower & Village Hall.	Village of Argenta – Mayor	HMGP & Water General Funds	2014	Low	Low
2.	2	Security & Monitoring System for Village Hall.	Village of Argenta – Mayor	HMGP & Water General Funds	2014	Medium	Medium
3.	3	Purchase NOAA radios for each household.	Village of Argenta – Mayor	HMGP & Water General Funds	2014	Medium	Low
4.	3	Purchase 2 rain barrels for each household.	Village of Argenta – Mayor	HMGP & Water General Funds	2014	Low	Low

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Blue Mound, Village of **Contact Name** Chief Tom Bingamon **Contact Phone No.** [redacted]
Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	1	Provide Generator for Village Hall and Other Critical Infrastructure.	Blue Mound Village Board – Village President	General Fund	2018	Low	Low
2.	5	Provide Material – Town Meetings – Brochures.	Blue Mound Police Department – Chief Tom Bingamon	General Fund	2018	Low	Low
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Decatur, City of **Contact Name** Mark L. Smith **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	1	Major drainage & storm water work on, along & around Baltimore Ave.	City of Decatur Macon County Hwy Sanitary Dist. (Various Contacts)	Unknown	2015-2018	Significant drainage Improvements and reduced surface erosion & flooding	High
2.	2	Flood prone prop. mitigation/buyout on E. Mound Rd.	City of Decatur & Macon County (Mark Smith)	FEMA & Local	2014-2015	Removal of up to 9 residences & one church which are below BFE	Medium
3.	1	Emergency Water Wells (4).	City of Decatur (Keith Alexander)	Federal & Local	2014-2015	Adequate City water in the event of another severe drought	High
4.	1	Piping DeWitt Well field water to Lake Decatur.	City of Decatur (Keith Alexander)	Federal & Local	2015-2017	Sizeable reduction in the amount of ground water "lost" via discharge into Friends Creek 10 miles to Lake Decatur	High
5.	1	Piping water from Lake Tokowazarwa 1.5 miles to Lake Decatur.	City of Decatur (Keith Alexander)	Federal & Local	2014-2015	Supplemental water supply in the event of another severe drought	High

†**Benefit and Cost estimates should be based on these categories**:

Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Decatur, City of **Contact Name** Mark L. Smith, Keith Alexander **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	4	Silt dams on Big Creek.	City of Decatur Macon County SWCD (Various Contacts)	Unknown	2015-2016	Silt reduction into Lake Decatur and soil erosion control, improved Lake life and water quality	Medium
2.	2	Adequate storm water drainage and retention to reduce repetitive damages to 3 houses on.	City of Decatur Macon County Sanitary District (Various Contacts)	Unknown	2014-2015	Eliminate repetitive loss of use and value from continued storm water related damages.	Low
3.	1	Detailed profile and BFE study of the Stevens Creek watershed.	City of Decatur Village of Forsyth Macon County Sanitary District (Various Contracts)	FEMA	2014-2015	Accurate BFE, FIRM for home owners, insurance companies, with a target of reduced rates	Low
4.	1	Site planning for disaster incident at South Water St. water plant.	City of Decatur Macon County EMA (Various Contacts)	Macon County EMA	2014-2015	Adequate and timely response planning in the event a natural or man-made incident were to "take down" the City's WTP	Low
5.	1,3,5	Create a Lake Decatur EAP.	City of Decatur,	TBD	2014	High	$100,000

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Sanitary District of Decatur **Contact Name** Gregory D. Pyles **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	4	Develop an alternate energy strategy for SOD facilities during power outages.	I&C Manager – J.D. Malone	General Funds	2016-2018	High	Medium
2.	1	Develop a continuity of operations strategy for keeping SOD facilities operational in times of crisis.	Safety Coordinator /Operations Manager – Greg Pyles	General Funds	2016-2018	Medium	Low
3.	2	Level improvement and Certification.	District Engineer – Don Miller	General Funds	2014-2018	High	Low
4.	3	Mobile pumping.	District Engineer – Don Miller	General Funds	2014-2018	High	Low
5.	3	Groundwater development project.	District Engineer – Don Miller	General Funds	2016-2020	High	High

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Sanitary District of Decatur **Contact Name** Gregory D. Pyles **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	2	Plant Security.	Safety Coordinator - Greg Pyles	General Funds	2014-2018	High	Medium
2.	2	Internet / Computer / SCADA security improvements.	MIS -Vincent McCauley	General Funds	2016-2019	High	Medium
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Forsyth, Village of **Contact Name** Mike Miller, Village Administrator **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	1	Acquire future water supply well site.	Village of Forsyth, Mike Miller	Local	2018	High	Low
2.	4	Reduce flooding along Stevens Creek.	Macon County Jay Dunn	Local	2023	High	High
3.	5	CH 20 Storm Sewer PH 1 Reduce flooding in Beaver Creek Estates.	Village of Forsyth, Mike Miller	Local	2018	Medium	High
4.	6	Timber Lane Flood Berm.	Village of Forsyth, Mike Miller	Local	2028	Low	Low
5.	3	Upgrade tornado sirens.	Village of Forsyth, Mike Miller	Local	2015	Medium	Low
6.	2	Coordinate planning with Mall for disaster readiness.	Hickory Point Mall	Private	2015	Low	Low

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Harristown, Village of **Contact Name** Gordon Schrishuhn **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	4	Establish Potable Water Well.	Village of Harristown	HMGP & Local	2018	Medium	Medium
2.	4	3 Back-up Generators for Sewer and Water Pumps.	Village of Harristown	HMGP & Local	2015	Medium	Low
3.	1	Tree removal to maintain utility path.	Village of Harristown	HMGP & Local	2016	Medium	Low
4.	1	Ditching to ensure storm drainage.	Village of Harristown	HMGP & Local	2016	Medium	Low
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Long Creek, Village of **Contact Name** Cheryl Smith **Contact Phone No.** _____
Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	3	Provide back-up generators to water supply systems in the Village of Long Creek	Long Creek Water District	Federal & Local	2014-2018	Supplemental Power for water supply in the event of severe weather	Medium
2.							
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Mitigation Activity Development Worksheet
Mitigation Strategy
April 1, 2013

Community Name Macon, City of **Contact Name** Ed Aukamp **Contact Phone No.** [redacted]
Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	2	Implement a tile system for storm water drainage.	City of Macon – Ed Aukamp – Administrator	TIF Funds	2018	Medium	Medium
2.	4	Tornado Sirens – Walsh Park & Hogan Hills	City of Macon – Ed Aukamp – Administrator	City of Macon – Ed Aukamp – Administrator	TIF Funds	High	Low
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Maroa, City of **Contact Name** Brad Wilkey **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	3	Provide back-up generators to city hall.	City of Maroa Brad Wilkey	Federal & Local	2014-2015	To provide for shelter during frequent power outages.	Medium
2.	4	Install additional sirens within the city in areas not currently covered by existing sirens.	City of Maroa Brad Wilkey	Federal & Local	2018	Correct shortfalls in the City siren coverage.	Low
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:

Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Mount Zion, Village of **Contact Name** Julie Miller **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	3	Upgrade warning sirens.	Village of Mt. Zion – Julie Miller	HMGP & General Fund	2016	Low	Low
2.	4	Elevate section of Sulphur Springs Rd. that floods.	Village of Mt. Zion – Julie Miller	HMGP & General Fund	2018	Medium	Medium
3.	1	Promote use of weather radios.	Village of Mt. Zion – Julie Miller	HMGP & General Fund	2013-2014	Low	Low
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Niantic, Village of **Contact Name** Randy Hiser **Contact Phone No.** [redacted]

Mitigation Goals:

1. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
2. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
3. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
4. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
5. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	4	Build Storm Shelter	Village of Niantic – Randy Hiser	Federal / Local	2018	Strengthen Infrastructure - Medium	Medium
2.	4	Tornado Sirens	Village of Niantic – Randy Hiser	Federal / Local	2018	Correct shortages in siren coverage. - Medium	Low
3.							
4.							
5.							

†**Benefit and Cost estimates should be based on these categories**:

Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Community Name Warrensburg, Village of **Contact Name** Stephen W. Mills **Contact Phone No.** [redacted]

Mitigation Goals:

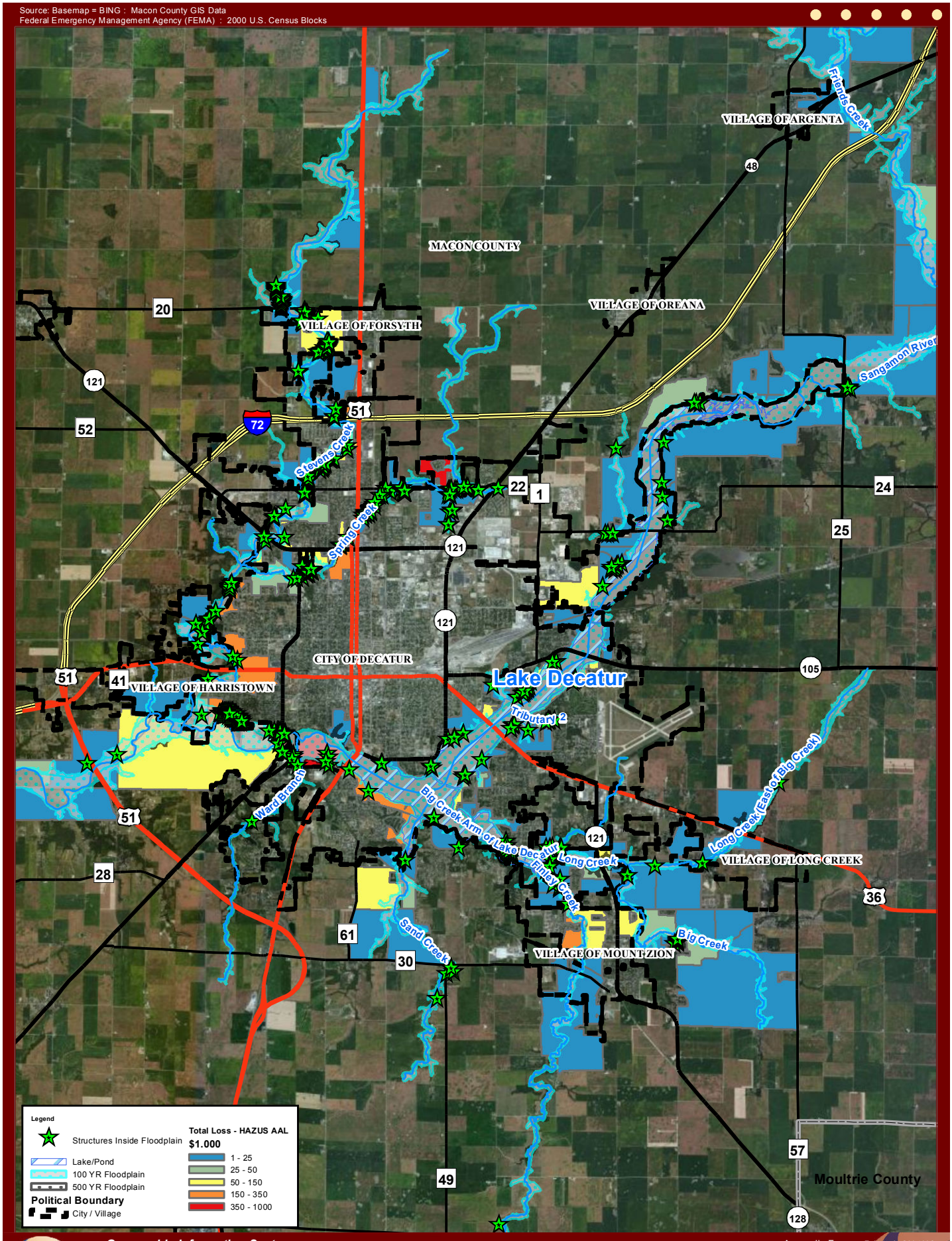
6. **Preventative Activities**. Reduce risks through regulations including building codes, development outside of hazardous areas, and local planning or capital improvement projects.
7. **Property Protection**. Reduce exposure to hazards through building or parcel specific activities such as flood proofing, structure acquisition, or retrofitting.
8. **Emergency Services**. Reduce impacts through response and recovery activities that are implemented during a disaster.
9. **Structural Projects**. Minimize impacts through projects, such as detention basins, tornado shelters, tornado sirens, etc.
10. **Public Information**. Assist residents to prepare for risks and protective measures to better protect themselves and their property.

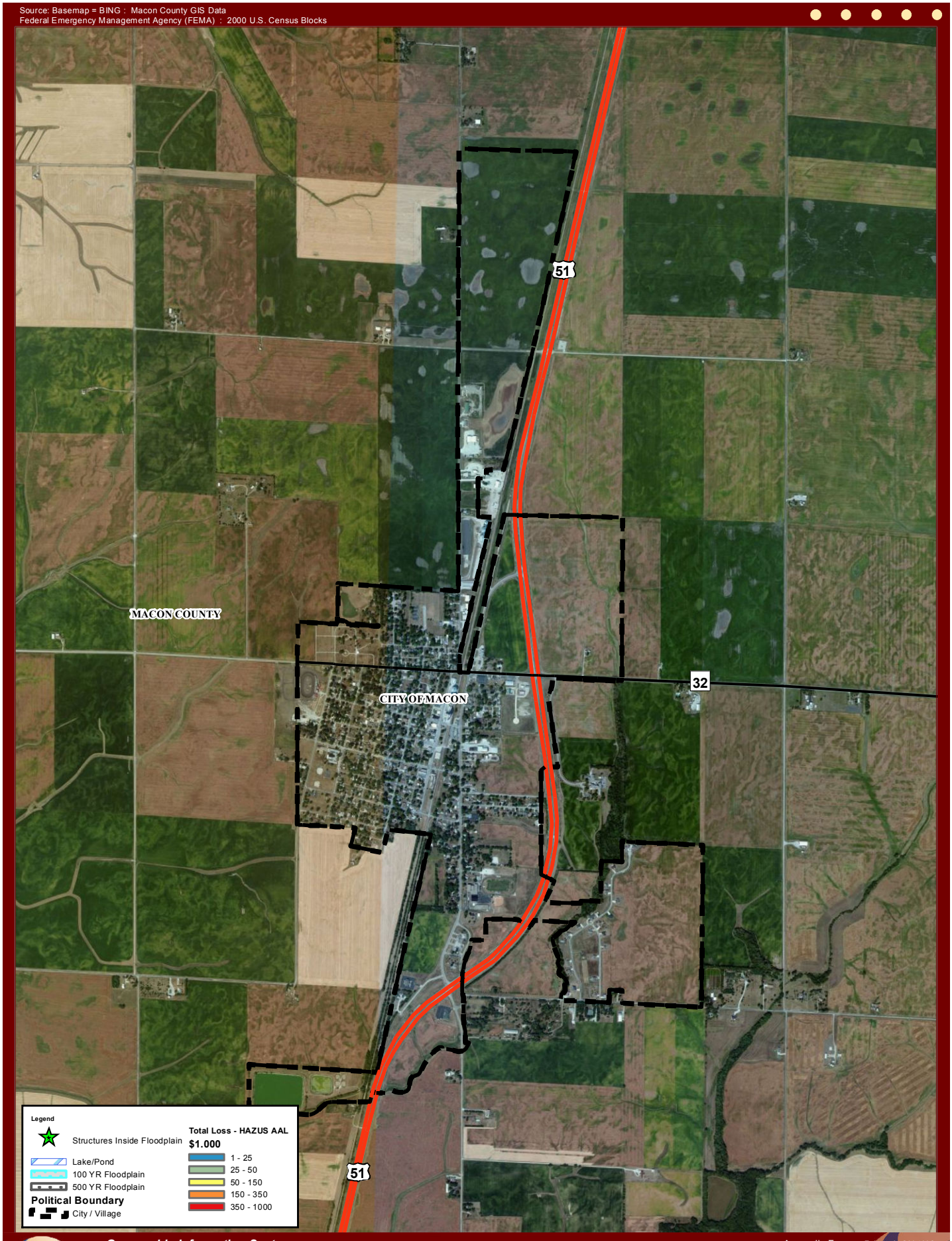
Item Number	Goal Number	Mitigation Action	Responsible Agency & Contact Person	Funding Source	Implementation Timeline	Estimated Benefits†	Estimated Costs†
1.	4	Purchase another Tornado Alert Siren.	Village Board – Steve Mills	General Funds	2018	Medium	Medium
2.	5	Electric Public Information Sign.	Village Board – Steve Mills	General Funds	2018	Low	Low
3.	4	Back-up generators for new water plant.	Village Board – Steve Mills	General Funds	2018	Low	Low
4.	4	Back-up generators for sewer lift stations.	Village Board – Steve Mills	General Funds	2018	Low	Low
5.							

†**Benefit and Cost estimates should be based on these categories**:
Less than $100,000 = Low
$100,000 - $500,000 = Medium
More than $500,000 = High

Appendix F

HAZUS Analysis Flooding and Earthquakes


Source: Basemap = BING : Macon County GIS Data
Federal Emergency Management Agency (FEMA) : 2000 U.S. Census Blocks
VILLAGE OF ARGENTA
Friends Creek
48
MACON COUNTY
VILLAGE OF OREANA
20
VILLAGE OF FORSYTH
Sangamon River
121
52
51
72
Stevens Creek
22
1
24
Spring Creek
25
121
121
CITY OF DECATUR
Lake Decatur
105
51
41
VILLAGE OF HARRISTOWN
Tributary 2
Ward Branch
Big Creek Arm of Lake Decatur
Long Creek (East of Big Creek)
51
121
Long Creek
VILLAGE OF LONG CREEK
28
Finley Creek
36
61
Sand Creek
Big Creek
VILLAGE OF MOUNT ZION
30
57
Moultrie County
49
128
Legend
Structures Inside Floodplain
Lake/Pond
100 YR Floodplain
500 YR Floodplain
Political Boundary
City / Village
Total Loss - HAZUS AAL
$1.000
1 - 25
25 - 50
50 - 150
150 - 350
350 - 1000
Geographic Information Systems
Appendix F
Printed: 2/14/13
0
2.5 Miles
N
HAZUS - AAL
Potential Loss
CITY OF DECATUR
Macon County Multi-Hazard Mitigation Plan
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Appendix F Printed: 2/14/13

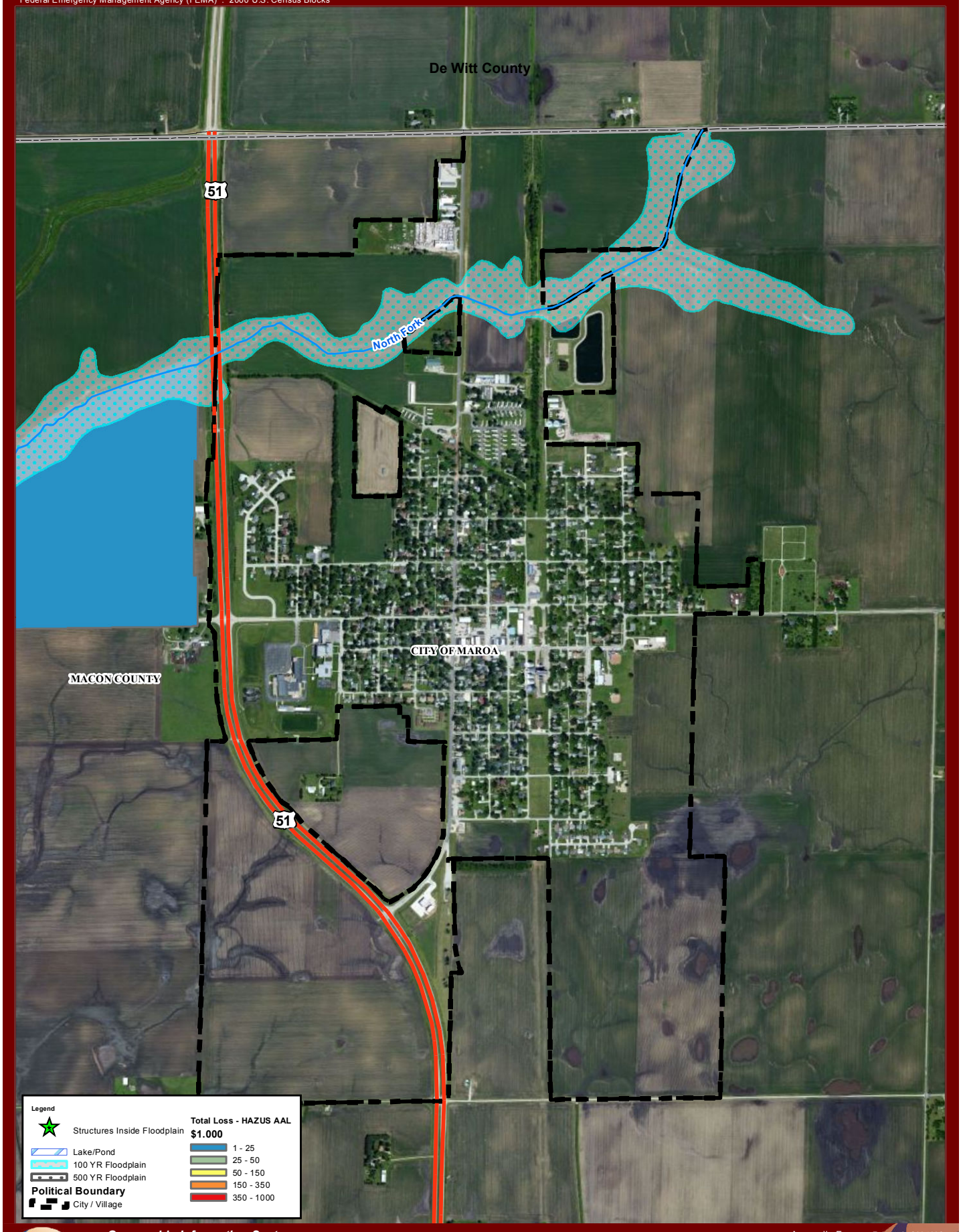
0 0.4 Miles

N

HAZUS - AAL
Potential Loss
CITY OF MACON
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING : Macon County GIS Data
Federal Emergency Management Agency (FEMA) : 2000 U.S. Census Blocks



Geographic Information Systems

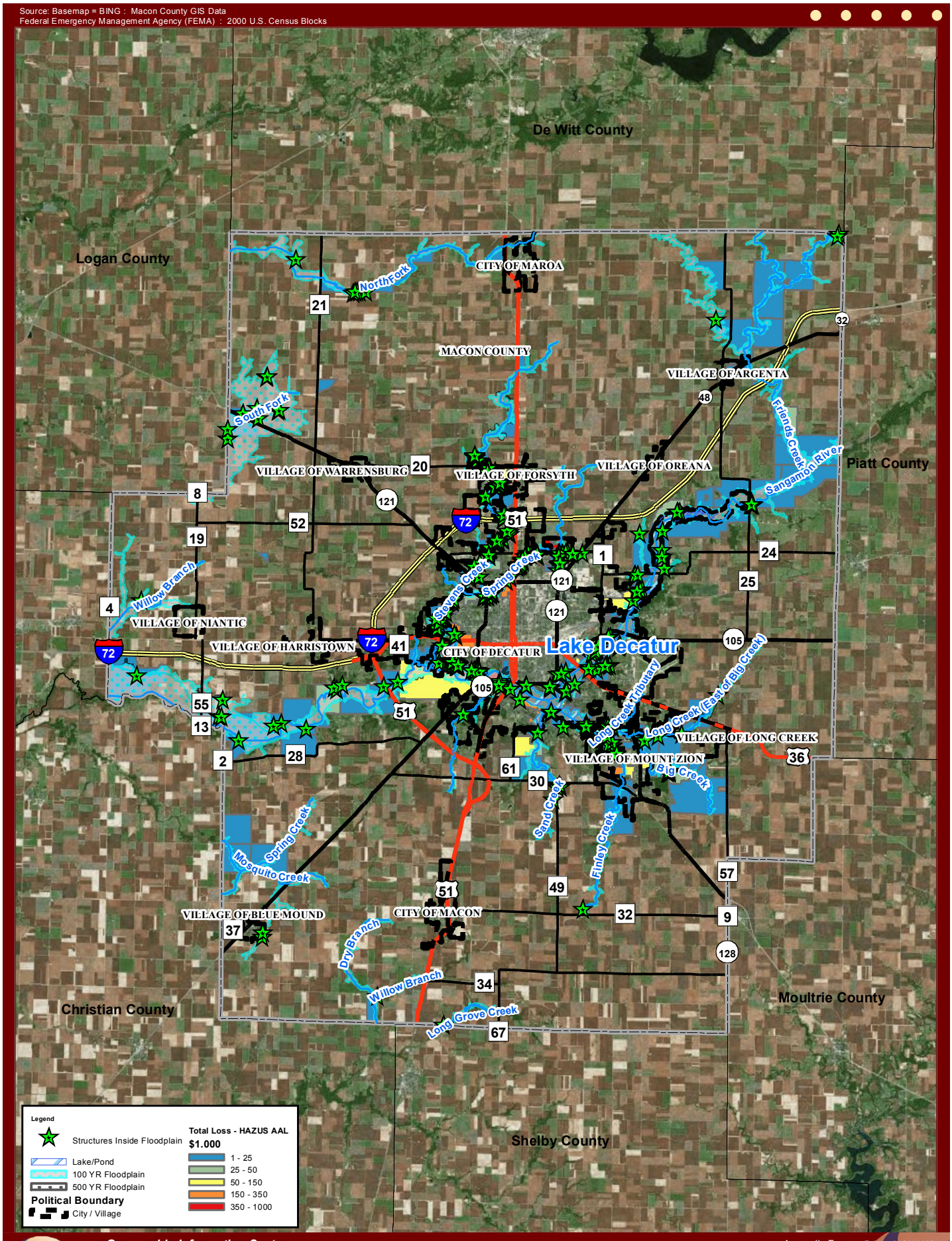
Appendix F Printed: 2/14/13

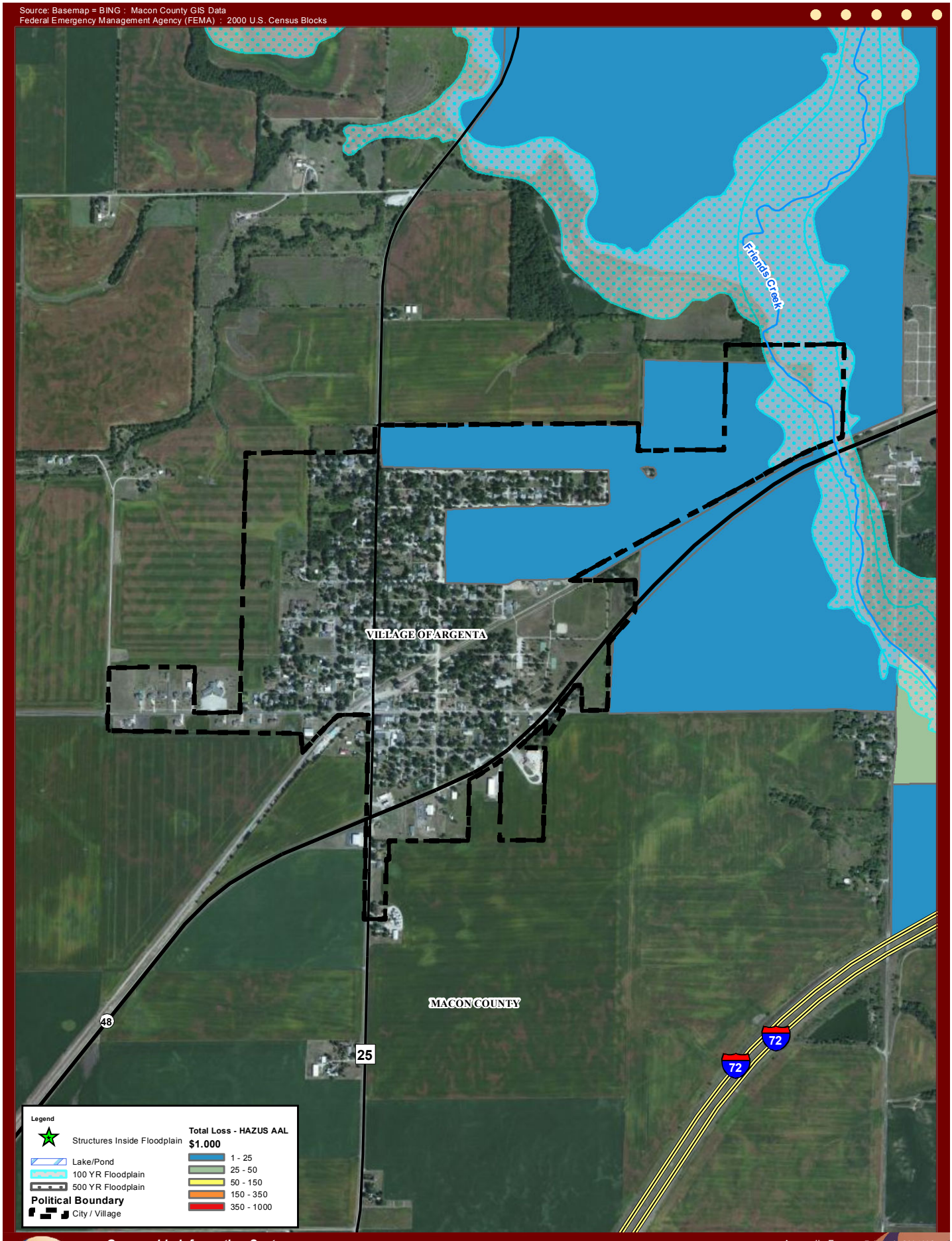
0 0.25 Miles

N

HAZUS - AAL
Potential Loss
CITY OF MAROA
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com


Source: Basemap = BING : Macon County GIS Data
Federal Emergency Management Agency (FEMA) : 2000 U.S. Census Blocks
De Witt County
Logan County
Piatt County
Christian County
Moultrie County
Shelby County
MACON COUNTY
CITY OF MAROA
VILLAGE OF ARGENTA
VILLAGE OF WARRENSBURG
VILLAGE OF FORSYTH
VILLAGE OF OREANA
VILLAGE OF NIANTIC
VILLAGE OF HARRISTOWN
CITY OF DECATUR
Lake Decatur
VILLAGE OF LONG CREEK
VILLAGE OF MOUNT ZION
VILLAGE OF BLUE MOUND
CITY OF MACON
North Fork
South Fork
Willow Branch
Stevens Creek
Spring Creek
Long Creek Tributary
Long Creek (East of Big Creek)
Big Creek
Sand Creek
Finley Creek
Mosquito Creek
Dry Branch
Long Grove Creek
Friends Creek
Sangamon River
Legend
Structures Inside Floodplain
Lake/Pond
100 YR Floodplain
500 YR Floodplain
Political Boundary
City / Village
Total Loss - HAZUS AAL
$1.000
1 - 25
25 - 50
50 - 150
150 - 350
350 - 1000
0
4.5 Miles
N
Geographic Information Systems
Appendix F
Printed: 2/14/13
HAZUS - AAL
Potential Loss
MACON COUNTY
Macon County Multi-Hazard Mitigation Plan
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Appendix F Printed: 2/14/13

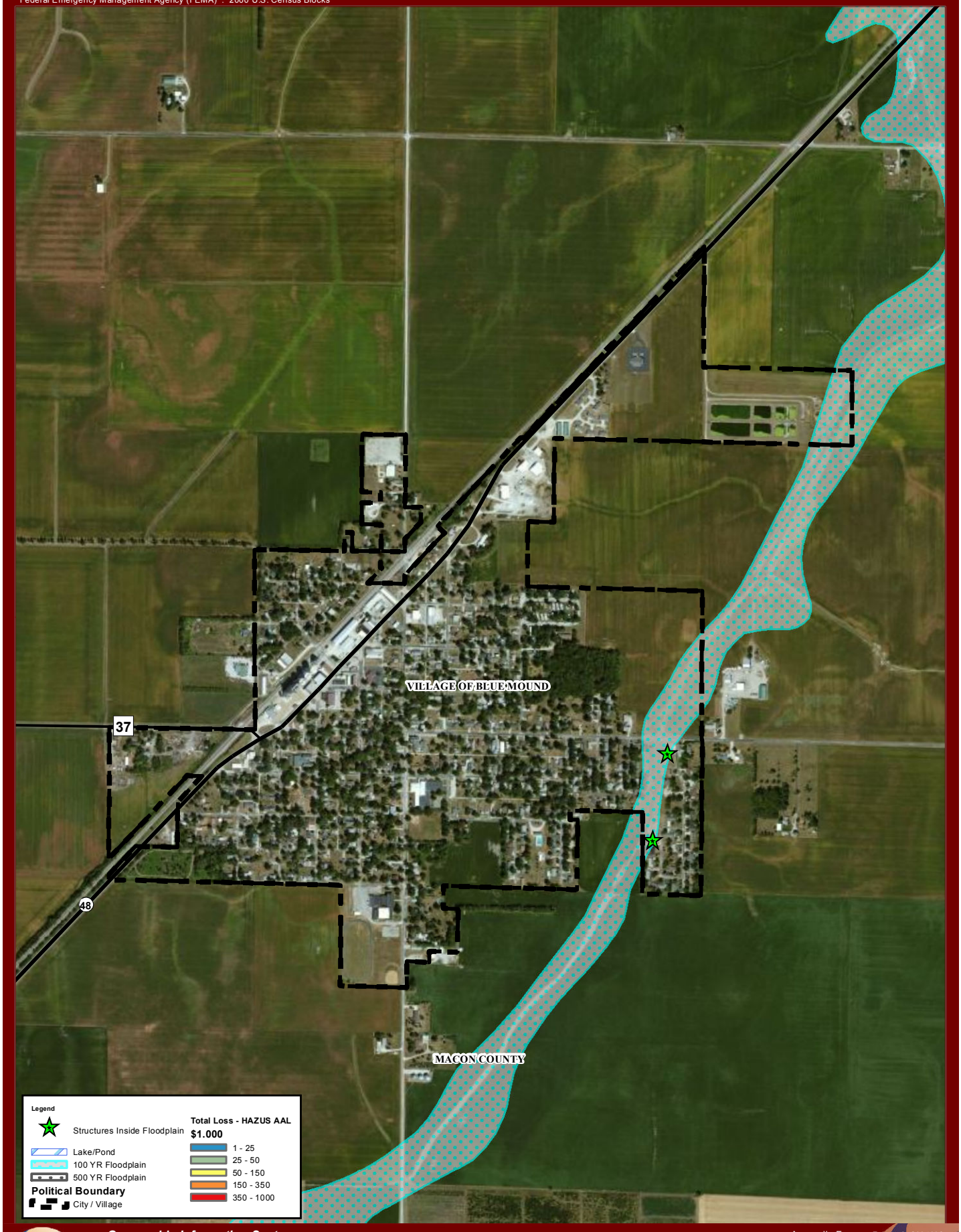
0 0.25 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF ARGENTA
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING : Macon County GIS Data
Federal Emergency Management Agency (FEMA) : 2000 U.S. Census Blocks



Geographic Information Systems

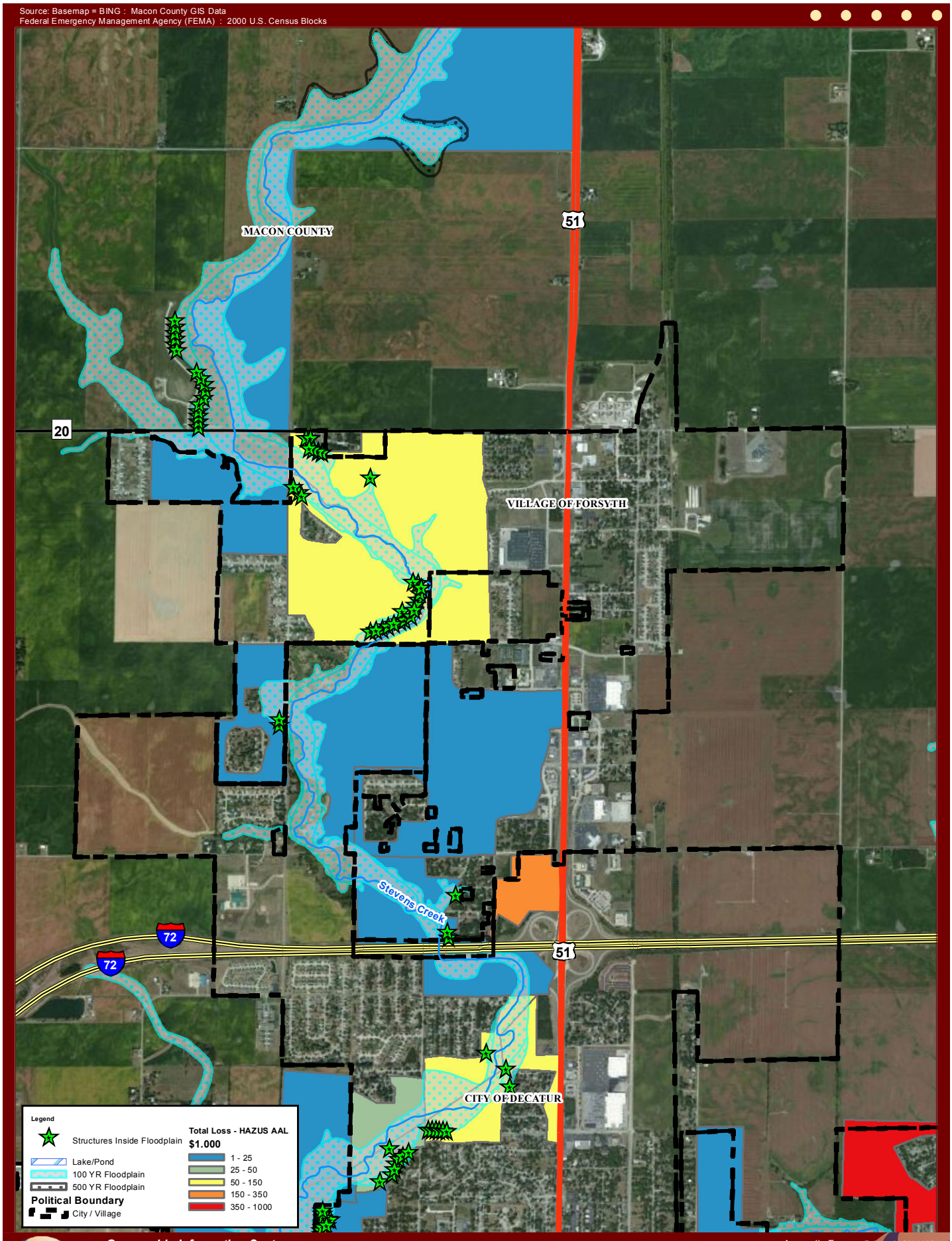
Appendix F Printed: 2/14/13

0 0.2 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF BLUE MOUND
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

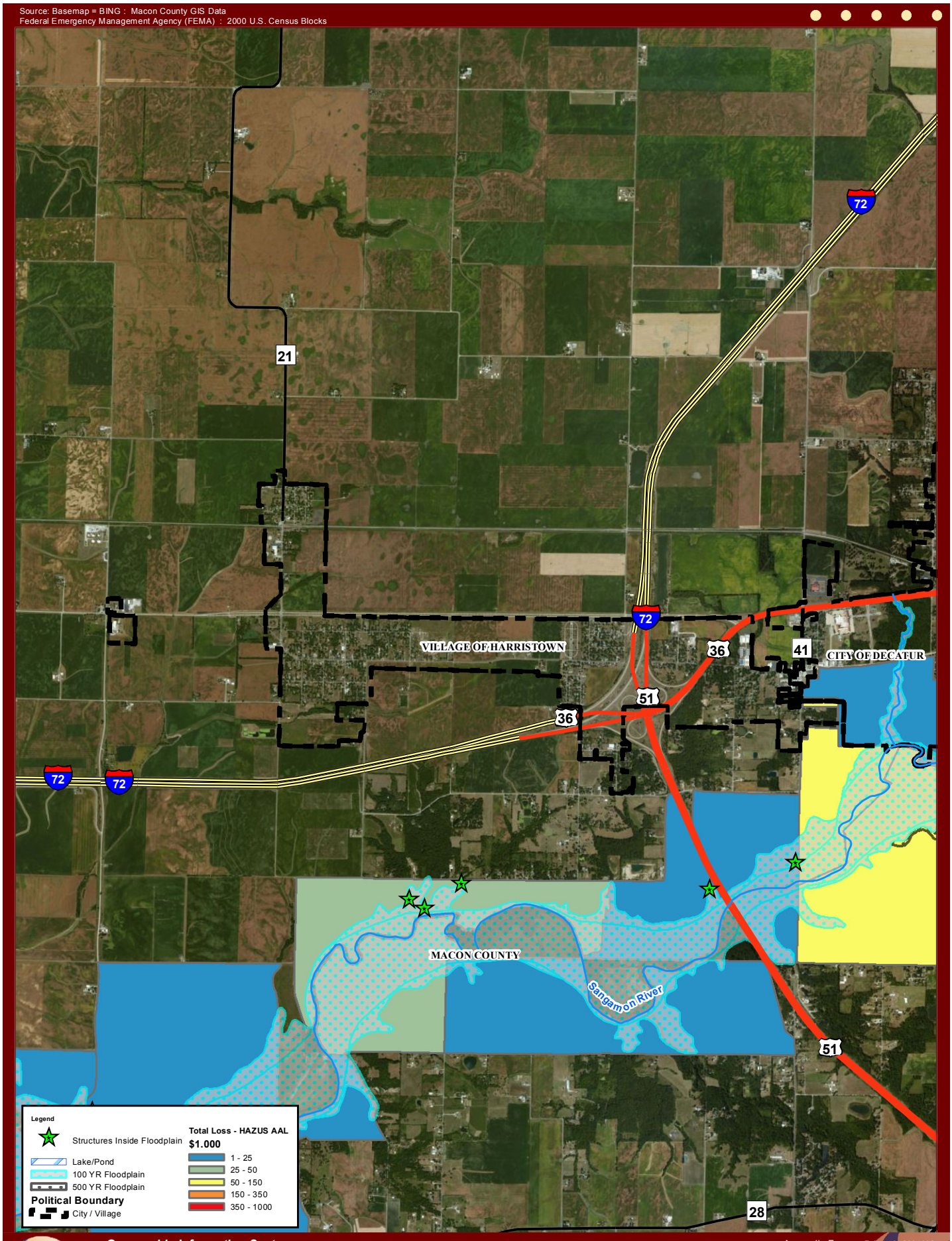
Appendix F Printed: 2/14/13

0 0.45 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF FORSYTH
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

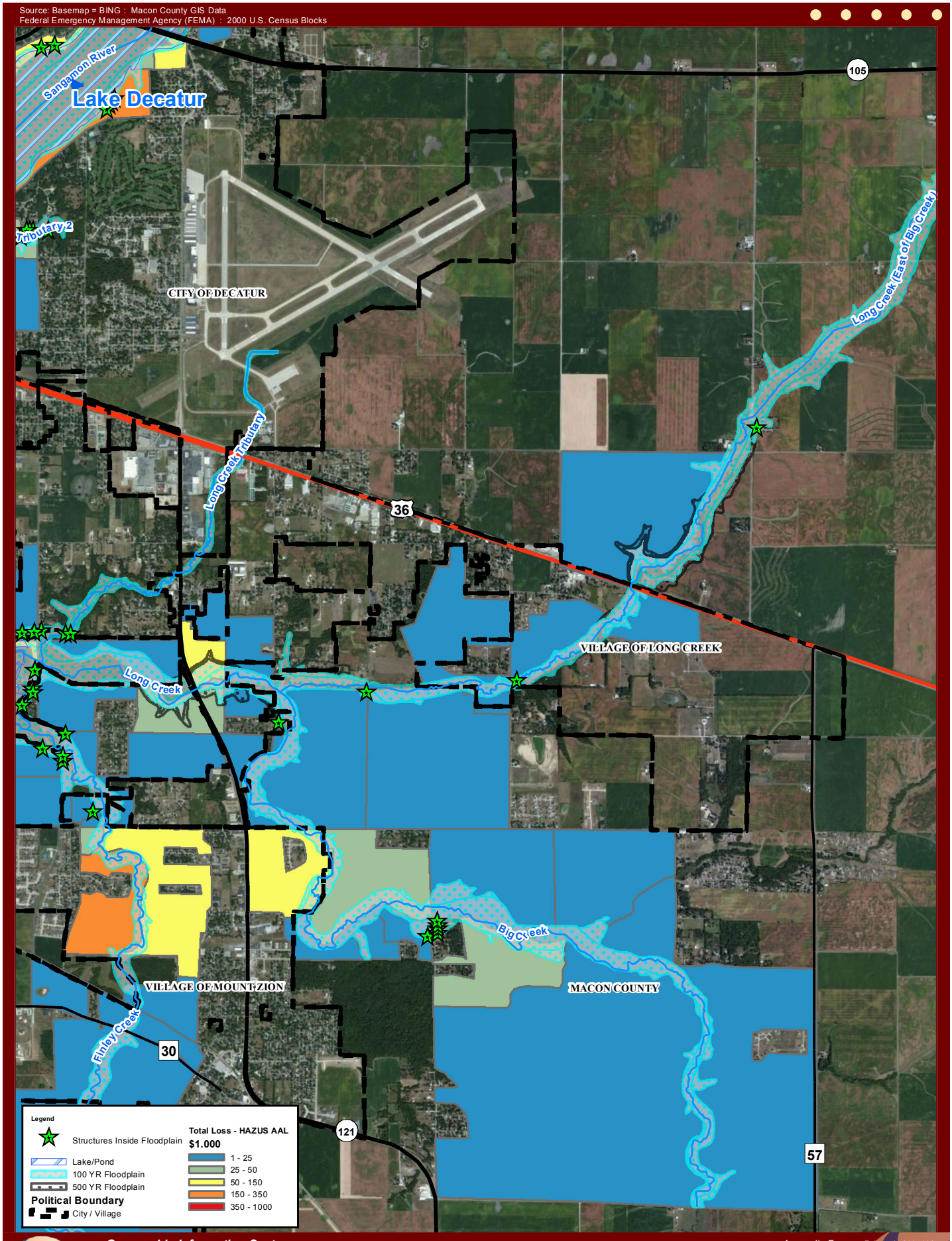
Appendix F Printed: 2/14/13

0 0.75 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF HARRISTOWN
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

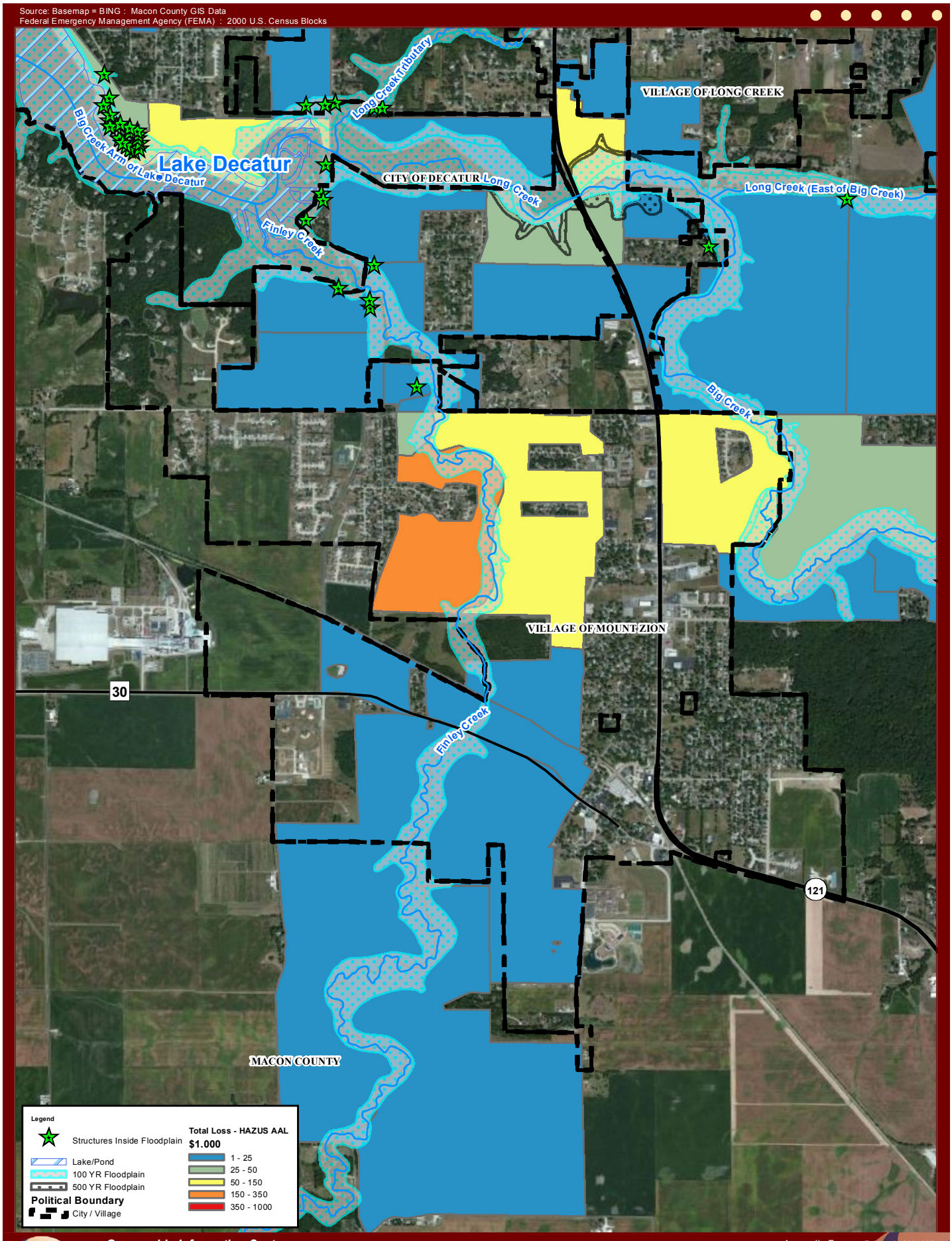
Appendix F Printed: 2/14/13

0 0.75 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF LONG CREEK
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Appendix F Printed: 2/14/13

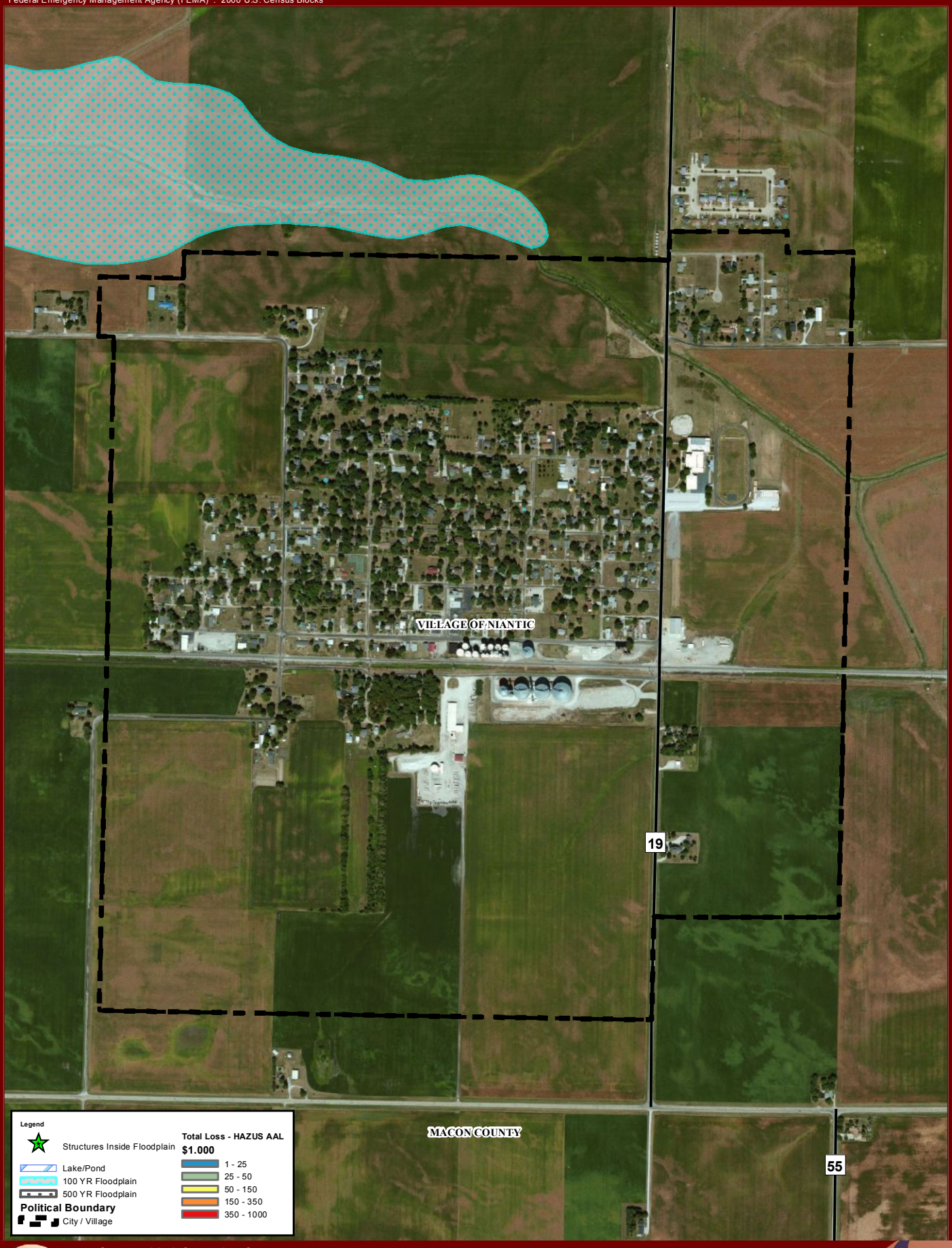
0 0.45 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF MOUNT ZION
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING : Macon County GIS Data
Federal Emergency Management Agency (FEMA) : 2000 U.S. Census Blocks



Geographic Information Systems

Appendix F Printed: 2/14/13

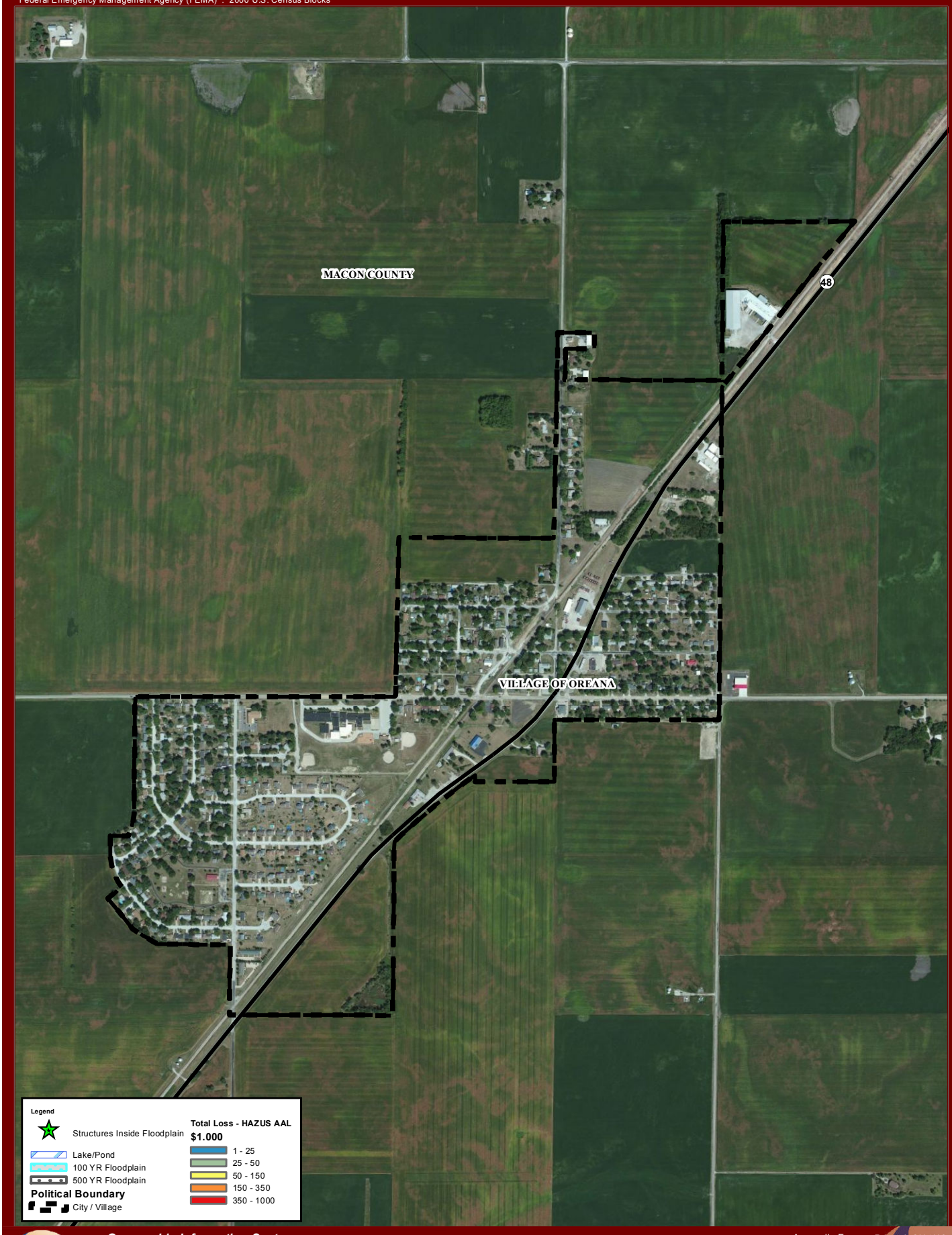
0 0.15 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF NIANTIC
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING : Macon County GIS Data
Federal Emergency Management Agency (FEMA) : 2000 U.S. Census Blocks



Geographic Information Systems

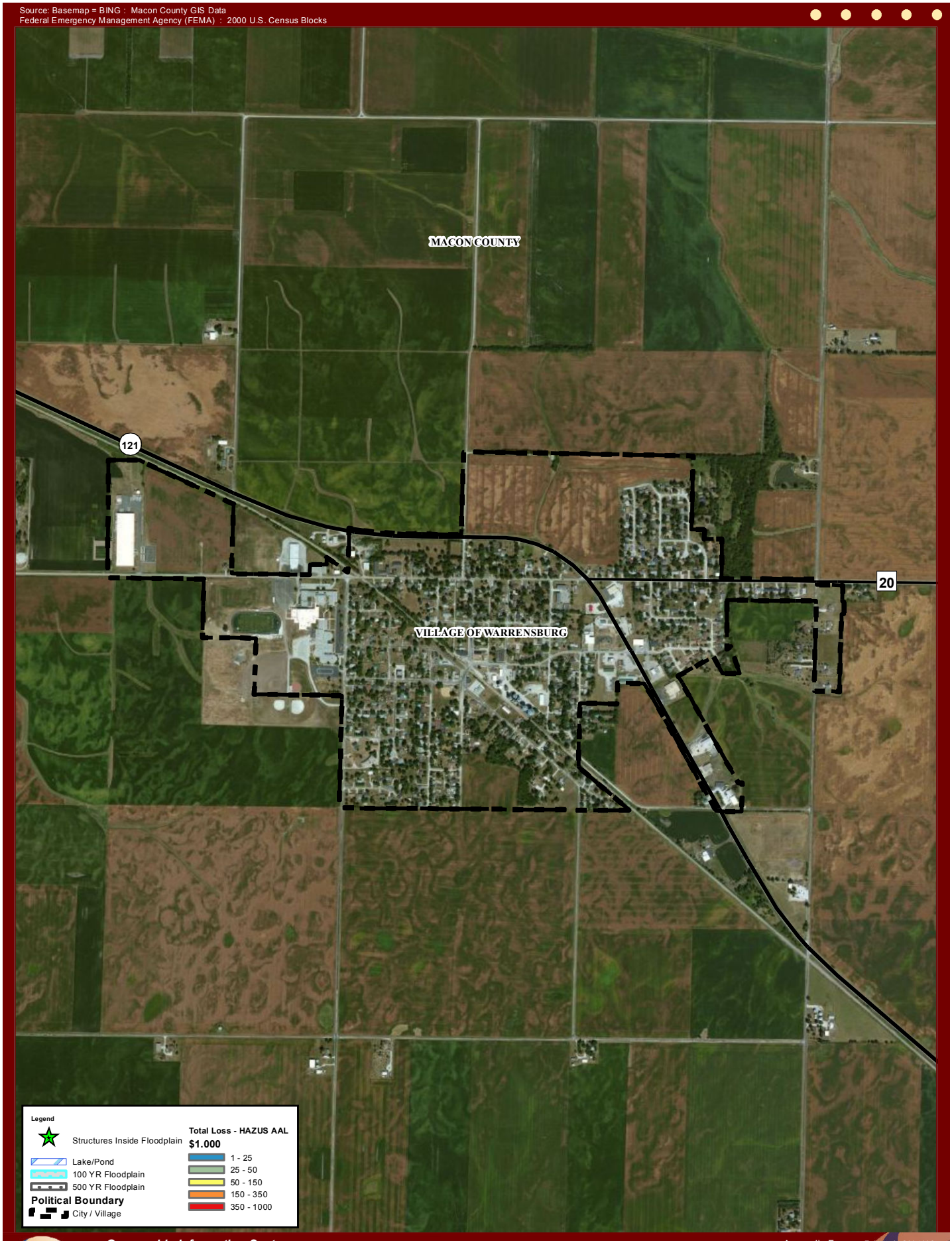
Appendix F Printed: 2/14/13

0 0.2 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF OREANA
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Appendix F Printed: 2/14/13

0 0.25 Miles

N

HAZUS - AAL
Potential Loss
VILLAGE OF WARRENSBURG
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

VIL

Hazus-MH: Flood Event Report

Region Name: Macon_County_IL_Level_1_updated

Flood Scenario: Level_1

Print Date: Friday, February 08, 2013

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Illinois

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 581 square miles and contains 4,119 census blocks. The region contains over 47 thousand households and has a total population of 114,706 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 52,620 buildings in the region with a total building replacement value (excluding contents) of 8,509 million dollars (2006 dollars). Approximately 94.02% of the buildings (and 74.67% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 52,620 buildings in the region which have an aggregate total replacement value of 8,509 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure ($1000)	Percent of Total
Residential	6,353,640	74.7%
Commercial	1,315,972	15.5%
Industrial	321,777	3.8%
Agricultural	43,770	0.5%
Religion	193,403	2.3%
Government	60,736	0.7%
Education	219,241	2.6%
Total	**8,508,539**	**100.00%**

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure ($1000)	Percent of Total
Residential	1,260,803	76.0%
Commercial	302,217	18.2%
Industrial	39,828	2.4%
Agricultural	10,774	0.6%
Religion	24,817	1.5%
Government	5,703	0.3%
Education	14,796	0.9%
Total	**1,658,938**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 404 beds.
There are 62 schools, 12 fire stations, 7 police stations and no emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	Macon_County_IL_Level_1_updated
Scenario Name:	Level_1
Return Period Analyzed:	Annual
Analysis Options Analyzed:	No What-Ifs

Building Damage

General Building Stock Damage

Analysis has not been performed for this Scenario.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Analysis has not been performed for this Scenario.												

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Analysis has not been performed for this Scenario.												

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 404 hospital beds available for use. On the day of the scenario flood event, the model estimates that 404 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	12	0	0	0
Hospitals	2	0	0	0
Police Stations	7	0	0	0
Schools	62	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.

(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

Analysis has not been performed for this Scenario.

Social Impact

Shelter Requirements

Analysis has not been performed for this Scenario.

Economic Loss

The total economic loss estimated for the flood is 9.17 million dollars, which represents 0.55 % of the total replacement value of the scenario buildings.

Building-Related Losses

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 flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 9.14 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 55.39% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	3.27	0.72	0.21	0.07	4.27
	Content	1.81	2.02	0.47	0.47	4.76
	Inventory	0.00	0.02	0.09	0.01	0.11
	Subtotal	**5.08**	**2.76**	**0.76**	**0.55**	**9.14**
Business Interruption						
	Income	0.00	0.01	0.00	0.00	0.01
	Relocation	0.00	0.00	0.00	0.00	0.00
	Rental Income	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.01	0.00	0.00	0.01
	Subtotal	**0.00**	**0.02**	**0.00**	**0.00**	**0.03**
ALL	**Total**	**5.08**	**2.78**	**0.76**	**0.55**	**9.17**

Appendix A: County Listing for the Region

Illinois

- Macon

Appendix B: Regional Population and Building Value Data

		Building Value (thousands of dollars)		
	Population	Residential	Non-Residential	Total
Illinois				
Macon	114,706	6,353,640	2,154,899	8,508,539
Total	**114,706**	**6,353,640**	**2,154,899**	**8,508,539**
Total Study Region	**114,706**	**6,353,640**	**2,154,899**	**8,508,539**

Hazus-MH: Earthquake Event Report

Region Name: Macon_HMP

Earthquake Scenario: Annualized_Loss_Earthquake

Print Date: August 23, 2012

Totals only reflect data for those census tracts/blocks included in the user's study region.

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

Table of Contents

General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

Illinois

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 584.62 square miles and contains 36 census tracts. There are over 46 thousand households in the region which has a total population of 114,706 people (2002 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 52 thousand buildings in the region with a total building replacement value (excluding contents) of 8,508 (millions of dollars). Approximately 94.00 % of the buildings (and 75.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 2,350 and 630 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 52 thousand buildings in the region which have an aggregate total replacement value of 8,508 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 70% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 404 beds. There are 62 schools, 12 fire stations, 7 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 4 dams identified within the region. Of these, 2 of the dams are classified as 'high hazard'. The inventory also includes 108 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 2,980.00 (millions of dollars). This inventory includes over 298 kilometers of highways, 313 bridges, 6,098 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	313	268.60
	Segments	91	1,759.10
	Tunnels	0	0.00
		Subtotal	**2,027.70**
Railways	Bridges	29	2.30
	Facilities	3	8.00
	Segments	89	187.00
	Tunnels	0	0.00
		Subtotal	**197.30**
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
		Subtotal	**0.00**
Bus	Facilities	1	1.20
		Subtotal	**1.20**
Ferry	Facilities	0	0.00
		Subtotal	**0.00**
Port	Facilities	0	0.00
		Subtotal	**0.00**
Airport	Facilities	1	10.70
	Runways	3	113.90
		Subtotal	**124.50**
		Total	**2,350.70**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	61.00
	Facilities	5	184.80
	Pipelines	0	0.00
		Subtotal	**245.80**
Waste Water	Distribution Lines	NA	36.60
	Facilities	6	443.60
	Pipelines	0	0.00
		Subtotal	**480.10**
Natural Gas	Distribution Lines	NA	24.40
	Facilities	1	1.20
	Pipelines	0	0.00
		Subtotal	**25.60**
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**0.00**
Electrical Power	Facilities	0	0.00
		Subtotal	**0.00**
Communication	Facilities	11	1.20
		Subtotal	**1.20**
		Total	**752.80**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	Annualized_Loss_Earthquake
Type of Earthquake	Probabilistic
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	Annualized
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	NA
Depth (Km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Building Damage

Hazus estimates that about 0 buildings will be at least moderately damaged. This is over 0.00 % of the buildings in the region. There are an estimated 0 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	79	0.16	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	894	1.78	0	0.00	0	0.00	0	0.00	0	0.00
Education	23	0.05	0	0.00	0	0.00	0	0.00	0	0.00
Government	16	0.03	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	126	0.25	0	0.00	0	0.00	0	0.00	0	0.00
Other Residential	9,575	19.11	0	0.00	0	0.00	0	0.00	0	0.00
Religion	95	0.19	0	0.00	0	0.00	0	0.00	0	0.00
Single Family	39,292	78.43	0	0.00	0	0.00	0	0.00	0	0.00
Total	**50,100**		**0**		**0**		**0**		**0**	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	36,450	72.75	0	0.00	0	0.00	0	0.00	0	0.00
Steel	172	0.34	0	0.00	0	0.00	0	0.00	0	0.00
Concrete	384	0.77	0	0.00	0	0.00	0	0.00	0	0.00
Precast	36	0.07	0	0.00	0	0.00	0	0.00	0	0.00
RM	32	0.06	0	0.00	0	0.00	0	0.00	0	0.00
URM	10,850	21.66	0	0.00	0	0.00	0	0.00	0	0.00
MH	2,176	4.34	0	0.00	0	0.00	0	0.00	0	0.00
Total	**50,100**		**0**		**0**		**0**		**0**	

*Note:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 404 hospital beds available for use. On the day of the earthquake, the model estimates that only 394 hospital beds (98.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 99.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	2	0	0	2
Schools	62	0	0	62
EOCs	0	0	0	0
PoliceStations	7	0	0	7
FireStations	12	0	0	12

Transportation and Utility Lifeline Damage

Table 6 provides damage estimates for the transportation system.

Table 6: Expected Damage to the Transportation Systems

System	Component		Number of Locations			
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	91	0	0	91	91
	Bridges	313	0	0	313	313
	Tunnels	0	0	0	0	0
Railways	Segments	89	0	0	89	89
	Bridges	29	0	0	29	29
	Tunnels	0	0	0	0	0
	Facilities	3	0	0	3	3
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	0	0	1	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	1	1
	Runways	3	0	0	3	3

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	5	0	0	5	5
Waste Water	6	0	0	6	6
Natural Gas	1	0	0	1	1
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	11	0	0	11	11

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	3,049	3	1
Waste Water	1,829	1	0
Natural Gas	1,220	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	46,561	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.00 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 0.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the earthquake. Of these, 0 people (out of a total population of 114,706) will seek temporary shelter in public shelters.

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	**0**	**0**	**0**	**0**
2 PM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	**0**	**0**	**0**	**0**
5 PM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	0	0	0	0
	Single Family	0	0	0	0
	Total	**0**	**0**	**0**	**0**

Economic Loss

The total economic loss estimated for the earthquake is 0.74 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

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 total building-related losses were 0.71 (millions of dollars); 26 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 48 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	0.00	0.04	0.00	0.00	0.04
	Capital-Related	0.00	0.00	0.03	0.00	0.00	0.03
	Rental	0.01	0.01	0.02	0.00	0.00	0.03
	Relocation	0.03	0.01	0.03	0.00	0.01	0.08
	Subtotal	**0.04**	**0.01**	**0.11**	**0.01**	**0.02**	**0.19**
Capital Stock Losses							
	Structural	0.05	0.01	0.03	0.01	0.01	0.11
	Non_Structural	0.14	0.05	0.08	0.02	0.03	0.31
	Content	0.04	0.01	0.03	0.01	0.01	0.10
	Inventory	0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.22**	**0.07**	**0.14**	**0.04**	**0.05**	**0.52**
	Total	**0.26**	**0.08**	**0.26**	**0.05**	**0.07**	**0.71**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Hazus estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 14 presents the results of the region for the given earthquake.

Table 12: Transportation System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1,759.07	$0.00	0.00
	Bridges	268.60	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Subtotal	**2027.70**	**0.00**	
Railways	Segments	186.98	$0.00	0.00
	Bridges	2.31	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	7.99	$0.00	0.04
	Subtotal	**197.30**	**0.00**	
Light Rail	Segments	0.00	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Bus	Facilities	1.21	$0.00	0.03
	Subtotal	**1.20**	**0.00**	
Ferry	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Port	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Airport	Facilities	10.65	$0.00	0.04
	Runways	113.89	$0.00	0.00
	Subtotal	**124.50**	**0.00**	
	Total	**2350.70**	**0.00**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	$0.00	0.00
	Facilities	184.80	$0.00	0.00
	Distribution Lines	61.00	$0.01	0.02
	Subtotal	**245.80**	**$0.01**	
Waste Water	Pipelines	0.00	$0.00	0.00
	Facilities	443.60	$0.00	0.00
	Distribution Lines	36.60	$0.01	0.02
	Subtotal	**480.15**	**$0.01**	
Natural Gas	Pipelines	0.00	$0.00	0.00
	Facilities	1.20	$0.00	0.00
	Distribution Lines	24.40	$0.00	0.01
	Subtotal	**25.60**	**$0.00**	
Oil Systems	Pipelines	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**$0.00**	
Electrical Power	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**$0.00**	
Communication	Facilities	1.20	$0.00	0.00
	Subtotal	**1.22**	**$0.00**	
	Total	**752.77**	**$0.02**	

Table 14. Indirect Economic Impact with outside aid

(Employment as # of people and Income in millions of $)

LOSS		Total	%

Appendix A: County Listing for the Region

Macon,IL

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Illinois					
	Macon	114,706	6,353	2,154	8,508
Total State		**114,706**	**6,353**	**2,154**	**8,508**
Total Region		**114,706**	**6,353**	**2,154**	**8,508**

Appendix G

Illinois Emergency Management Agency
Worksheet 3a

Illinois Emergency Management Agency Worksheet 3a – Community building type and value assessments.

All building types and value information is based on data derived from local property data. Value based on Parcel, which meant multiple structures with the same Parcel Number were not duplicated within the table. Total Addresses within Macon County is 56,163 (Provided by Macon County GIS department.) Value was not available for all building types. Population figures derived from the 2010 U.S. Census. Census blocks that intersected the floodplain were given a weighted average. The percentage of the block inside the floodplain was used to calculate the affected population.

Worksheet 3a. Macon County

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	6,151	6,151	100	231,210,448	231,210,448	100	14,516	14,516	100
Commercial	180	180	100	11,538,910	11,538,910	100	N/A	N/A	
Industrial	60	60	100	8,782,490	8,782,490	100	N/A	N/A	
Exempt *	1,286	1,286	100	69,896	69,896	100	N/A	N/A	
Agricultural	963	963	100	35,087,628	35,087,628	100	N/A	N/A	
TOTAL:	**7,483**	**7,483**	**100**	**286,689,372**	**286,689,372**	100	**14,516**	**14,516**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	6,151	71	1.2	231,210,448.00	1,626,742	0.7	14,516	7,277	50.1
Commercial	180	7	3.9	11,538,910.00	490,020	4.2	N/A	N/A	N/A
Industrial	60	1	1.7	8,782,490.00	0	0.0	N/A	N/A	N/A
Exempt *	1,286	4	0.3	69,896.00	0	0.0	N/A	N/A	N/A
Agricultural	963	14	1.5	35,087,628.00	469,084	1.3	N/A	N/A	N/A
TOTAL:	**7,483**	**97**	**1.3**	**286,689,372.00**	**2,585,846**	**0.9**	**14,516**	**7,277**	**50.1**

1.	Do you know where your greatest damages may occur in your hazard areas?	_____
2.	Do you know whether your critical facilities will be operational after a hazard event?	_____
3.	Is there enough data to determine which assets are subject to the greatest potential damages?	_____
4.	Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	_____
5.	Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards?	_____
6.	Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	_____
7.	Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	_____

Worksheet 3a. Village of Argenta

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	360	360	100	9,275,464	9,275,464	100	947	947	100
Commercial	16	16	100	528,534	528,534	100	N/A	N/A	
Industrial	2	2	100	24,105	24,105	100	N/A	N/A	
Exempt *	8	8	100	0	0	100	N/A	N/A	
Agricultural	1	1	100	88,907	88,907	100	N/A	N/A	
TOTAL:	**387**	**387**	**100**	**9,917,010**	**9,917,010**	**100**	**947**	**947**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	360	0	0.0	9,275,464.00	0	0.0	947	99	10.5
Commercial	16	0	0.0	528,534.00	0	0.0	N/A	N/A	N/A
Industrial	2	0	0.0	24,105.00	0	0.0	N/A	N/A	N/A
Exempt *	8	0	0.0	0.00	0		N/A	N/A	N/A
Agricultural	1	0	0.0	88,907.00	0	0.0	N/A	N/A	N/A
TOTAL:	**387**	**0**	**0.0**	**9,917,010.00**	**0**	**0.0**	**947**	**99**	**10.5**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. Village of Blue Mound

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	411	411	100	9,458,230	9,458,230	100	1,158	1,158	100
Commercial	31	31	100	720,847	720,847	100	N/A	N/A	
Industrial	4	4	100	15,356	15,356	100	N/A	N/A	
Exempt *	14	14	100	0	0	100	N/A	N/A	
Agricultural	0	0	100	0	0	100	N/A	N/A	
TOTAL:	**460**	**460**	**100**	**10,194,433**	**10,194,433**	**100**			**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	411	2	0.5	9,458,230.00	93,611	1.0	1,158	251	21.7
Commercial	31	0	0.0	720,847.00	0	0.0	N/A	N/A	N/A
Industrial	4	0	0.0	15,356.00	0	0.0	N/A	N/A	N/A
Exempt *	14	0	0.0	0.00	0		N/A	N/A	N/A
Agricultural	0	0	0.0	0.00	0	0.0	N/A	N/A	N/A
TOTAL:	**460**	**2**	**0.4**	**10,194,433.00**		**0.0**	**1,158**	**251**	**21.7**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. City of Decatur

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	29,162	29,162	100	584,836,956	584,836,956	100	76,122	76,122	100
Commercial	1,592	1,592	100	193,495,404	193,495,404	100	N/A	N/A	
Industrial	173	173	100	55,234,551	55,234,551	100	N/A	N/A	
Exempt *	1,286	1,286	100	250,574	250,574	100	N/A	N/A	
Agricultural	20	20	100	1,929,603	1,929,603	100	N/A	N/A	
TOTAL:	**32,233**	**32,233**	**100**	**835,747,088**	**835,747,088**	**100**	**76,122**	**76,122**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	29,162	204	0.7	584,836,956	9,486,529	1.6	76,122	12,357	16.2
Commercial	1,592	7	0.4	193,495,404	428,045	0.2	N/A	N/A	N/A
Industrial	173	3	1.7	55,234,551	1,658,491	3.0	N/A	N/A	N/A
Exempt *	1,286	32	2.5	250,574	0		N/A	N/A	N/A
Agricultural	20	1	0.0	1,929,603	0	0.0	N/A	N/A	N/A
TOTAL:	**32,233**	**247**	**0.8**	**835,747,088**	**11,573,065**	**1.4**	**76,122**	**12,357**	**16.2**

1.	Do you know where your greatest damages may occur in your hazard areas?	_____
2.	Do you know whether your critical facilities will be operational after a hazard event?	_____
3.	Is there enough data to determine which assets are subject to the greatest potential damages?	_____
4.	Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	_____
5.	Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards?	_____
6.	Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	_____
7.	Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	_____

Worksheet 3a. Village of Forsyth

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	1,208	1,208	100	72,321,047	72,321,047	100	3,490	3,490	100
Commercial	75	75	100	30,047,217	30,047,217	100	N/A	N/A	
Industrial	1	1	100	130,992	130,992	100	N/A	N/A	
Exempt *	23	23	100	57,942	57,942	100	N/A	N/A	
Agricultural	0	0	100	0	0	100	N/A	N/A	
TOTAL:	**1,307**	**1,307**	**100**	**102,557,198**	**102,557,198**	**100**	**3,490**	**3,490**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	1,208	31	2.6	72,321,047	2,057,887	2.8	3,490	1,293	37.0
Commercial	75	0	0.0	30,047,217	0	0.0	N/A	N/A	N/A
Industrial	1	0	0.0	130,992	0	0.0	N/A	N/A	N/A
Exempt *	23	0	0.0	57,942	0		N/A	N/A	N/A
Agricultural	0	0	0.0	0	0	0.0	N/A	N/A	N/A
TOTAL:	**1,307**	**31**	**2.4**	**102,557,198**	**2,057,887**	**2.0**	**3,490**	**1,293**	**37.0**

1.	Do you know where your greatest damages may occur in your hazard areas?	_____
2.	Do you know whether your critical facilities will be operational after a hazard event?	_____
3.	Is there enough data to determine which assets are subject to the greatest potential damages?	_____
4.	Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	_____
5.	Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards?	_____
6.	Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	_____
7.	Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	_____

Worksheet 3a. Village of Harristown

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	529	529	100	13,568,989	13,568,989	100	1,367	1,367	100
Commercial	18	18	100	1,211,409	1,211,409	100	N/A	N/A	
Industrial	1	1	100	17,104	17,104	100	N/A	N/A	
Exempt *	13	13	100	0	0	100	N/A	N/A	
Agricultural	2	2	100	0	0	100	N/A	N/A	
TOTAL:	**563**	**563**	**100**	**14,797,502**	**14,797,502**	**100**	**1,367**	**1,367**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	529	0	0.0	13,568,989	0	0.0	1,367	0	0.0
Commercial	18	0	0.0	1,211,409	0	0.0	N/A	N/A	N/A
Industrial	1	0	0.0	17,104	0	0.0	N/A	N/A	N/A
Exempt *	13	0	0.0	0	0		N/A	N/A	N/A
Agricultural	2	0	0.0	0	0	0.0	N/A	N/A	N/A
TOTAL:	**563**	**0**	**0.0**	**14,797,502**	**0**	**0.0**	**1,367**	**0**	**0.0**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. Village of Long Creek

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	538	538	100	19,838,321	19,838,321	100	1,328	1,328	100
Commercial	43	43	100	2,618,287	2,618,287	100	N/A	N/A	
Industrial	3	3	100	128,537	128,537	100	N/A	N/A	
Exempt *	15	15	100	0	0	100	N/A	N/A	
Agricultural	11	11	100	473,092	473,092	100	N/A	N/A	
TOTAL:	**610**	**610**	**100**	**23,058,237**	**23,058,237**	**100**	**1,328**	**1,328**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	538	2	0.4	19,838,321	195,049	1.0	1,328	655	49.3
Commercial	43	0	0.0	2,618,287	0	0.0	N/A	N/A	N/A
Industrial	3	0	0.0	128,537	0	0.0	N/A	N/A	N/A
Exempt *	15	0	0.0	0	0		N/A	N/A	N/A
Agricultural	11	0	0.0	473,092	0	0.0	N/A	N/A	N/A
TOTAL:	**610**	**2**	**0.3**	**23,058,237**	**195,049**	**0.8**	**1,328**	**655**	**49.3**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. City of Macon

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	462	462	100	10,718,077	10,718,077	100	1,138	1,138	100
Commercial	40	40	100	1,732,477	1,732,477	100	N/A	N/A	
Industrial	2	2	100	170,767	170,767	100	N/A	N/A	
Exempt *	19	19	100	0	0	100	N/A	N/A	
Agricultural	4	4	100	151,913	151,913	100	N/A	N/A	
TOTAL:	**527**	**527**	**100**	**12,773,234**	**12,773,234**	**100**	**1,138**	**1,138**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	462	0	0.0	10,718,077	0	0.0	1,138	0	0.0
Commercial	40	0	0.0	1,732,477	0	0.0	N/A	N/A	N/A
Industrial	2	0	0.0	170,767	0	0.0	N/A	N/A	N/A
Exempt *	19	0	0.0	0	0		N/A	N/A	N/A
Agricultural	4	0	0.0	151,913	0	0.0	N/A	N/A	N/A
TOTAL:	**527**	**0**	**0.0**	**12,773,234**	**0**	**0.0**	**1,138**	**0**	**0.0**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. City of Maroa

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	602	602	100	16,401,810	16,401,810	100	1,801	1,801	100
Commercial	47	47	100	1,167,834	1,167,834	100	N/A	N/A	
Industrial	2	2	100	233,578	233,578	100	N/A	N/A	
Exempt *	18	18	100	0	0	100	N/A	N/A	
Agricultural	3	3	100	43,765	43,765	100	N/A	N/A	
TOTAL:	**672**	**672**	**100**	**17,846,987**	**17,846,987**	**100**	**1,801**	**1,801**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	602	0	0.0	16,401,810	0	0.0	1,801	239	13.3
Commercial	47	0	0.0	1,167,834	0	0.0	N/A	N/A	N/A
Industrial	2	0	0.0	233,578	0	0.0	N/A	N/A	N/A
Exempt *	18	0	0.0	0	0		N/A	N/A	N/A
Agricultural	3	0	0.0	43,765	0	0.0	N/A	N/A	N/A
TOTAL:	**672**	**0**	**0.0**	**17,846,987**	**0**	**0.0**	**1,801**	**239**	**13.3**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. Village of Mount Zion

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	1,861	1,861	100	77,004,043	77,004,043	100	5,833	5,833	100
Commercial	103	103	100	8,599,349	8,599,349	100	N/A	N/A	
Industrial	2	2	100	1,615	1,615	100	N/A	N/A	
Exempt *	28	28	100	102,774	102,774	100	N/A	N/A	
Agricultural	4	4	100	199,601	199,601	100	N/A	N/A	
TOTAL:	**1,998**	**1,998**	**100**	**85,907,382**	**85,907,382**	**100**	**5,833**	**5,833**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	1,861	1	0.1	77,004,043	69,210	0.1	5,833	1,931	33.1
Commercial	103	0	0.0	8,599,349	0	0.0	N/A	N/A	N/A
Industrial	2	0	0.0	1,615	0	0.0	N/A	N/A	N/A
Exempt *	28	0	0.0	102,774	0		N/A	N/A	N/A
Agricultural	4	0	0.0	199,601	0	0.0	N/A	N/A	N/A
TOTAL:	**1,998**	**1**	**0.1**	**85,907,382**	**69,210**	**0.1**	**5,833**	**1,931**	**33.1**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. Village of Niantic

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	227	227	100	77,004,043	77,004,043	100	707	707	100
Commercial	19	19	100	8,599,349	8,599,349	100	N/A	N/A	
Industrial	2	2	100	1,615	1,615	100	N/A	N/A	
Exempt *	10	10	100	102,774	102,774	100	N/A	N/A	
Agricultural	4	4	100	199,601	199,601	100	N/A	N/A	
TOTAL:	**262**	**262**	**100**	**5,483,787**	**5,483,787**	**100**	**707**	**707**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	227	0	0.0	77,004,043	0	0.0	707	0	0.0
Commercial	19	0	0.0	8,599,349	0	0.0	N/A	N/A	N/A
Industrial	2	0	0.0	1,615	0	0.0	N/A	N/A	N/A
Exempt *	10	0	0.0	102,774	0		N/A	N/A	N/A
Agricultural	4	0	0.0	199,601	0	0.0	N/A	N/A	N/A
TOTAL:	**262**	**0**	**0.0**	**5,483,787**	**0**	**0.0**	**707**	**0**	**0.0**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. Village of Oreana

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	339	339	100	9,675,428	9,675,428	100	875	875	100
Commercial	10	10	100	337,546	337,546	100	N/A	N/A	
Industrial	2	2	100	428,390	428,390	100	N/A	N/A	
Exempt *	8	8	100	0	0	100	N/A	N/A	
Agricultural	0	0	100	0	0	100	N/A	N/A	
TOTAL:	**359**	**359**	**100**	**10,441,364**	**10,441,364**	**100**	**875**	**875**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	339	0	0.0	9,675,428	0	0.0	875	0	0.0
Commercial	10	0	0.0	337,546	0	0.0	N/A	N/A	N/A
Industrial	2	0	0.0	428,390	0	0.0	N/A	N/A	N/A
Exempt *	8	0	0.0	0	0		N/A	N/A	N/A
Agricultural	0	0	0.0	0	0	0.0	N/A	N/A	N/A
TOTAL:	**359**	**0**	**0.0**	**10,441,364**	**0**	**0.0**	**875**	**0**	**0.0**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Worksheet 3a. Village of Warrensburg

All Hazards Except Flooding and Dam/Levee Failure (* Exempt Class = Religious / Education / Government)

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community (thousands)	$ in Hazard Area (thousands)	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	426	426	100	11,544,306	11,544,306	100	1,210	1,210	100
Commercial	23	23	100	799,291	799,291	100	N/A	N/A	
Industrial	7	7	100	388,430	388,430	100	N/A	N/A	
Exempt *	13	13	100	0	0	100	N/A	N/A	
Agricultural	1	1	100	0	0	100	N/A	N/A	
TOTAL:	**470**	**470**	**100**	**12,732,027**	**12,732,027**	**100**	**1,210**	**1,210**	**100**

FLOOD ONLY

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	426	0	0.0	11,544,306	0	0.0	1,210	0	0.0
Commercial	23	0	0.0	799,291	0	0.0	N/A	N/A	N/A
Industrial	7	0	0.0	388,430	0	0.0	N/A	N/A	N/A
Exempt *	13	0	0.0	0	0		N/A	N/A	N/A
Agricultural	1	0	0.0	0	0	0.0	N/A	N/A	N/A
TOTAL:	**470**	**0**	**0.0**	**12,732,027**	**0**	**0.0**	**1,210**	**0**	**0.0**

1. Do you know where your greatest damages may occur in your hazard areas? _____
2. Do you know whether your critical facilities will be operational after a hazard event? _____
3. Is there enough data to determine which assets are subject to the greatest potential damages? _____
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards? _____
5. Is there enough data to determine whether certain areas of historic, environmental, political or cultural significance are vulnerable to potential hazards? _____
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence? _____
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives? _____

Appendix H

Countywide Multi-Hazard Plan Crosswalk

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

Prerequisite(s) (Check Applicable Box)	**NOT MET**	**MET**
1. Adoption by the Local Governing Body: §201.6(c)(5) OR		
2. Multi-Jurisdictional Plan Adoption: §201.6(c)(5) **AND**		
3. Multi-Jurisdictional Planning Participation: §201.6(a)(3)		

Planning Process	**N**	**S**
4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)		

Risk Assessment	**N**	**S**
5. Identifying Hazards: §201.6(c)(2)(i)		
6. Profiling Hazards: §201.6(c)(2)(i)		
7. Assessing Vulnerability: Overview: §201.6(c)(2)(ii)		
8. Assessing Vulnerability: Addressing Repetitive Loss Properties. §201.6(c)(2)(ii)		
9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(ii)(B)		
10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)		
11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)		
12. Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)		

*States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Mitigation Strategy	**N**	**S**
13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)		
14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)		
15. Identification and Analysis of Mitigation Actions: NFIP Compliance. §201.6(c)(3)(ii)		
16. Implementation of Mitigation Actions: §201.6(c)(3)(iii)		
17. Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)		

Plan Maintenance Process	**N**	**S**
18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(ii)		
19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)		
20. Continued Public Involvement: §201.6(c)(4)(iii)		

Additional State Requirements*	**N**	**S**
Insert State Requirement		
Insert State Requirement		
Insert State Requirement		

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED	
See Reviewer's Comments	
PLAN APPROVED	

LOCAL MITIGATION PLAN REVIEW CROSSWALK: Macon County Multi-Hazard Mitigation Plan

Local Mitigation Plan Review and Approval Status

Jurisdiction: Macon County, Illinois	**Title of Plan:** Macon County Multi-Hazard Mitigation Plan	**Date of Plan:** **April 1, 2013**
Local Point of Contact: James Root	**Address:** Macon County Emergency Management Agency 282 E Macon Street Decatur, Illinois 62523	
Title: Director		
Agency: Macon County Emergency Management Agency		
Phone Number: [redacted]	**E-Mail:** [redacted]	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region V		
Plan Not Approved		
Plan Approved		
Date Approved		

LOCAL MITIGATION PLAN REVIEW CROSSWALK: Macon County Multi-Hazard Mitigation Plan

Jurisdiction:	DFIRM		NFIP Status*			
	In Plan	NOT in Plan	Y	N	N/A	CRS Class
1. Argenta, Village of		X		X		
2. Blue Mound, Village of		X	X			
3. Decatur, City of		X	X			
4. Forsyth, Village of		X	X			
5. Harristown, Village of		X		X		
6. Long Creek, Village of		X	X			
7. Macon, City of		X		X		
8. Macon County		X				
9. Maroa, City of		X		X		
10. Mount Zion, Village of		X	X			
11. Niantic, Village of		X		X		
12. Oreana, Village of		X		X		
13. Warrensburg, Village of		X		X		

LOCAL MITIGATION PLAN REVIEW CROSSWALK: Macon County Multi-Hazard Mitigation Plan

PREREQUISITE(S)

1. Adoption by the Local Governing Body

***Requirement §201.6(c)(5)*:** *[The local hazard mitigation plan **shall** include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Has the local governing body adopted the **new or updated** plan?	Section 1.3; Appendix A			
B. Is supporting documentation, such as a resolution, included?	Appendix A			
		SUMMARY SCORE		

2. Multi-Jurisdictional Plan Adoption

***Requirement §201.6(c)(5)*:** *For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Does the **new or updated** plan indicate the specific jurisdictions represented in the plan?	Section 1.3			
B. For each jurisdiction, has the local governing body adopted the **new or updated** plan?	Section 1.3, Table 2			
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?	Appendix A			
		SUMMARY SCORE		

3. Multi-Jurisdictional Planning Participation

***Requirement §201.6(a)(3)*:** *Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process … Statewide plans will not be accepted as multi-jurisdictional plans.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Does the **new or updated** plan describe **how** each jurisdiction participated in the plan's development?	Section 1.4 Appendix B			
B. Does the **updated** plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?	N/A – First Plan			
		SUMMARY SCORE		

PLANNING PROCESS: *§201.6(b): An open public involvement process is essential to the development of an effective plan.*

4. Documentation of the Planning Process

Requirement §201.6(b): *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:*
(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): *[The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

Element	**Location in the Plan** (section or annex and page #)	**Reviewer's Comments**	SCORE N	SCORE S
A. Does the plan provide a narrative description of the process followed to prepare the **new or updated** plan?	Section 2			
B. Does the **new or updated** plan indicate who was involved in the **current** planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, *etc*.?)	Section 2.2			
C. Does the **new or updated** plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)	Section 2.3			
D. Does the **new or updated** plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	Section 2.3			
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?	Section 2.4			
F. Does the **updated** plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?	N/A – First Plan			
		SUMMARY SCORE		

RISK ASSESSMENT: *§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

5. Identifying Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the type … of all natural hazards that can affect the jurisdiction.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include **a description** of the types of **all natural hazards** that affect the jurisdiction?	Section 3			
		SUMMARY SCORE		

6. Profiling Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the … location and extent of all natural hazards that can affect the jurisdiction. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the risk assessment identify the **location** (*i.e.*, geographic area affected) of each natural hazard addressed in the **new or updated** plan?	Sections 3.2.2; 3.3.2; 3.4.2; 3.5.2; 3.6.2; 3.7.2; 3.8.2; 3.9.2; 3.10.2			
B. Does the risk assessment identify the **extent** (*i.e.*, magnitude or severity) of each hazard addressed in the **new or updated** plan?	Sections 3.2.2; 3.3.2; 3.4.2; 3.5.2; 3.6.2; 3.7.2; 3.8.2; 3.9.2; 3.10.2			
C. Does the plan provide information on **previous occurrences** of each hazard addressed in the **new or updated** plan?	Sections 3.2.1; 3.3.1; 3.4.1; 3.5.1; 3.6.1; 3.7.1; 3.8.1; 3.9.1 3.10.1			
D. Does the plan include the **probability of future events** (*i.e.*, chance of occurrence) for each hazard addressed in the **new or updated** plan?	Sections 3.2.2; 3.3.2; 3.4.2; 3.5.2; 3.6.2; 3.7.2; 3.8.2; 3.9.2; 3.10.2			
		SUMMARY SCORE		

7. Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	Location in the **Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	Sections 3.2.2; 3.3.2; 3.4.2; 3.5.2; 3.6.2; 3.7.2; 3.8.2; 3.9.2; 3.10.2			
B. Does the **new or updated** plan address the **impact** of each hazard on the jurisdiction?	Sections 3.2.2; 3.3.2; 3.4.2; 3.5.2; 3.6.2; 3.7.2; 3.8.2; 3.9.2; 3.10.2			
		SUMMARY SCORE		

8. Assessing Vulnerability: Addressing Repetitive Loss Properties

Requirement §201.6(c)(2)(ii): *[The risk assessment] **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.*

Element	Location in the **Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of *repetitive loss properties* located in the identified hazard areas?	Section 3.2.2.1			
		SUMMARY SCORE		

9. Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): *The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area … .*

Element	Location in the **Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Appendix G	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the **new or updated** plan describe vulnerability in terms of the **types and numbers** of **future** buildings,	Appendix G	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		

infrastructure, and critical facilities located in the identified hazard areas?				
		SUMMARY SCORE		

10. Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): *[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate … .*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan estimate **potential dollar losses** to vulnerable structures?	Sections 3.2.2; 3.3.2; 3.4.2; 3.5.2; 3.6.2; 3.7.2; 3.8.2; 3.9.2; 3.10.2	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the **new or updated** plan describe the **methodology** used to prepare the estimate?	Section 3.3.3	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

11. Assessing Vulnerability: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): *[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe land uses and development trends?	Section 1 Sections 3.2.1; 3.3.1; 3.4.1; 3.5.1; 3.6.1; 3.7.1; 3.8.1; 3.9.1; 3.10.1	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

12. Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): *For multi-jurisdictional plans, the risk assessment **must** assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?	Section 3.3.2			
		SUMMARY SCORE		

MITIGATION STRATEGY: *§201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

13. Local Hazard Mitigation Goals

Requirement §201.6(c)(3)(i): *[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the **new or updated** plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?	Section 4.2			
		SUMMARY SCORE		

14. Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): *[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?	Section 3.8.3 & Appendix E			
B Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?	Section 4.3 & Appendix G			
C. Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?	Section 4.3 & Appendix G			
		SUMMARY SCORE		

15. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance

Requirement: §201.6(c)(3)(ii): *[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new** or **updated** plan describe the jurisdiction (s) participation in the NFIP?	Section 3.2.2.1			
B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?	Section 4.4			
		SUMMARY SCORE		

16. Implementation of Mitigation Actions

Requirement: §201.6(c)(3)(iii): *[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)	Section 4.4.1			
B. Does the **new or updated** mitigation strategy address how the actions will be implemented and administered, including the responsible department , existing and potential resources and the timeframe to complete each action?	Section 4.4 & Appendix E			
C. Does the **new or updated** prioritization process include an emphasis on the use of a **cost-benefit review** to maximize benefits?	Section 4.4.2			
D. Does the **updated** plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (*i.e.*, deferred), does the updated plan describe why no changes occurred?	N/A – First Plan			
		SUMMARY SCORE		

17. Multi-Jurisdictional Mitigation Actions

Requirement §201.6(c)(3)(iv): *For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the **new or updated** plan include identifiable **action items** for each jurisdiction requesting FEMA approval of the plan?	Appendix E			
B. Does the **updated** plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (*i.e.*, deferred), does the updated plan describe why no changes occurred?	N/A – First Plan			
		SUMMARY SCORE		

PLAN MAINTENANCE PROCESS

18. Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): *[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe the method and schedule for **monitoring** the plan, including the responsible department?	Section 5.1.1			
B. Does the **new or updated** plan describe the method and schedule for **evaluating** the plan, including how, when and by whom (*i.e.* the responsible department)?	Section 5.1.2			
C. Does the **new or updated** plan describe the method and schedule for **updating** the plan within the five-year cycle?	Section 5.1.3			
		SUMMARY SCORE		

19. Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): *[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?	Section 5.2			
B. Does the **new or updated** plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (*e.g.*, risk assessment) into other planning mechanisms, when appropriate?	Section 5.2			
C. Does the **updated** plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (*e.g.*, risk assessment) into other planning mechanisms, when appropriate?	N/A – First Plan			
		SUMMARY SCORE		

Continued Public Involvement

Requirement §201.6(c)(4)(iii): *[The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	Section 5.3			
		SUMMARY SCORE		

MATRIX A: PROFILING HAZARDS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required**.

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each *applicable* ***hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.***

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes	N	S	N	S	N	S	N	S
Avalanche	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Erosion	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐	☐	☐	☐	☐
Expansive Soils	☐	☐	☐	☐	☐	☐	☐	☐	☐
Levee Failure	☐	☐	☐	☐	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tsunami	☐	☐	☐	☐	☐	☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐	☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

Legend:

§201.6(c)(2)(i) Profiling Hazards
A. Does the risk assessment identify the location (*i.e.*, geographic area affected) of each hazard addressed in the **new or updated** plan?
B. Does the risk assessment identify the extent (*i.e.*, magnitude or severity) of each hazard addressed in the **new or updated** plan?
C. Does the plan provide information on previous occurrences of each natural hazard addressed in the **new or updated** plan?
D. Does the plan include the probability of future events (*i.e.*, chance of occurrence) for each hazard addressed in the plan?

MATRIX B: ASSESSING VULNERABILITY

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that the new or updated plan addresses each requirement. **Completing the matrix is not required**.

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk. Note: Receiving an N in the shaded columns will not preclude the plan from passing.*

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	§201.6(c)(2)(ii) Assessing Vulnerability: Overview	A. Overall Summary Description of Vulnerability		B. Hazard Impact		§201.6(c)(2)(ii) Assessing Vulnerability: Identifying Structures	A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)		§201.6(c)(2)(ii) Assessing Vulnerability: Estimating Potential Losses	A. Loss Estimate		B. Methodology	
	Yes		N	S	N	S		N	S	N	S		N	S	N	S
Avalanche	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Coastal Erosion	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Coastal Storm	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Dam Failure	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Drought	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Earthquake	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Expansive Soils	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Levee Failure	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Flood	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Hailstorm	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Hurricane	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Land Subsidence	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Landslide	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Severe Winter Storm	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Tornado	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Tsunami	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Volcano	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Wildfire	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Windstorm	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other _____	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other _____	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other _____	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐

Legend:

§201.6(c)(2)(ii) Assessing Vulnerability: Overview

A. Does the **new or updated** plan include an overall summary description of the jurisdiction's vulnerability to each hazard?

B. Does the **new or updated** plan address the impact of each hazard on the jurisdiction?

§201.6(c)(2)(ii)(A) Assessing Vulnerability: Identifying Structures

A. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?

B. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

§201.6(c)(2)(ii)(B) Assessing Vulnerability: Estimating Potential Losses

A. Does the **new or updated** plan estimate potential dollar losses to vulnerable structures?

B. Does the **new or updated** plan describe the methodology used to prepare the estimate?

MATRIX C: IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

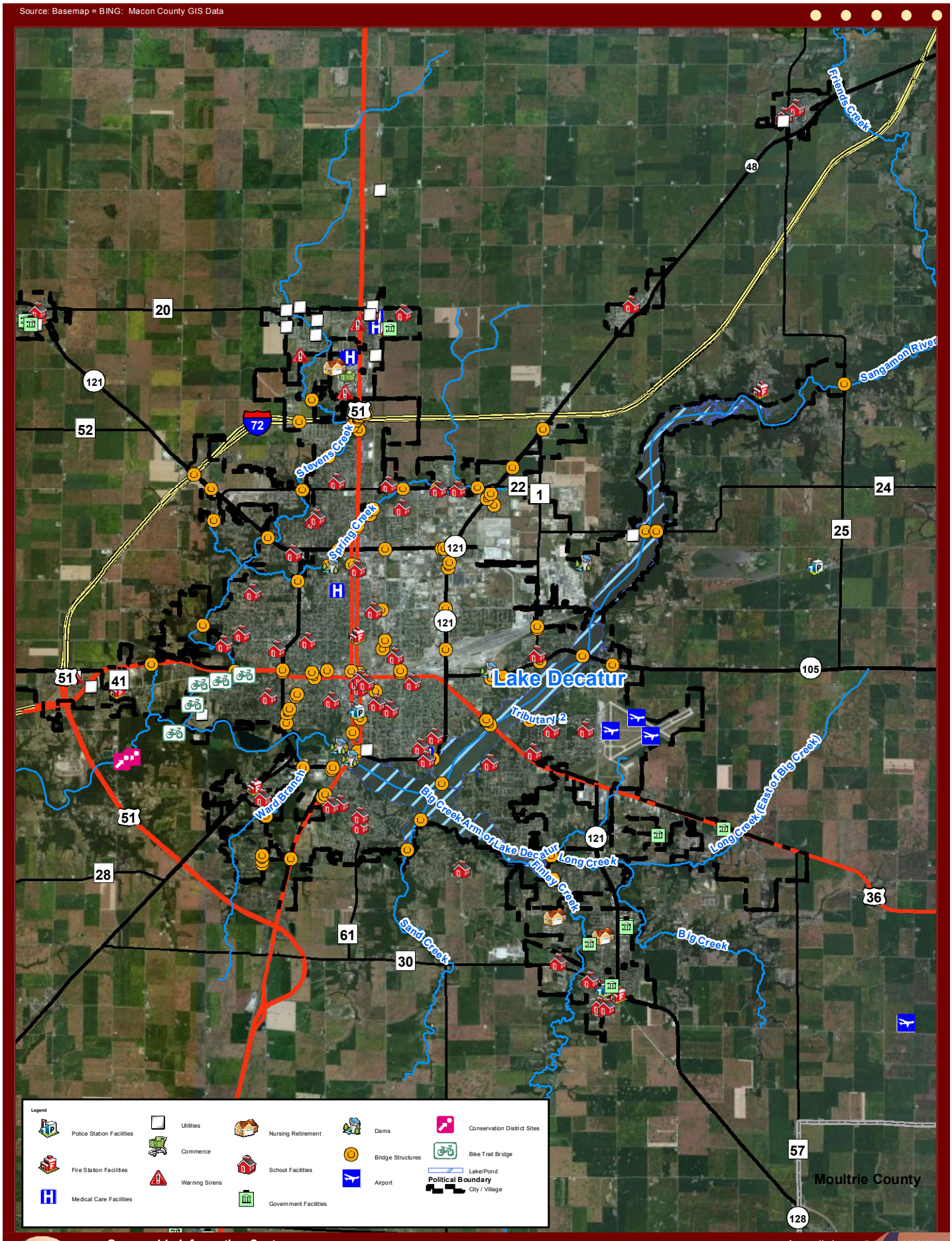
Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Comprehensive Range of Actions and Projects	
	Yes	N	S
Avalanche	☐	☐	☐
Coastal Erosion	☐	☐	☐
Coastal Storm	☐	☐	☐
Dam Failure	☐	☐	☐
Drought	☐	☐	☐
Earthquake	☐	☐	☐
Expansive Soils	☐	☐	☐
Levee Failure	☐	☐	☐
Flood	☐	☐	☐
Hailstorm	☐	☐	☐
Hurricane	☐	☐	☐
Land Subsidence	☐	☐	☐
Landslide	☐	☐	☐
Severe Winter Storm	☐	☐	☐
Tornado	☐	☐	☐
Tsunami	☐	☐	☐
Volcano	☐	☐	☐
Wildfire	☐	☐	☐
Windstorm	☐	☐	☐
Other _____	☐	☐	☐
Other _____	☐	☐	☐
Other _____	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

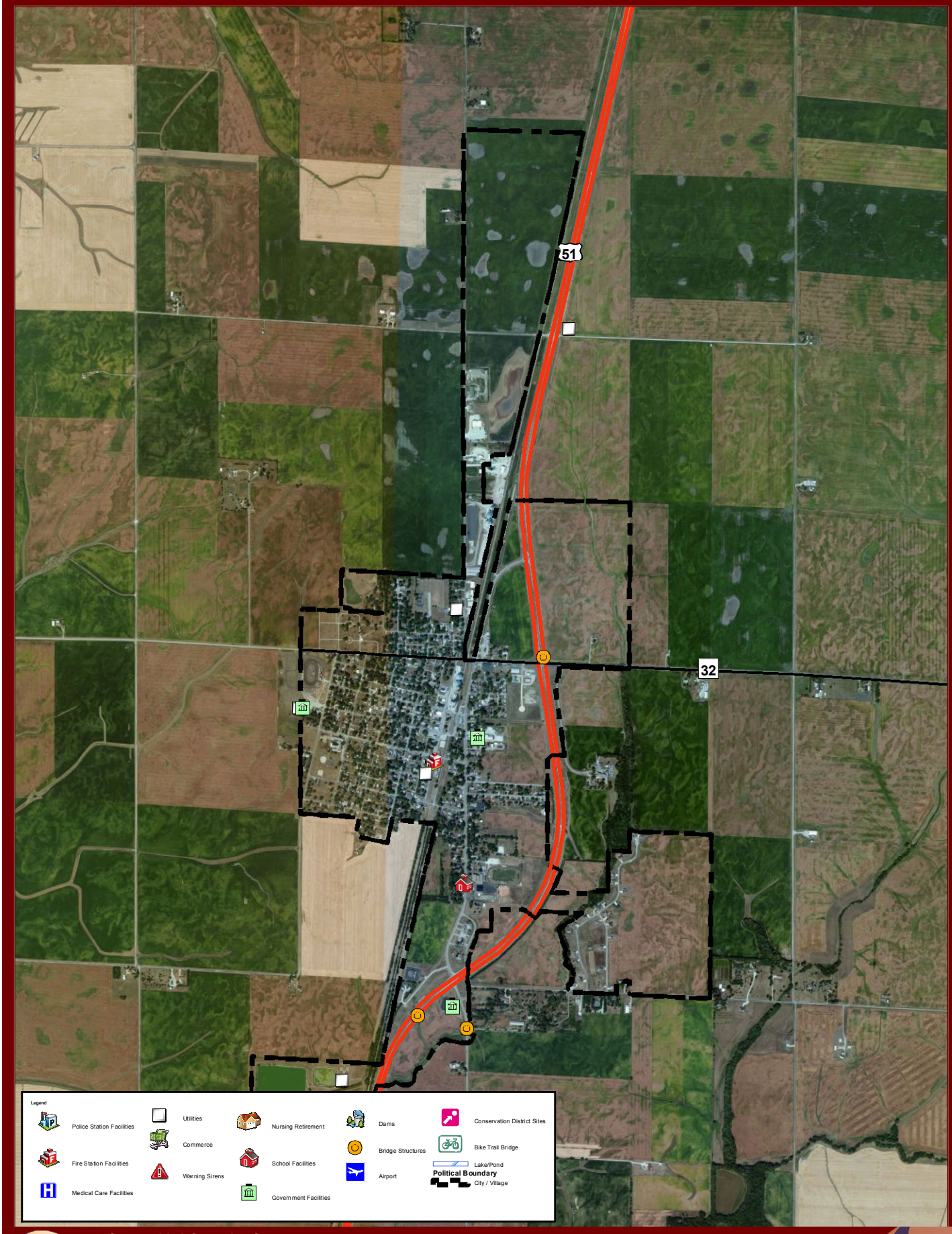
Legend:
§201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions
A. Does the **new or updated** plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?

Appendix I

Critical Facilities


Source: Basemap = BING: Macon County GIS Data
Lake Decatur
Friends Creek
Sangamon River
Stevens Creek
Spring Creek
Tributary 2
Ward Branch
Big Creek Arm of Lake Decatur
Long Creek
Long Creek (East of Big Creek)
Rinley Creek
Sand Creek
Big Creek
Moultrie County
20
121
52
72
51
48
22
1
24
25
105
41
28
61
30
36
57
128
Legend
Police Station Facilities
Fire Station Facilities
Medical Care Facilities
Utilities
Commerce
Warning Sirens
Nursing Retirement
School Facilities
Government Facilities
Dams
Bridge Structures
Airport
Conservation District Sites
Bike Trail Bridge
Lake/Pond
Political Boundary
City / Village
Geographic Information Systems
Appendix I
Printed: 3/22/13
0
2.5 Miles
N
Critical Facilities
CITY OF DECATUR
Macon County Multi-Hazard Mitigation Plan
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.4 Miles

N

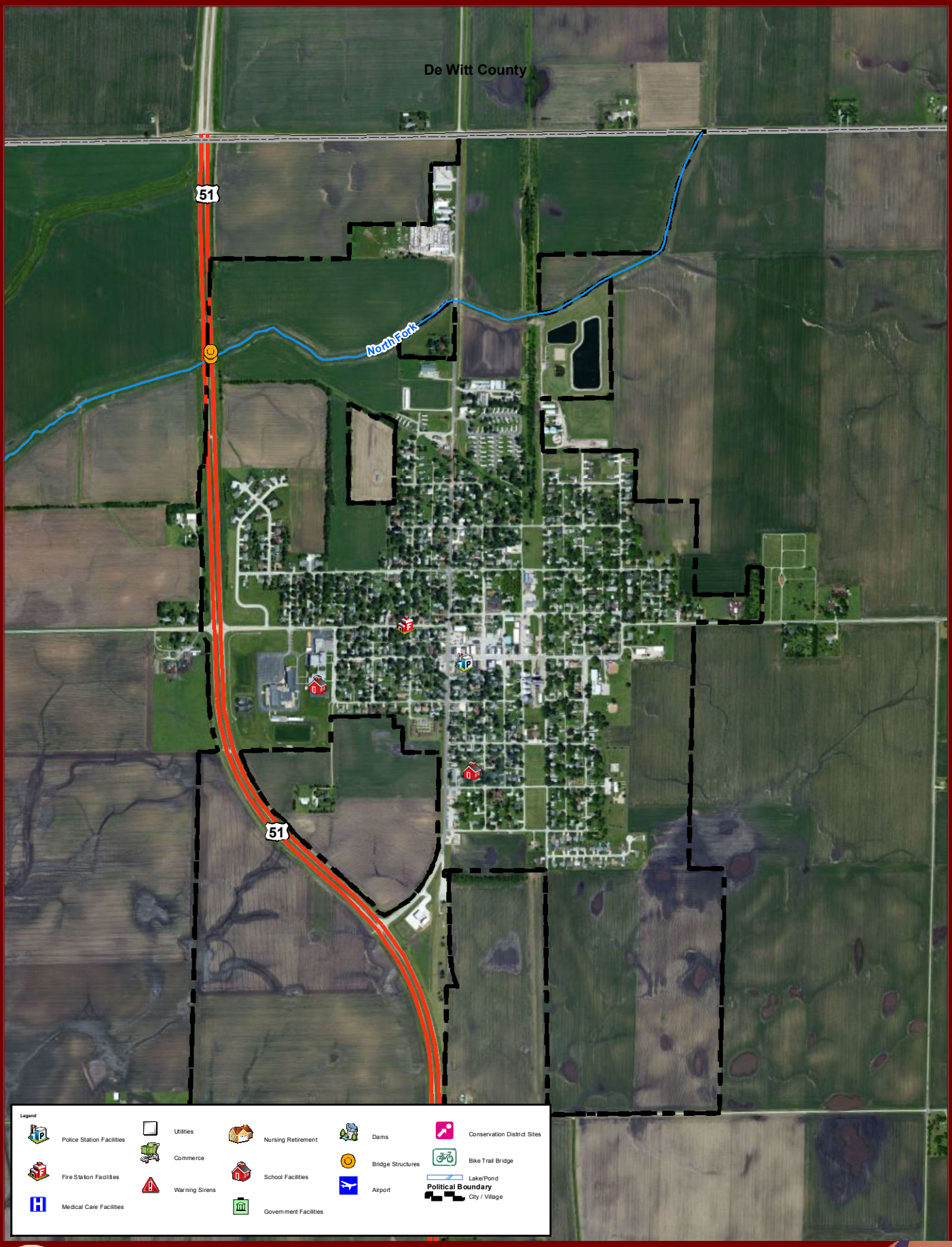
Critical Facilities

CITY OF MACON

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.25 Miles

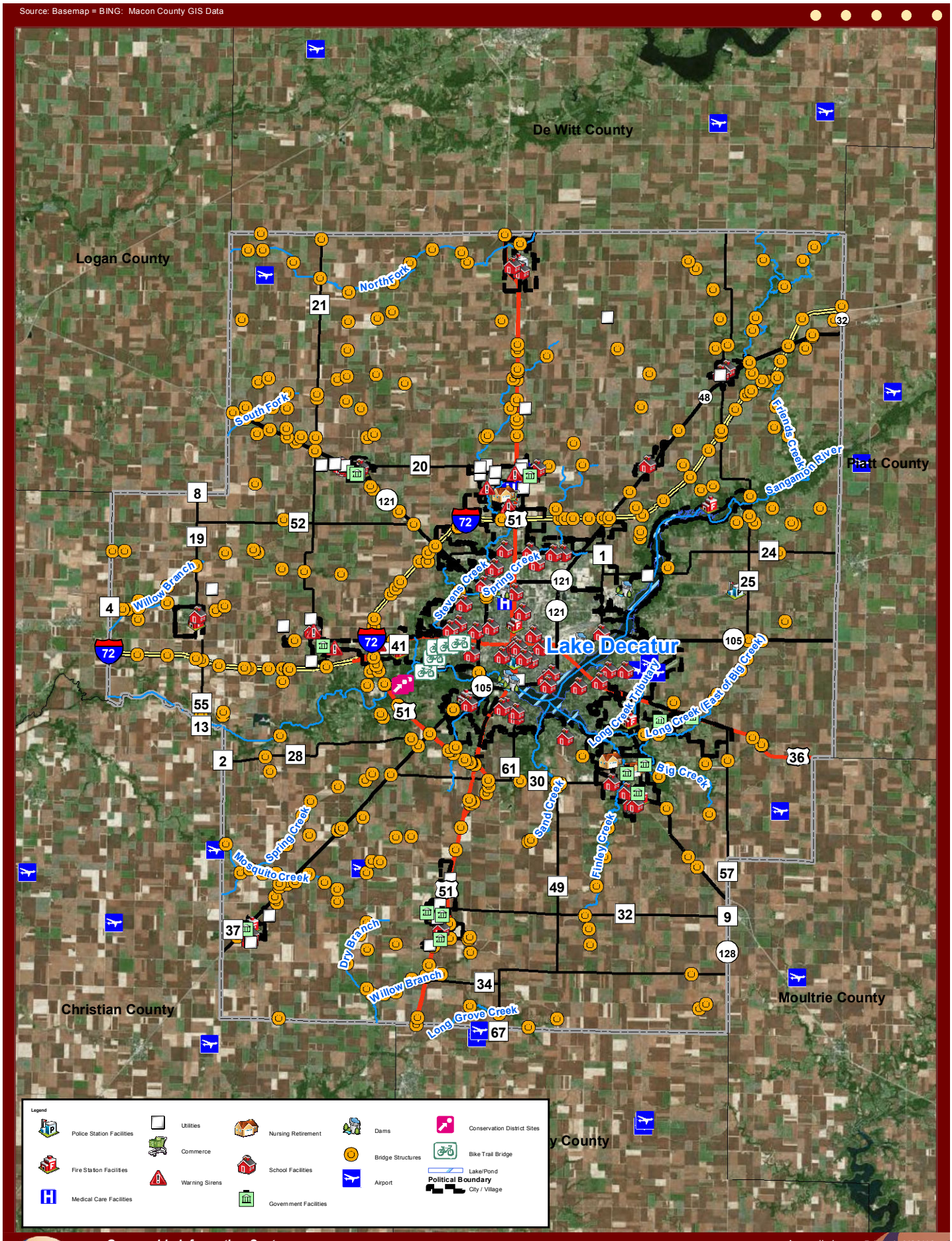
N

Critical Facilities

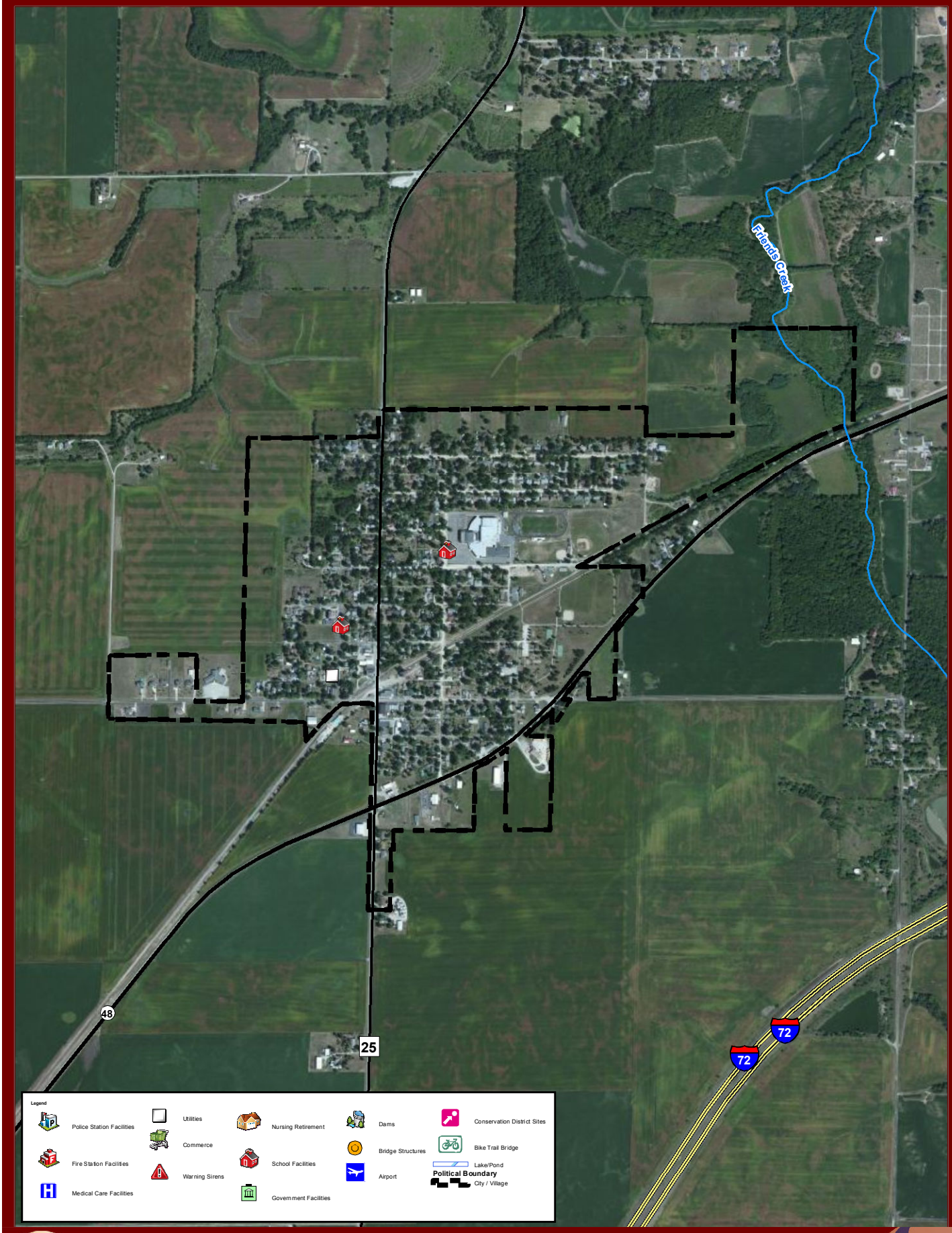
CITY OF MAROA

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com


Source: Basemap = BING: Macon County GIS Data
De Witt County
Logan County
Piatt County
Christian County
Moultrie County
Lake Decatur
North Fork
South Fork
Willow Branch
Spring Creek
Stevens Creek
Sangamon River
Friends Creek
Long Creek Tributary
Long Creek (East of Big Creek)
Big Creek
Sand Creek
Finley Creek
Mosquito Creek
Dry Branch
Long Grove Creek
Legend
Police Station Facilities
Fire Station Facilities
Medical Care Facilities
Utilities
Commerce
Warning Sirens
Nursing Retirement
School Facilities
Government Facilities
Dams
Bridge Structures
Airport
Conservation District Sites
Bike Trail Bridge
Lake/Pond
Political Boundary
City / Village
Geographic Information Systems
Appendix I
Printed: 3/22/13
0
4.5 Miles
N
Critical Facilities
MACON COUNTY
Macon County Multi-Hazard Mitigation Plan
Stantec
11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.25 Miles

N

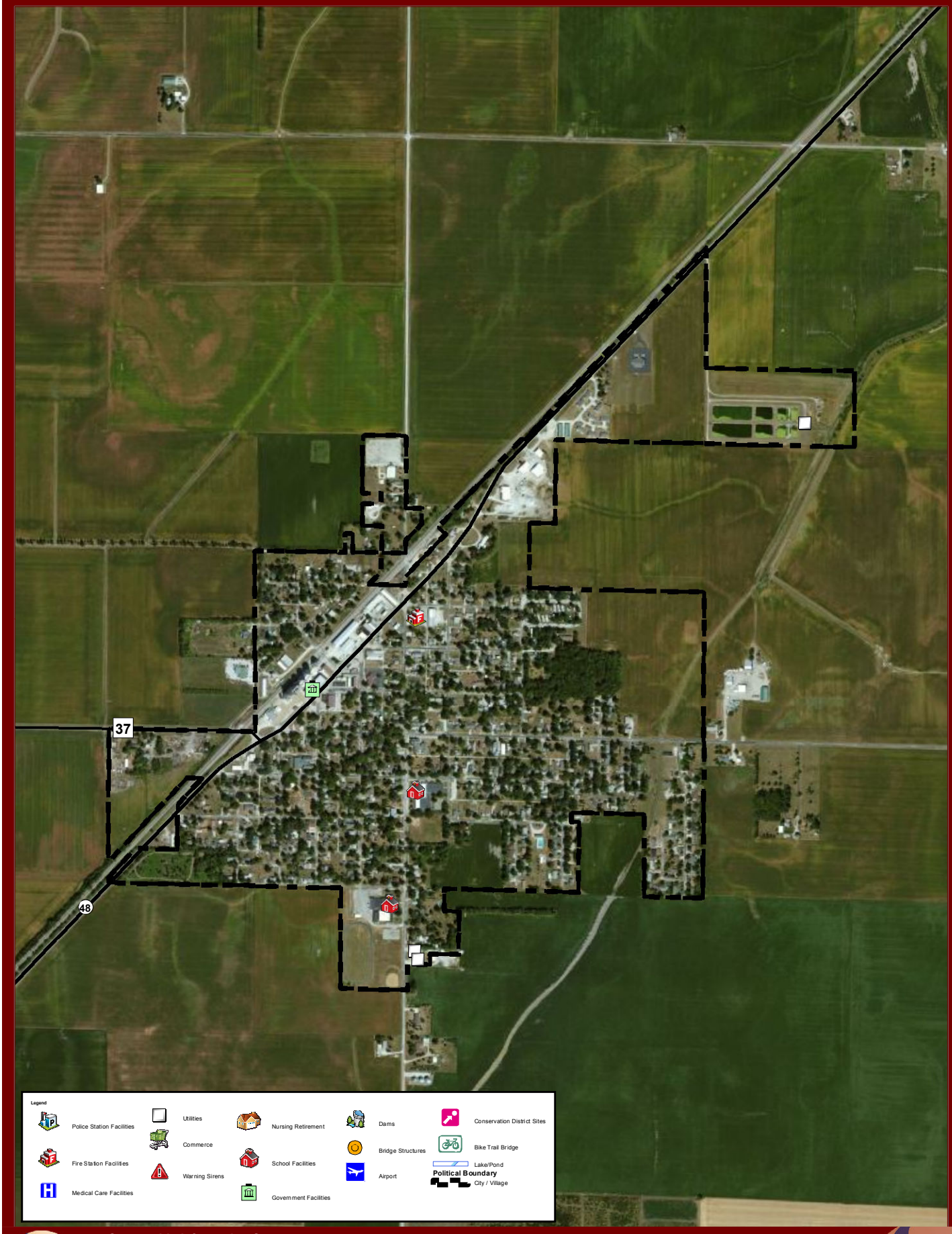
Critical Facilities

VILLAGE OF ARGENTA

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.2 Miles

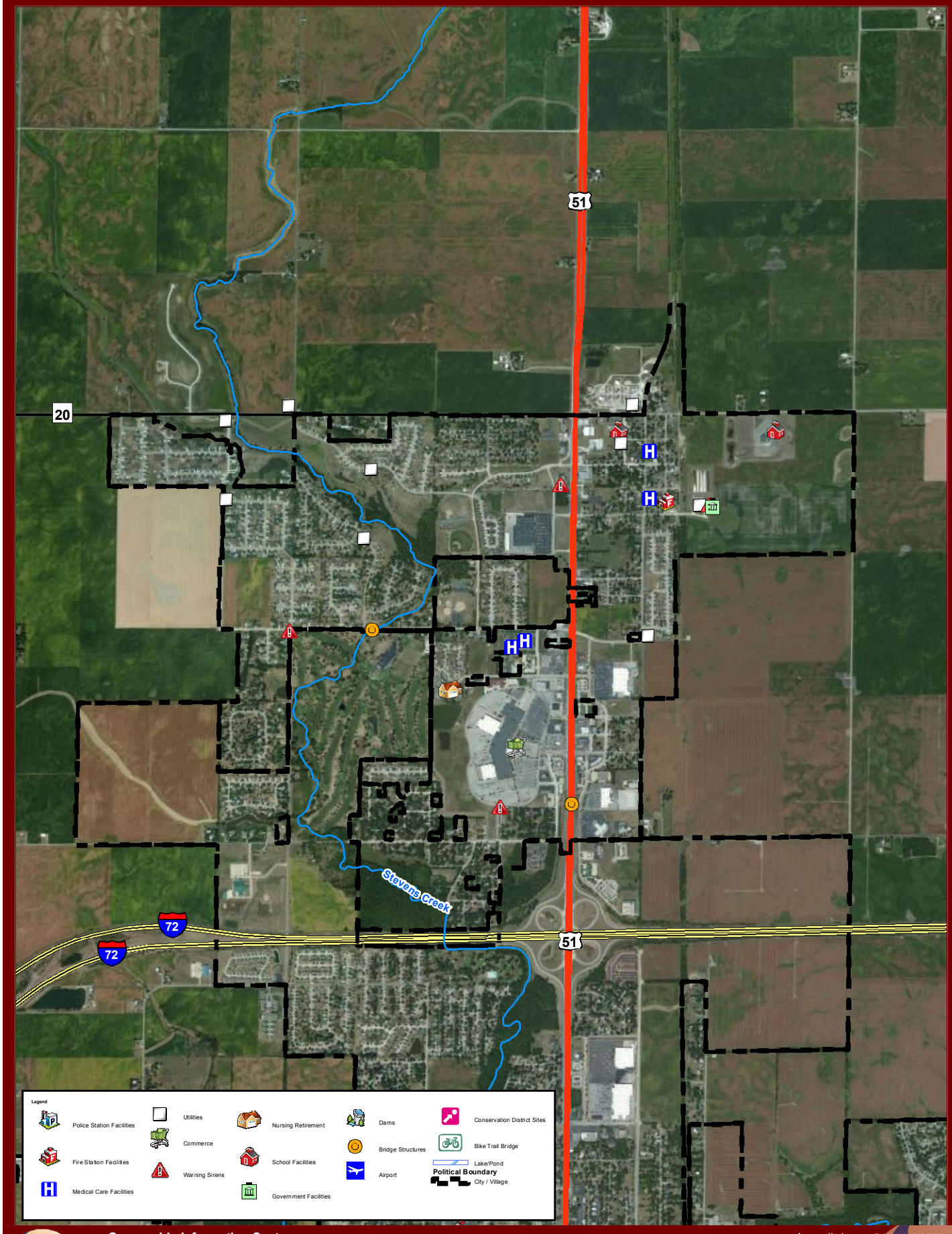
N

Critical Facilities

VILLAGE OF BLUE MOUND
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.45 Miles

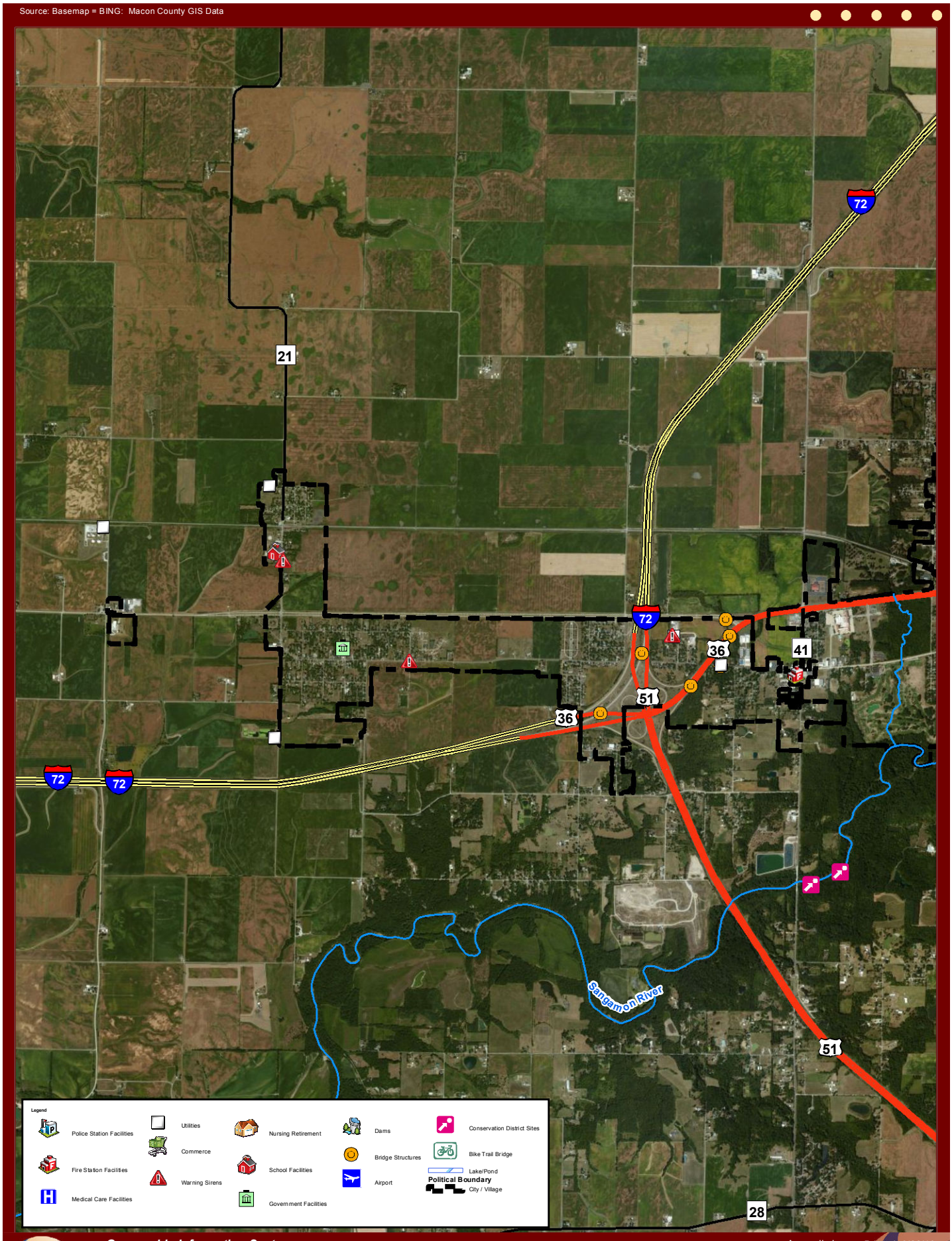
N

Critical Facilities

VILLAGE OF FORSYTH

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Appendix I Printed: 3/22/13

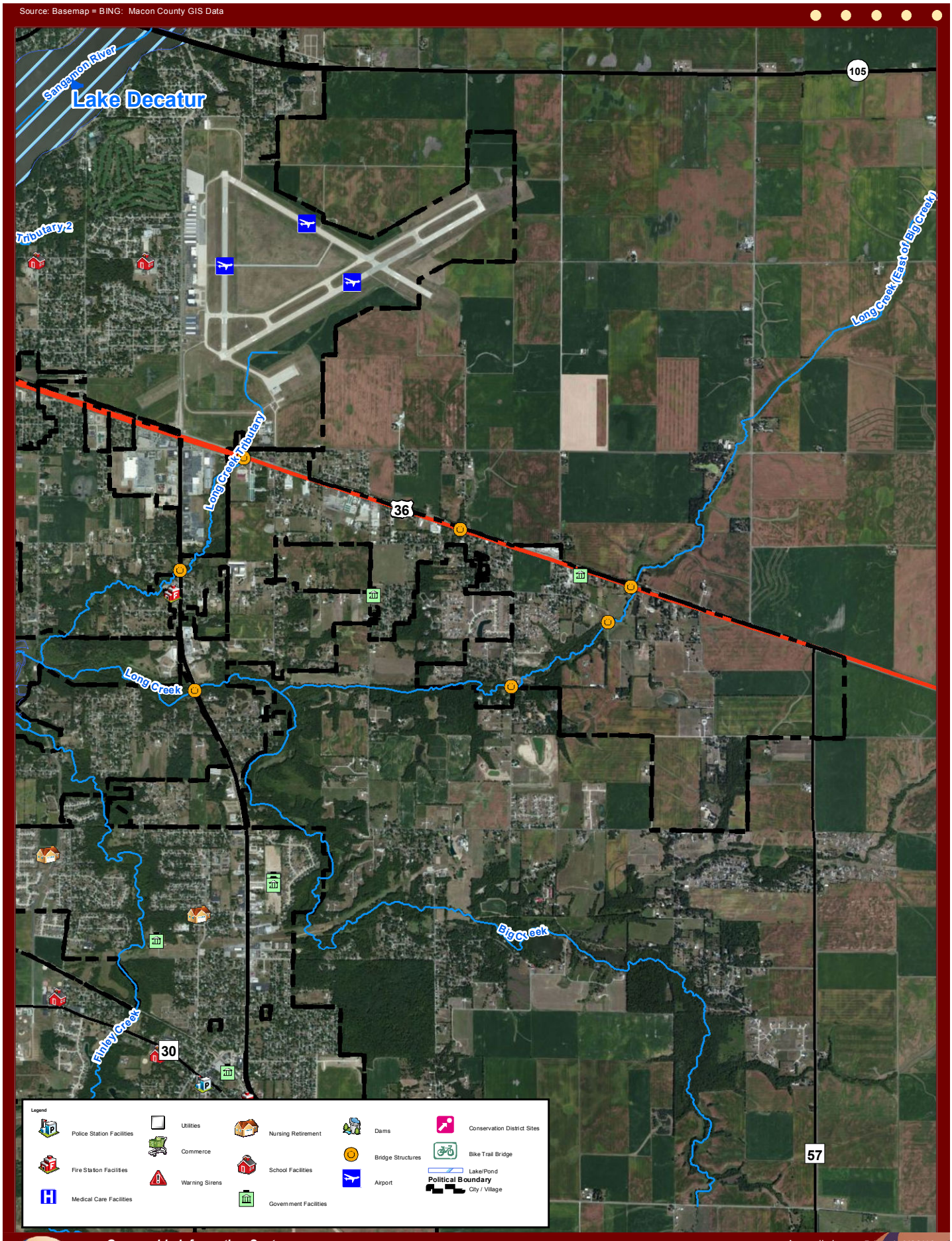
0 0.75 Miles

N

Critical Facilities

VILLAGE OF HARRISTOWN
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.75 Miles

N

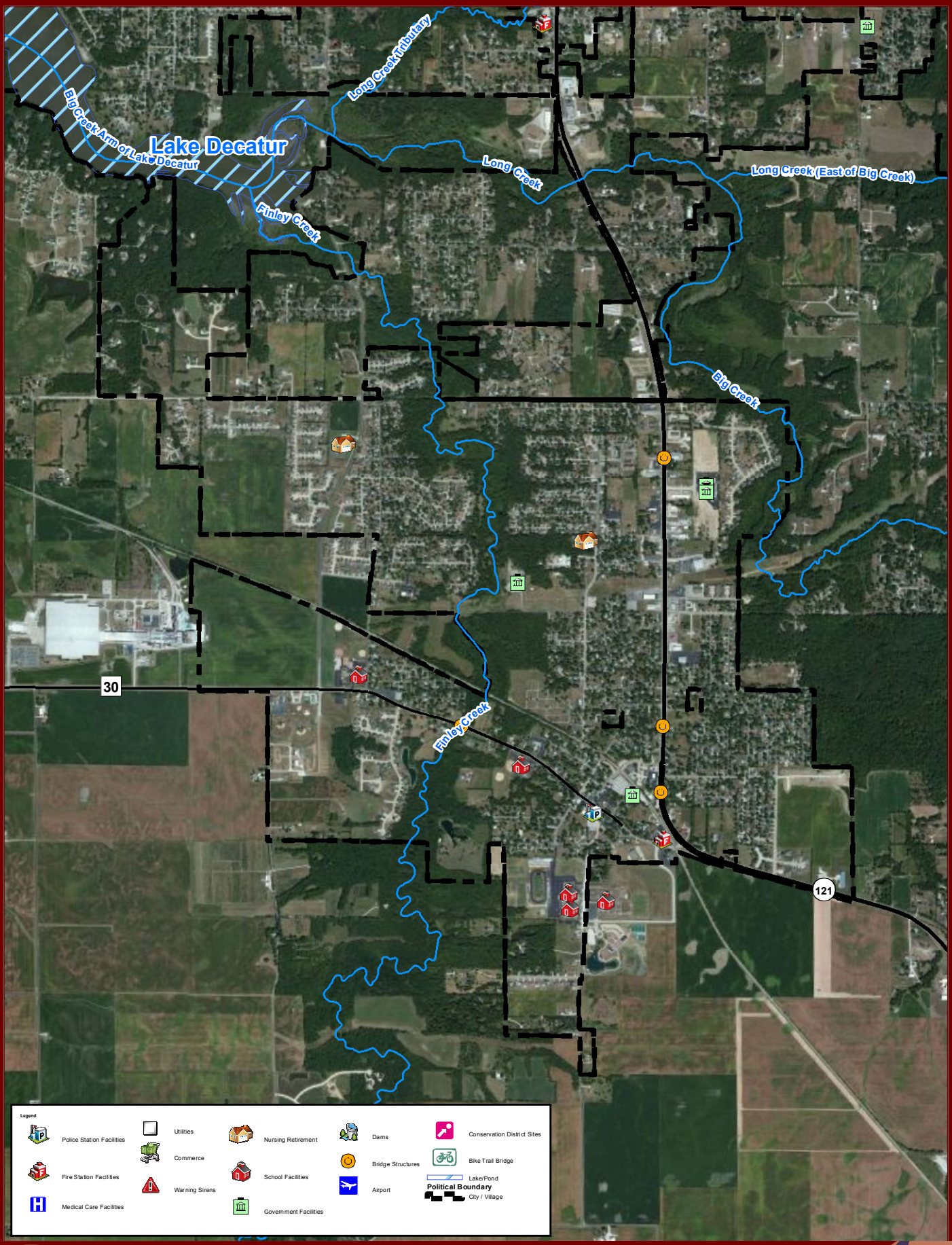
Critical Facilities

VILLAGE OF LONG CREEK

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.45 Miles

N

Critical Facilities

VILLAGE OF MOUNT ZION

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data

Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.15 Miles

N

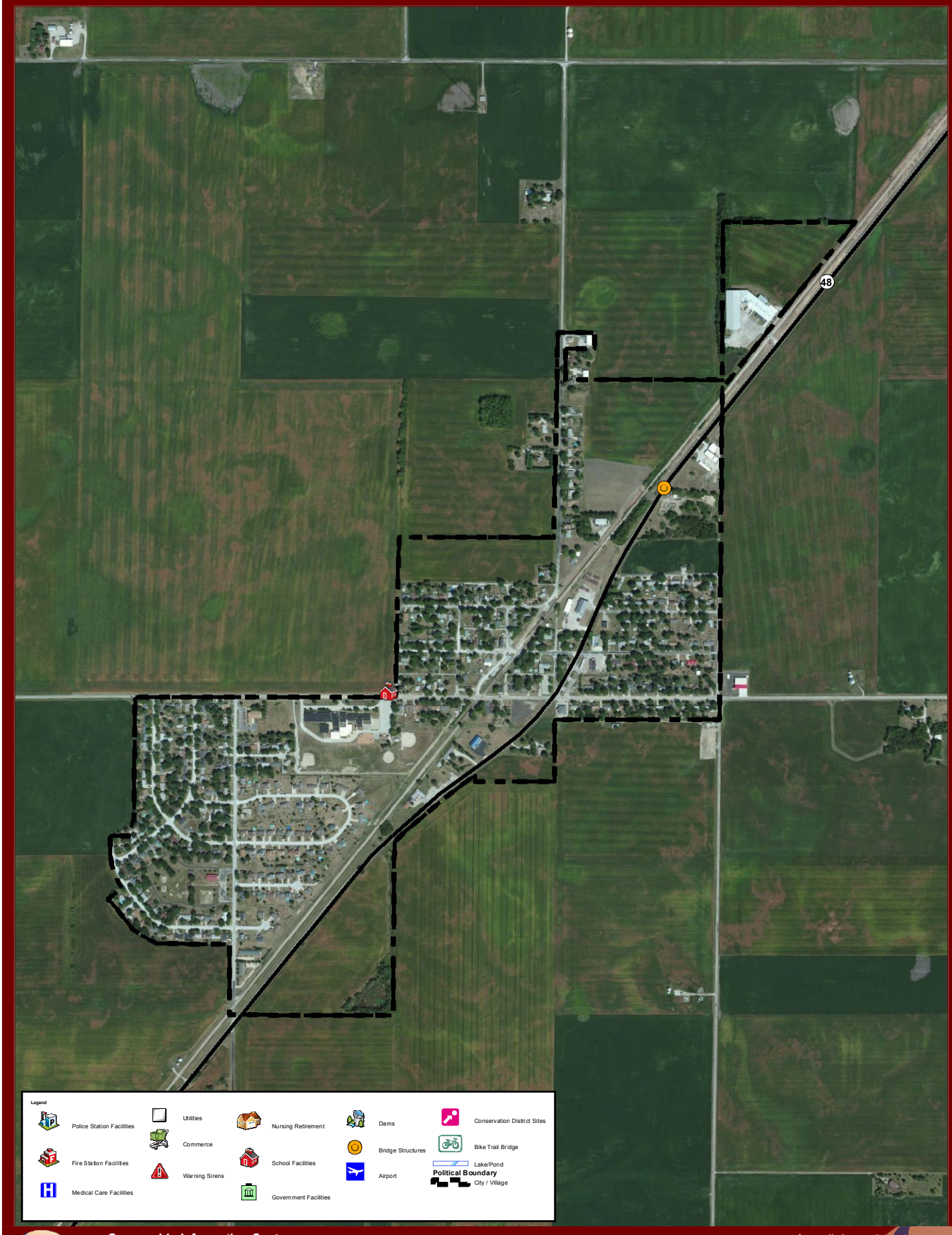
Critical Facilities

VILLAGE OF NIANTIC

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data



Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.2 Miles

N

Critical Facilities

VILLAGE OF OREANA

Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com

Source: Basemap = BING: Macon County GIS Data

Geographic Information Systems

Appendix I Printed: 3/22/13

0 0.25 Miles

N

Critical Facilities

VILLAGE OF WARRENSBURG
Macon County Multi-Hazard Mitigation Plan

Stantec 11687 Lebanon Road Cincinnati, OH 45241 Phone 513.842.8200 Fax 513.842.8250 www.stantec.com