

2014 Mitigation Plan for Natural Disasters Marion County, Ohio



Prepared for:

The Marion City / County Emergency Management Agency

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Approved by Mitigation Planning Committee: 1/14/14
Approved by FEMA: July 16, 2014

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Chapter One

Introduction

1.1 Disaster Mitigation Act of 2000

The federal government enacted the Disaster Mitigation Act of 2000 (DMA 2000) for the purpose of reducing or eliminating the long-term risk to human life and property associated with natural disasters. This Act provides local communities with the guidance necessary to access the natural disasters impacting their communities and to establish and implement mitigation activities that will reduce or eliminate natural hazard risks. The Act emphasizes cooperative efforts among all public sectors including local citizens, village, city, township, and county officials; and state and federal governmental agencies. Thus, the Marion County Mitigation Plan for Natural Disasters is established.

1.2 Committee Mission

The mission of the Marion County Mitigation Planning Committee is to develop and implement a Mitigation Plan for Marion County, Ohio that is directed specifically to natural disasters. Through cooperative efforts among local subdivisions and state and federal governmental agencies, the Plan is designed to minimize the adverse effects of natural disasters on the lives and properties of citizens of Marion County.

1.3 Plan Design

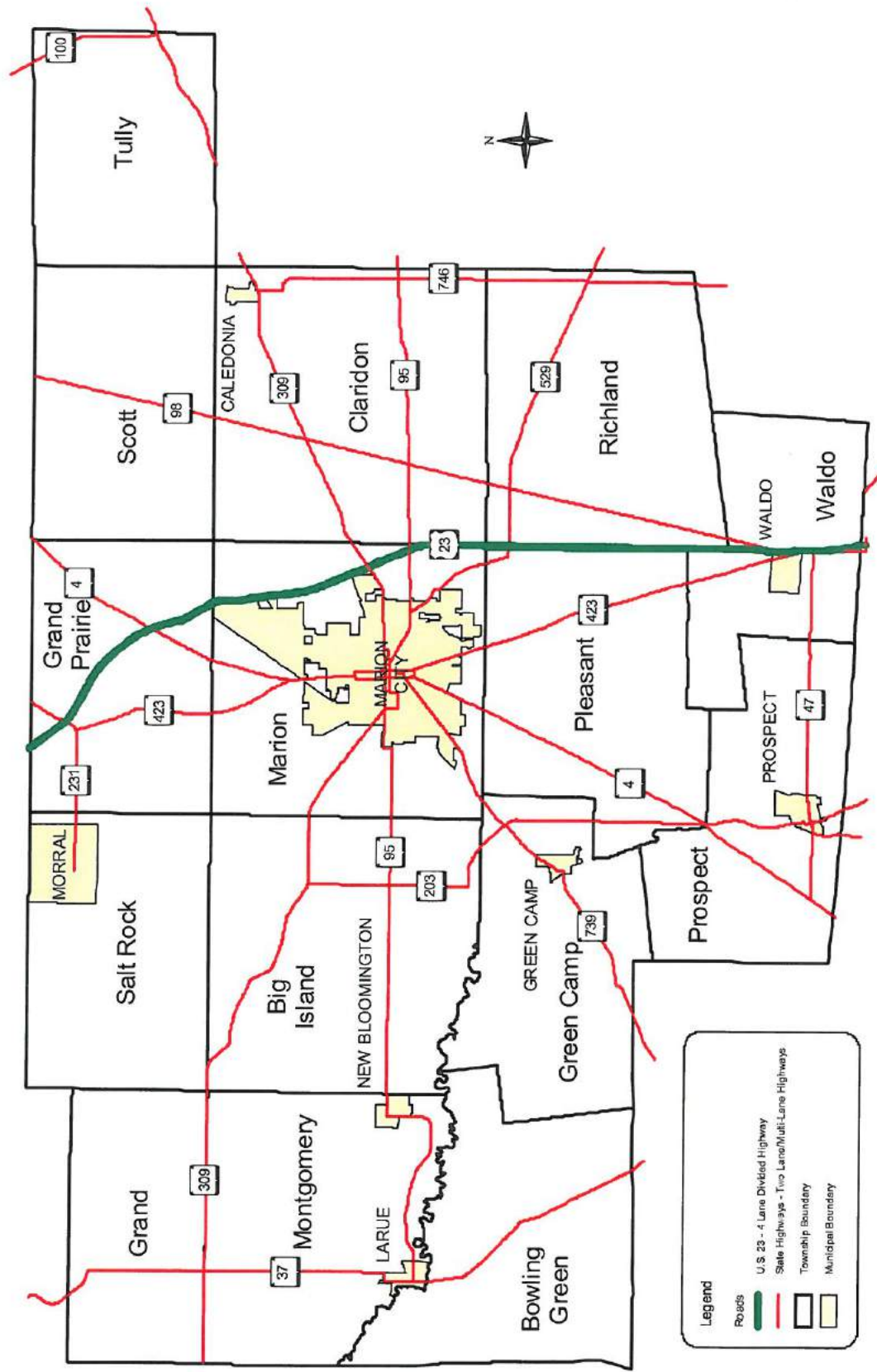
The Marion County Mitigation Plan for Natural Disasters is considered a multi-jurisdictional plan which addresses issues specific to individual incorporated areas (cities and villages) and the remaining unincorporated areas (townships). The Plan is designed for a five-year implementation period. The Plan describes the methods and procedures utilized in its development, provides the results of community assessments, identifies the mitigation activities determined to be the most important to the citizens of Marion County, and sets time lines for the implementation of those activities.

1.4 Marion County Overview

Marion County is located in north central Ohio and has a land area of approximately 409 square miles (261,760 acres). Marion County is bounded by six counties: Hardin to the west; Union to the southwest; Delaware to the south; Morrow to the east; and Crawford and Wyandot to the north. Marion County is comprised of 23 political subdivisions: one city, seven incorporated villages, and 15 townships (see Figure 1). Marion City, the County Seat is located in the central portion of the county.

Marion County has a population of 65,501 (2010 Census) with the greatest concentration of people residing in Marion City and Marion Township (44,749 (2010 Census) = 68.3% of total county population). Land use in the County is primarily agricultural. According to the 2007 Census of Agriculture, 206,832 acres (79.0% of county land area) are devoted to agricultural use. The majority of commercial and industrial activities are located within and around the perimeter of Marion City.

Figure 1 Marion County Subdivisions



Prepared by: Marion County RPC, 8/19/13

Map Source: Marion County Auditor GIS Data

The following communities are part of the Marion County Mitigation Plan for Natural Disasters:

Marion County
Marion City
Caledonia Village
Green Camp Village
LaRue Village
Morral Village
New Bloomington Village
Prospect Village
Waldo Village

Chapter Two

Organization

2.1 Committee Organization

One of the most important factors in any planning effort is to acquire the services of qualified and committed individuals who assist in the development of a formal document; particularly one that considers the well-being of each citizen within the County. The Marion County Mitigation Planning Committee was established with this important task in mind.

As a result, the Marion City / County Emergency Management Office sought support and information from various jurisdictions, business, industry, non-profit organizations, and other interested individuals. Obtaining the support of community and organizational leaders was the best foundation for the plan update effort. Pending Federal approval, the county and its participating jurisdictions intend to formally adopt this plan by passing a Resolution or Ordinance.

The 2012-2014 Mitigation Planning Committee was formed by notifying and assembling individuals and organizations that previously served on the Committee when the plan was first drafted in 2006. In addition, the Marion City / County Emergency Management Office sought to invite new individuals and organizations to participate in the plan update:

County Organizations

Marion County Commissioners
Marion City / County Regional Planning Commission
Marion County Engineers Office
Marion Area Health Department
Marion County Flood Plain Manager
Marion County Sanitary Sewer Department
Marion County Sheriff's Office

Major Employers

First Energy Corporation
Frontier Communications
Marion General Hospital
Nucor Steel
Whirlpool Corporation
Wyandot Corporation

Colleges and Universities

Ohio State University, Marion Campus
Marion Technical College

Non-Profit Organizations

Marion CANDO (Economic Development)
Salvation Army, Marion Chapter
American Red Cross, Marion Chapter
Goodwill, Marion Chapter

Others

Marion City Police Department
Marion City Fire Department
Marion Township Fire Department

EMA Directors from counties contiguous to Marion County

Crawford County
Delaware County
Hardin County
Morrow County
Union County
Wyandot County

Although invited to participate, none of the above EMA Directors chose to participate in the update of Marion County's Plan.

As a result of assessing community support and inviting a comprehensive range of resources, the following individuals were assembled to update the Marion County Natural Hazard Mitigation Plan:

2012-2014 Marion County Mitigation Planning Committee

Organization	Representative
Marion City / County Regional Planning Commission	Don Davis
Marion County Engineers Office	Brad Irons
Marion Area Health Department	Sandy Bridenstine
Marion County Flood Plain Manager	Roger Dietrich
Marion County Sanitary Sewer Department	Roger Dietrich
Marion County Sheriff's Office	Tim Bailey
First Energy Corporation	Dan DeVille

2012-2014 Marion County Mitigation Planning Committee -Continued-	
Organization	Representative
Frontier Communications	Tom Travis
Marion General Hospital	Joe Tulga
Nucor Steel	Trever Beers
Whirlpool Corporation	Dave Strzalka
Wyandot Corporation	Nick Chilton
Ohio State University, Marion Campus	Dave Claborn
Marion Technical College	LeeAnn Grau
Marion CANDO	Craig Thompson
Salvation Army, Marion Chapter	Major Paul Nickerbocker
American Red Cross, Marion Chapter	Michael Vance and Ralph Smith
Goodwill, Marion Chapter	Bob Jordan
Marion City Police Department	Tom Bell
Marion City Fire Department	Tony Zwolle
Marion Township Fire Department	Mike Fogle

Additionally, each of the jurisdictions were engaged as a part of the Mitigation Planning Committee. This allowed each jurisdiction to provide input to affect the plans content. These opportunities were usually demonstrated during scheduled meetings, email, and correspondence by postal service. As a result, the jurisdictions' representatives presented the views of their communities during the update of the hazard analysis, risk assessment, and vulnerability analyses. For the mitigation strategy, the entire Committee examined and evaluated the mitigation goals and objectives from the perspective of each jurisdiction and offered what actions must be taken. The jurisdictions also presented the status of each mitigation action from the previously Federally-approved plan. Below is a summary of each participating jurisdiction and their representative:

2.2 Assessing Risk

Next, Marion County and its subdivisions reviewed and updated characteristics and potential consequences of hazards. The intent was to understand how much of the community could be affected by specific hazards and what the impacts are on important community assets. The Mitigation Planning Committee began with a review of the county and community inventory and revised data regarding its assets for residential, non-residential, and critical facilities. The Committee also reviewed each hazard event profile for description, location, extent, history, and probability of occurrence.

Participating Jurisdictions

COMMUNITY	NAME	POSITION / TITLE	AGENCY / ORGANIZATION
*Marion County	Ken Striverson	President	Marion County Board of Commissioners
*City of Marion	Jay Shoup	Director	Marion City Service Office
*Village of Caledonia	Maureen Welch	Mayor	Caledonia Village Office
*Village of Green Camp	Michael Strauser	Mayor	Green Camp Village Office
*Village of LaRue	Milton Lightfoot	Mayor	LaRue Village Office
*Village of Morral	Greg Stevens	Mayor	Morral Village Office
*Village of New Bloomington	Amy Gruber	Mayor	NB Village Office
*Village of Prospect	Ken Blue	Manager	Prospect Village Office
*Village of Waldo	Bruce Baker	Mayor	Waldo Village Office
Big Island Township	Phillip Schaber	Chairman	Big Island Township Board of Trustees
Bowling Green Township	Jeffrey Mallett	Chairman	Bowling Green Township Board of Trustees
Claridon Township	John Boger	Chairman	Claridon Township Board of Trustees
Grand Township	John Hieckman	Chairman	Grand Township Board of Trustees
Grand Prairie Township	Wilfred Thiel Jr.	Chairman	Grand Prairie Township Board of Trustees
Green Camp Township	Robert Clunk	Chairman	Green Camp Township Board of Trustees
Marion Township	Lynn Clabaugh	Chairman	Marion Township Board of Trustees
Montgomery Township	Pearl Gamble	Chairman	Montgomery Township Board of Trustees
Pleasant Township	John Peacock	Chairman	Pleasant Township Board of Trustees
Prospect Township	Alfred Wasserbeck	Chairman	Prospect Township Board of Trustees
Richland Township	Roger Groll	Chairman	Richland Township Board of Trustees
Salt Rock Township	John Burchett	Chairman	Salt Rock Township Board of Trustees
Scott Township	Mark Croman	Chairman	Scott Township Board of Trustees
Tully Township	Everett Douce	Chairman	Tully Township Board of Trustees
Waldo Township	Steve Wetzal	Chairman	Waldo Township Board of Trustees

*Pending Federal approval, Marion County and the incorporated jurisdictions listed above intend to formally adopt the plan by passing a Resolution or Ordinance.

Based on the last several years, the Mitigation Planning Committee adjusted the probability of each hazard according to history, location, and variations of extent. Coupled with updated inventory data, the Mitigation Planning Committee estimated losses projected for building types, numbers and estimated damage to the county as a whole.

2.3 Mitigation Plan Development and Update

After understanding the risks posed by hazards, the Mitigation Planning Committee determined what their priorities should be and looked at possible ways to minimize the effects of each hazard. This resulted in the updated Marion County Natural Hazard Mitigation Plan and the strategy for its implementation. After examining existing goals and objectives, the Committee also considered new goals and objectives. A revised approach was formed that re-prioritized identified existing and new mitigation actions. The Committee prepared the implementation strategy that identifies the action, priority, time line, lead organization, resources needed, and status. This beginning section of the revised plan documents the planning process of the Marion County Mitigation Planning Committee.

2.4 Implementing the Plan and Monitoring Progress

Marion County and its communities intend to utilize this plan in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of local government. To ensure the success of this ongoing program, it is critical for the plan to remain relevant. Thus, it is important to conduct periodic evaluations and make revisions as necessary.

Following the completion of the draft Mitigation Plan, Marion City, each village and township within the county, as well as, the Marion County Commissioners, will be given the opportunity to formally adopt the plan. Copies of formal resolutions adopting the Marion County Natural Hazard Mitigation Plan by relevant political subdivisions within the county are found in Appendix A.

As the planning process continues, each county political subdivision will play a valuable role in the dissemination of mitigation planning information to their respective constituents. Their continued involvement with mitigation initiatives is extremely important in the protection of community citizens and properties. Those efforts are described further in Chapter Six. A copy of a Natural Hazard Mitigation Survey submitted to each political subdivision is found in Appendix B.

The plan and its results will be evaluated on a periodic basis as to gauge its effectiveness described in Chapter Seven. Some of the criteria to gauge effectiveness include, but are not limited to:

- How effective was the action to accomplish the end result?

- Was the action worth the effort?
- Did the action achieve the goal and is it worth it to repeat it in the future?

2.5 Regional Acknowledgment

The adverse effects of natural disasters are not bound by the borders of political subdivisions. Accordingly, the mitigation of natural disasters must take into consideration the impacts of natural disasters on counties adjacent to Marion. A prime example would be a severe winter storm spanning multiple counties. Because of these circumstances, attention must be given to the potentials of joint mitigation activities that would benefit citizens that may reside in close proximity to one another, but fall under separate county jurisdictions.

To that end, the Emergency Management Agency Directors from adjacent counties (Hardin, Union, Delaware, Morrow, Crawford, and Wyandot) were invited to be part of the Mitigation Planning Committee and participate in the update of Marion County's Mitigation Plan for Natural Disasters. In addition, the Marion County Mitigation Planning Committee is willing to assist in cooperative mitigation initiatives that might be developed with adjacent counties. A letter indicating this intent has been sent to the EMA Directors in the adjoining counties. A copy of this letter can be found in Appendix B. These potential initiatives are discussed in Chapter Four: Goals and Activities.

2.6 Public Participation

Public participation and input into the planning process was first announced through a press release. This notice directed the public to view the previous plan on-line and provide feedback via email, telephone, or conventional mail (see Appendix B). Copies of the previous plan were also available for review at the Marion City / County Regional Planning Commission Office. However, there were no comments received from the public that were accepted and implemented into the plan (several comments involved lack of tornado sirens at specific locations in the county which were already identified in the existing 2006 Plan).

Throughout the plan development phase, the public was invited to attend and participate in Mitigation Planning Committee meetings. An agenda indicating meeting location, dates, and times were sent to the Marion Star and Marion Online News, and posted at meeting locations. A copy of an agenda is shown in Appendix B of this plan. In addition, plan development progress and findings were presented at several Marion City / County Regional Planning Commission meetings.

After the planning process was finished, the public had the opportunity to review and comment on the revised plan. This method was similar to those listed above when the public reviewed the previous plan (see Appendix B). Copies of the updated plan were also available for review at the Marion City / County Regional Planning Commission Office. Eight public comments were received from the public meeting and where applicable incorporated into

the updated plan. In addition, the updated final plan was presented to the Marion City / County Regional Planning Commission at their January meeting.

The Mitigation Planning Committee's efforts to maximize community involvement are described in Chapter Six.

Chapter Three

Hazard Analysis

3.1 Overview

The Marion County Mitigation Planning Committee provides the following hazard analysis of natural disasters that have affected, and will continue to potentially affect, Marion County, Ohio. The purpose of this hazard analysis is to identify structures and populations within the county that are most at risk from the adverse impacts of natural disasters. To that end, the data and other information acquired during this portion of the mitigation process will be used to develop specific mitigation projects. These proposed projects, identified in a forthcoming chapter of the Plan, will be designed to lessen the adverse impacts of natural disasters on the citizens of Marion County. The Hazard Analysis Chapter of the Plan has been completed in accordance with provisions of the Federal Mitigation Act of 2000.

The Hazard Analysis Chapter includes five unique components: Hazard Identification, Profiles of Hazard Events, Community Profile, Vulnerability Analysis, and Estimated Losses.

The Hazard Identification component is designed to recognize particular types of natural disasters that have the potential of occurring within the County. Recorded incidences of past natural disasters were used to make this determination. The natural disasters impacting Marion County are listed specifically in this Chapter. This Section stands alone and is considered to be the foundation for the remaining components of the Hazard Analysis Chapter. With the exception of the Vulnerability Analysis component, the data and other pertinent information for each of the remaining hazard analysis components is contained under the headings for each specific natural hazard listed

Profiles of Hazard Events identify past incidences of natural disasters within Marion County. The information and data presented in these profiles were obtained through review of historical data from news media sources, discussions with county residents and representatives from the Ohio Department of Natural Resources and Marion County Historical Society. Internet web sites were researched as were resources through the Marion City Library. Additional sources of data / information are identified under specific natural disasters. Data provided on the extent of damage and losses are as complete to the best of our knowledge from the research conducted on each natural disaster. Estimated monetary losses within this Plan component are presented in 2012 dollars. Utilizing these determinations is valuable in the mitigation process by focusing mitigation efforts on particular natural disasters deemed to be more pertinent to the County.

The Community Profile component compares overall County property / population statistics to those within the pertinent hazard area. The County property data were obtained from the

Marion County Auditor's Office GIS (Geographic Information System). Structural data for the individual parcels were used in the determination of estimated losses.

Specific population data were included as part of the Hazard Analysis. Historical documentation has indicated that injuries / deaths of Marion County residents due to natural disasters have been minimal. Mitigation planning will continue to include personal injury / death potentials as a major consideration for proposed activities / projects.

Current and future structure data, in conjunction with population considerations, will continue to be paramount in directing particular mitigation initiatives towards locations and populations considered to be at risk.

The Vulnerability Analysis component is presented in this Chapter in the form of maps and aerial photos. These are provided for county areas where localized hazard events are possible (e.g. Class II dam failure, flood, tornado, etc.). Mapping of generalized hazard events (e.g. drought, hailstorm, severe winter storm, and windstorm) is not included as a formal part of the Plan due to their potential impact over the entire County.

Overall emergency planning and response coordination for all natural disasters occurring within the County are under the authority of the Marion City / County Emergency Management Agency. Emergency planning and response activities are implemented in cooperation with all relevant County political subdivisions. Procedures and other provisions of emergency planning and response to natural disasters are specified within Marion City / County EMA's *Emergency Operations Plan*. Should the capabilities of response at the County level be exceeded, requests for assistance would be made by the Marion City / County Emergency Management Agency to the Ohio and / or Federal Emergency Management Agencies.

The final Hazard Analysis component, Estimated Losses, quantifies monetary damage that might be incurred to structures affected by the respective natural disaster. For the purposes of this Plan, estimations are provided for the total loss of the structure as well as for contents for localized hazard events. All structural loss data provided in this Hazard Analysis component were calculated using information derived from the Marion County Auditor's Office. Regional storm events will be limited to providing a loss estimation for Marion County based on the total damage incurred across the region in question. In this instance, Marion County's portion of total damage will be calculated based on loss per storm event and average annual loss.

As stated in Chapter One of the Plan, Marion County is comprised of 23 political subdivisions; one city, seven villages, and 15 townships. Marion City, the County's most populous subdivision, is the County seat and is located in the central portion of the county. Approximately 55% of Marion County's total population reside within Marion City and Marion Township. Areas of concentrated population can also be found in all seven villages along with the Grand View Estates area in Marion and Grand Prairie Townships. Land use within the county is primarily agricultural. The majority of commercial and industrial

activities are located within and around the perimeter of Marion City. Limited commercial areas can be found in all seven villages.

Future population growth within Marion County is expected to remain fairly constant. Current and projected tendencies are for populations to increase mainly in suburban areas to the south and east of Marion City. Current population increases are not only due to relocations from urban areas within the county but also relocations from outside of the county due to the accessibility of U.S. 23 to the Columbus area and development pressures in Delaware County. Population increases are also expected to occur in the southern part of the county, again, due to development pressures from Delaware County.

Expansion of structures within the 100-year flood plain areas is expected to be minimal. Any construction in these areas must meet the provisions of the Marion County Flood Plain Regulations (unincorporated areas) or ordinances established by the various villages within the 100-year flood plain. Flood plain management planning efforts will be addressed in an upcoming chapter of the Plan.

Below is a list of recent natural disasters in Marion County that involved Federal Disaster Relief Money:

Disaster Number	Disaster Type	Declared	Public Assistance
DR-1580	Flood Mud/Landslide Winter Storm	2/15/2005	\$36,698.49
EM-3198	Snow Storm	11/2/2005	\$66,233.88
EM-3286	Record / Near Record Snow Storm	4/24/2008	\$106839.44
		Total	\$209,771.81

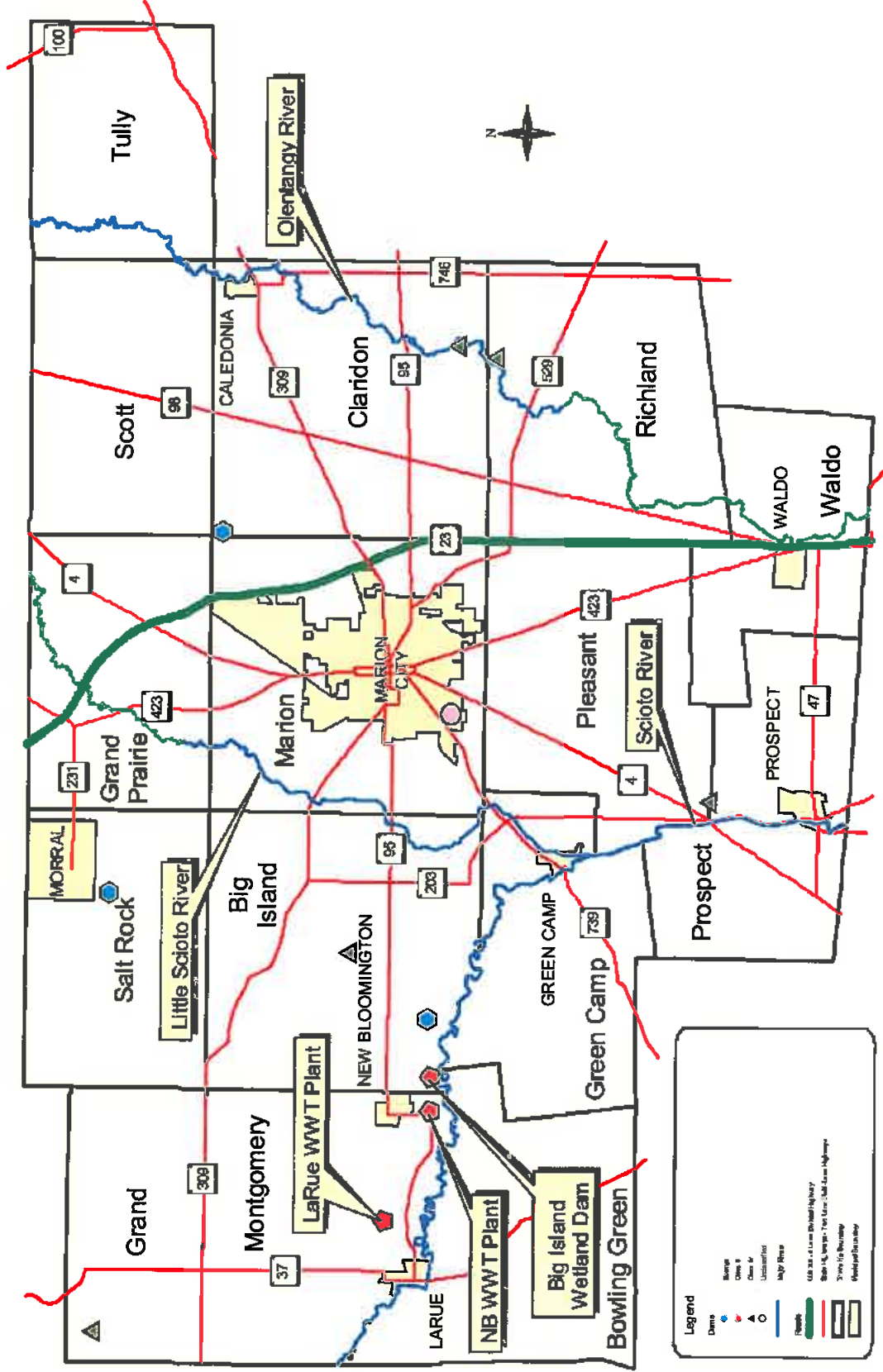
3.2 Hazard Analysis

Historical data indicates that there are a number of natural disasters that have potentials for adversely impacting Marion County. These are Class II dam failure, drought/extreme heat, earthquake, flood, hailstorm, severe winter storm, tornado, and windstorm. Individually, these natural disasters may affect the County in varying degrees of severity. As mentioned, the remaining three components of this hazard analysis will be addressed individually for each of these natural disasters.

Class II Dams

According to Ohio Department of Natural Resources, Marion County has 18 dams (see Figures 2 and 3). The 18 dams are broken down as follows:

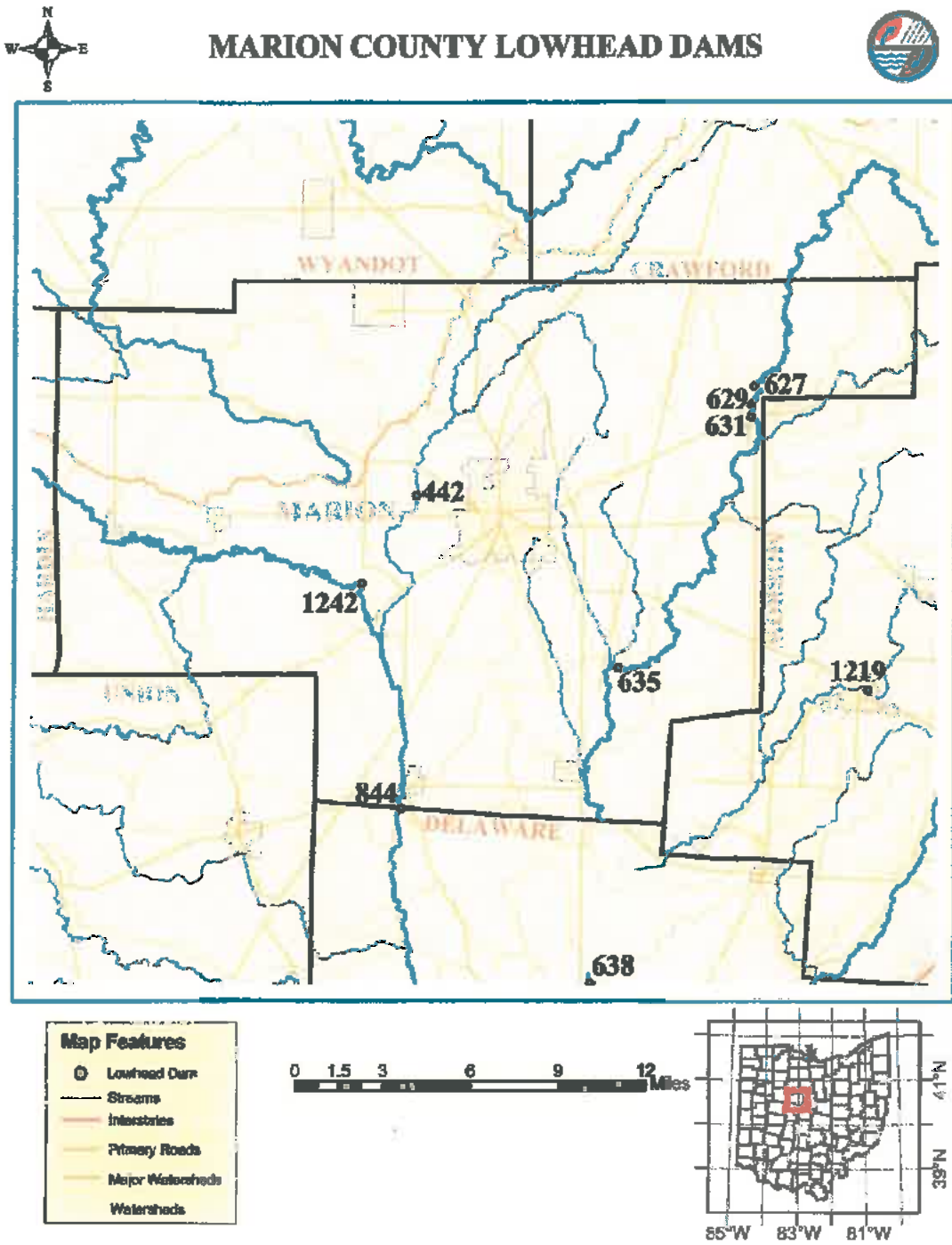
Figure 2
Marion County Dams



Map Source: ODNR & Marion County Auditor GIS Data

Prepared by: Marion County RPC, 8/19/13

Figure 3



- Class II Dams - 2
- Class IV Dams - 5
- Lowhead Dams - 7
- Exempt / Unclassified Dams - 4

Although not considered a Class II Dam by ODNR, the wastewater treatment lagoon for the village of New Bloomington will be treated as a Class II Dam for the purposes of this report.

In the late fall of 2011, Lowhead Dam 844 was removed as part of the City of Columbus "Water Beyond 2000 Upground Reservoir Project". The purpose of the project is to meet the future water supply needs of central Ohio residents.

Also, ODNR was contacted about any plans they may have or know of to remove any other lowhead dams in Marion County in the next five years. At this time, ODNR has no plans nor knows of any plans to remove any other lowhead dams in the county.

Since minimal property damage and no loss of life is anticipated with a breach of a Class IV, exempt / unclassified, or Lowhead dam, only Class II dams will be considered in this study.

According to ODNR, a Class II dam has the following characteristics:

"Dams having a storage volume greater than five hundred acre-feet or a height of greater than forty feet shall be placed in Class II. A dam shall be placed in Class II when failure of the dam would result in at least one of the following conditions, but loss of human life is not envisioned:

- A. Possible health hazard, including but not limited to loss of a public water supply or wastewater treatment facility.
- B. Probable loss of high-value property, including but not limited to flooding of residential, commercial, industrial, publically owned and / or valuable agricultural structures, structural damage to downstream Class I, II or III dams, dikes or levees, or other dams, dikes or levees of high value.
- C. Damage to major roads including but not limited to interstate and state highways, and roads which provide the only access to residential or other critical areas such as hospitals, nursing homes, or correctional facilities as determined by the chief.
- D. Damage to railroads, or other public facilities.

The following table lists major specifications for each of the three Class II dams in Marion County:

Class II Dam	Location	Completion Year	Capacity (gallons)	Use
LaRue Village Wastewater Treatment Plant Lagoons	Montgomery Township	2000	12M	Wastewater Treatment Plant
New Bloomington Wastewater Treatment Plant Lagoons	Montgomery Township	1997	8M	Wastewater Treatment Plant
Big Island Wetland Dam	Big Island Township	1995	36M	Maintains the water level for the Big Island Nature Preserve area

There have not been any failures of any of the Class II Dams in Marion County since their construction. The probability of a Class II Dam breach is considered low.

Community Profile - Class II Dams

The three dams in question are located in the western portion of the County.

LaRue Village Wastewater Treatment Plant Lagoons

The wastewater treatment plant for the Village of LaRue is located northeast of LaRue Village in Montgomery Township (see Figure 4). The plant is surrounded by farm fields. This plant is comprised of three lagoons with a side water depth of 7'. Any breach of a treatment lagoon(s) would result in effluent flowing south towards the Scioto River.

New Bloomington Wastewater Treatment Plant Lagoons

The wastewater treatment plant for the Village of New Bloomington is located due south of the New Bloomington Village in Montgomery Township (see Figure 5). The plant is surrounded by farm fields. This plant is comprised of three lagoons with a side water depth ranging from 10' to 15' in height. Any breach of a treatment lagoon(s) would result in effluent flowing south towards the Scioto River.

Big Island Wetland Dam

The dam is located southeast of New Bloomington Village in Big Island Township (see Figure 6). The dam is located on the north side of LaRue - Prospect Road. This dam has a height of 9' with a length of 2600'. Any breach of this dam would result in water flowing south across LaRue - Prospect Road and bottom land to the Scioto River.

Both the Marion City / County EMA Director and the Marion County Sanitary Engineer believe any breach of the wastewater treatment plant lagoons would be easily contained by the Marion County Sanitary Engineering Department. In addition, the Marion City / County EMA Director and the Marion County Sanitary Engineer believe that any property or crop damage associated with a breach of any of the three dams would be minimal.

Figure 4
LaRue Wastewater Treatment Plant



Figure 5
New Bloomington Wastewater Treatment Plant



Figure 6
Big Island Wetland Dam



Estimation of Losses - Class II Dams

As stated previously any damage associated with a breach of any of the dams discussed above should result in minimal property or crop damage. In the case of the two wastewater treatment plants for the villages of LaRue and New Bloomington, a complete system failure is considered remote. Both wastewater treatment facilities are comprised of multi-cell lagoons. The loss on one cell would not impact the Villages and the probability of losing multiple cells is considered remote

The Big Island Wetlands Dam is used to regulate the water level in the Big Island Nature Preserve. Any breach of the Big Island Wetlands Dam would result in the temporary closure of LaRue- Prospect Road until the waters recede forcing traffic to find alternate routes. The loss of water behind the dam would significantly impact the wild life that is dependent on the wetland areas. It is impossible to place a monetary damage amount on the impact to the wild life.

For the purposes of this report, a loss estimate will be generated for the complete failure of the LaRue and New Bloomington waste water treatment plants. The estimate will involve the loss of agricultural crops only. No structures of any kind will be damaged due to the location of the wastewater treatment plants. The assumptions for this loss estimate are:

1. Complete breach of all three wastewater containment cells for each WWTP
2. Five acre containment and clean up area at each WWTP treatment site (10 acres total).
3. Surrounding farmland planted with corn.
4. Average corn yield per acre = 150 bushels / acre.
5. Current commodity price of Ohio corn = \$4.77 per bushel (AG/Web, 4-7-14).

Type of Parcel (Occupancy Class)	Number of Structures Countywide	Value of Structures for this Scenario
Residential	0	\$0
Non-Residential	0	*\$7,155
Critical Facilities	0	\$0
Total	0	*\$7,155

* agricultural crop damage only.

Drought / Extreme Heat

FEMA considers drought as “a persistent and abnormal moisture deficiency having adverse effects on vegetation, animals, or people.” Extreme heat, which may precede drought conditions is considered to involve conditions where temperatures are 10 degrees or more above the average high temperature for the region and last for several weeks.

Profile of Hazard Events - Drought / Extreme Heat

For the purposes of this report, drought / extreme heat is considered a countywide event impacting all municipalities and townships. The following is a listing of periods of drought and related periods of extreme heat that have occurred in Ohio and Marion County since 1930:

1930-1938
June 1940 - May 1941
August 1943 - July 1944
February 1953 - January 1954
February 1960 - January 1961
1963
September 1987 - August 1988
May 1991 - April 1992
1995
1996
1999
Summer 2002
Summer 2005 (north only)
Summer 2012

According to the USGS, droughts occur in Ohio on the average of every ten years.

Drought is measured with the Palmer Drought Severity Index. The index uses temperature and precipitation data to calculate water supply and demand, incorporates soil moisture, and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief. The table below provides a summary of the Palmer Drought Severity Index.

Community Profile - Drought / Extreme Heat

For the purposes of this report, this a countywide event and affects all townships and jurisdictions. However, damage estimates are limited to agricultural damage only.

Palmer Classifications	
4.0 or more	extremely wet
3.0 to 3.99	very wet
2.0 To 2.99	moderately wet
1.0 to 1.99	slightly wet
0.5 to 0.99	incipient wet spell
0.49 to -0.49	near normal
-0.5 to -0.99	incipient dry spell
-1.0 to -1.99	mild drought
-2.0 to -2.99	moderate drought
-3.0 to -3.99	severe drought
-4.0 or less	extreme drought

Estimation of Losses - Drought / Extreme Heat

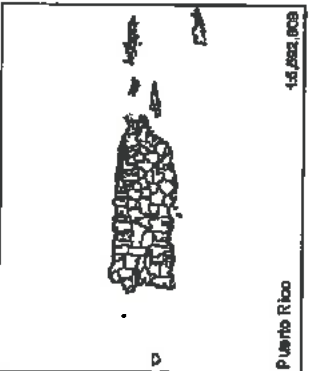
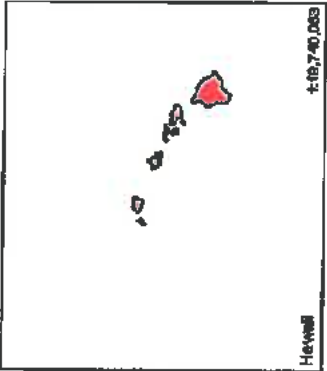
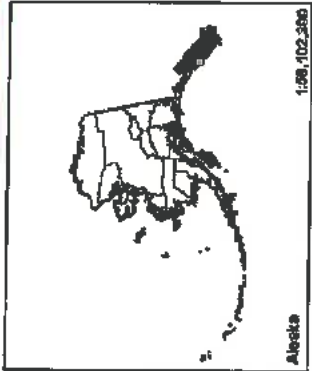
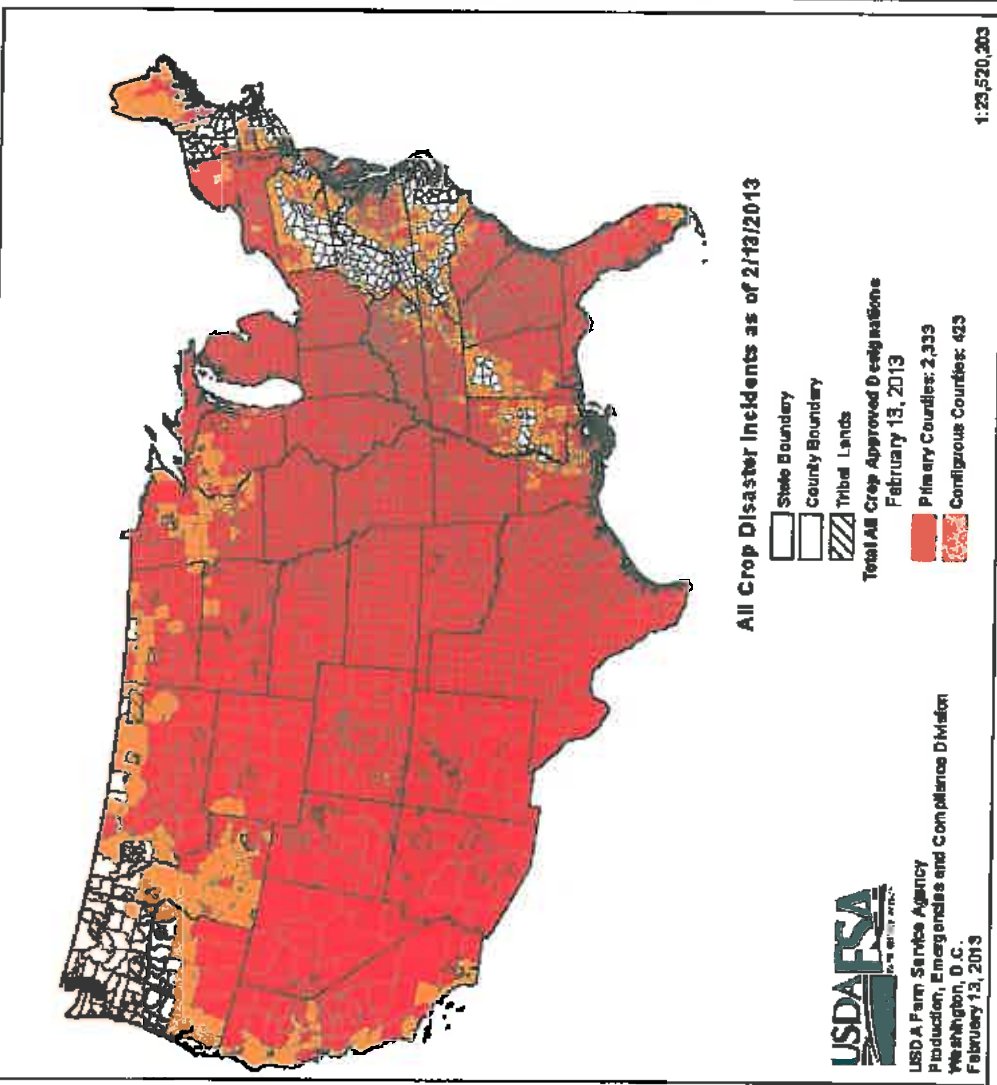
Seasons of drought and periods of extreme heat can potentially occur during any particular year when climatic conditions are conducive. Effects of both drought and extreme heat would be expected to impact the entire county. Agricultural losses to crops and livestock would primarily be affected during periods of drought while property damage and loss of life and injury would primarily be affected during periods of extreme heat. Drought can also result in the reduction of potable water supplies for humans and animals; necessitating water conservation methods. Extreme heat could result in adverse health-related affects to both humans and animals.

The most recent drought occurred in 2012-2013. The 2012-2013 North American Drought is an expansion of the 2010-2012 United States drought which began in the spring of 2012, when lack of snow in the United States caused very little melt water to absorb into the soil. The drought includes most of the US including Ohio. Among many counties, Marion County was designated with moderate drought conditions by mid-June (see 2012 Crop Disaster Losses Map). It has been equaled to similar effects as droughts in the 1930s and 1950s but it has not yet been in place that long. However, the drought has inflicted, and is expected to inflict, catastrophic economic ramifications. In most measures, the drought has exceeded the 1988-1989 North American Drought, which is the most recent comparable drought.

Financial losses to structures would not be applicable to periods of drought. As mentioned, losses of agricultural productivity would be an issue. In the past, definitive financial losses

Secretarial Disaster Designations - CY 2012

Primary and Contiguous Counties Designated for 2012 Crop Disaster Losses



to agriculture due to drought are, for the most part, unavailable on a county by county basis. For the purposes of this report, USDA Agricultural Statistics on crop production will be used to compare a non-drought year with a drought year. This comparison will provide a basis for understanding how drought impacts countywide crop production in the Marion County. The table below compares Marion County crop production (for the three main primary crops of corn, soybeans, wheat) for the years of 2011 (a non-drought year) and 2012 (a drought year):

Crop	2011 Value	2012 Value	Difference
Corn - Acres Planted	57,000	71,000	+14,000
Corn, Grain - Acres Harvested	52,000	65,000	+13,000
Corn, Grain - Production Measured in BU	9,145,000	8,650,000	-495,000
Corn, Grain - Yield, Measured in BU / Acre	175.9	133.1	-42.8
Soybeans - Acres Planted	104,000	99,700	-4,300
Soybeans - Acres Harvested	104,000	99,700	-4,300
Soybean - Production Measured in BU	5,249,000	4,590,000	-659,000
Soybeans - Yield, Measured in BU / Acre	50.5	46	-4.5
Wheat Winter - Acres Planted	11,900	5,700	-6,200
Wheat Winter - Acres Harvested	11,700	5,240	-6,490
Wheat Winter - Production Measured in BU	740,000	353,000	-387,000
Wheat Winter - Yield, Measured in BU / Acre	63.2	67.4	-4.2

A review of the above table indicates more acreage was allocated to corn planting (125%) in 2012 than in 2011. Conversely, the acres devoted to soybean planting (-4%) decreased slightly from 2011 to 2012. In addition, winter wheat acres planted decreased by approximately 50% from 2011 to 2012.

The most tell data related to the drought Marion County experienced in 2012 relates to data on corn-grain production and yield from 2011 to 2012. While corn-grain acres planted and harvested from 2011 to 2012 both increased by 125% the production and yield both decreased by 5% and 25%, respectively. This ultimately translated into economic loss for local farmers.

According to the Ohio Department of Agriculture, **2011 & 2012 Ohio Department of Agriculture Annual Report and Statistics**, the 2011 cash receipts for corn in Marion County was \$50,165,000 which translates to \$5.49 per bushel of corn. According to the USDA, National Agricultural Statistical Service, **Agricultural Prices (November 2012)** corn in Ohio was being purchased for \$7.00 per bushel in October of 2012. This translates into a 2012 cash receipt of \$60,550,000. Although the 2012 drought reduced the county's corn yield, market demand for corn kept the drought from becoming an economic disaster for local farmers. In fact, corn cash receipts increased by approximately 10 million dollars from 2011 to 2012.

From a planning perspective, the severity of an impact of a drought and extreme heat in Marion County and all its subdivisions is considered low and moderate, respectively. Mitigation activities relating to drought and extreme heat would come primarily in the form of public education and other informational releases that would limit these effects on the community. Mitigation planning activities are addressed in a subsequent chapter of the Plan.

Earthquake

Earthquakes are caused by the movements of the Earth's tectonic plates. Effects of earthquake can range from minor ground motion to severe ground surface faults. Earthquake severity, in terms of magnitude and intensity, is measured using different scales. For the purposes of this study, the Magnitude Scale and Modified Mercalli Scale (intensity) used by the Ohio Seismic Network (see table below) will be the basis of evaluating earthquake events and hazards.

According to the U.S. Geological Survey (USGS), Ohio lies on the periphery of the New Madrid Seismic Zone. This seismic zone has been a source of numerous earthquakes with various magnitudes. The USGS identifies two Peak Acceleration Levels (% g) for Marion County. The eastern 2/3's of Marion County has a Peak Acceleration Level (% g) of 2-3% while the western 1/3 of the County has a Peak

Acceleration Level (% g) of 3-4% (see Figure 7). These (% g) levels indicate that structural damage from an earthquake event (especially in the western portion of the county) would be relatively minor (some breakage of dishes, windows, plaster, disturbance of tall objects). Given the facts that:

1. Marion County has not had an earthquake event since 1930; and
2. A level 4 magnitude earthquake in the western portion of the county would cause only minor building structural damage;

Thus, Marion County is at a relatively low risk to a earthquake hazard.

The tables below provide a basic summary of earthquake events from the last 12 years for both the United States and across the world. As noted above Marion County has the potential to experience an earthquake with a magnitude ranging from 2.0 to 4.0. Comparing Marion County earthquake event magnitude data to earthquake event data for the past 12 years in the United States and the world, one finds that approximately 83.2% and 43.9% of total earthquake events in the United States and the world, respectively, fall with the 2.0 to 4.0 magnitude range.

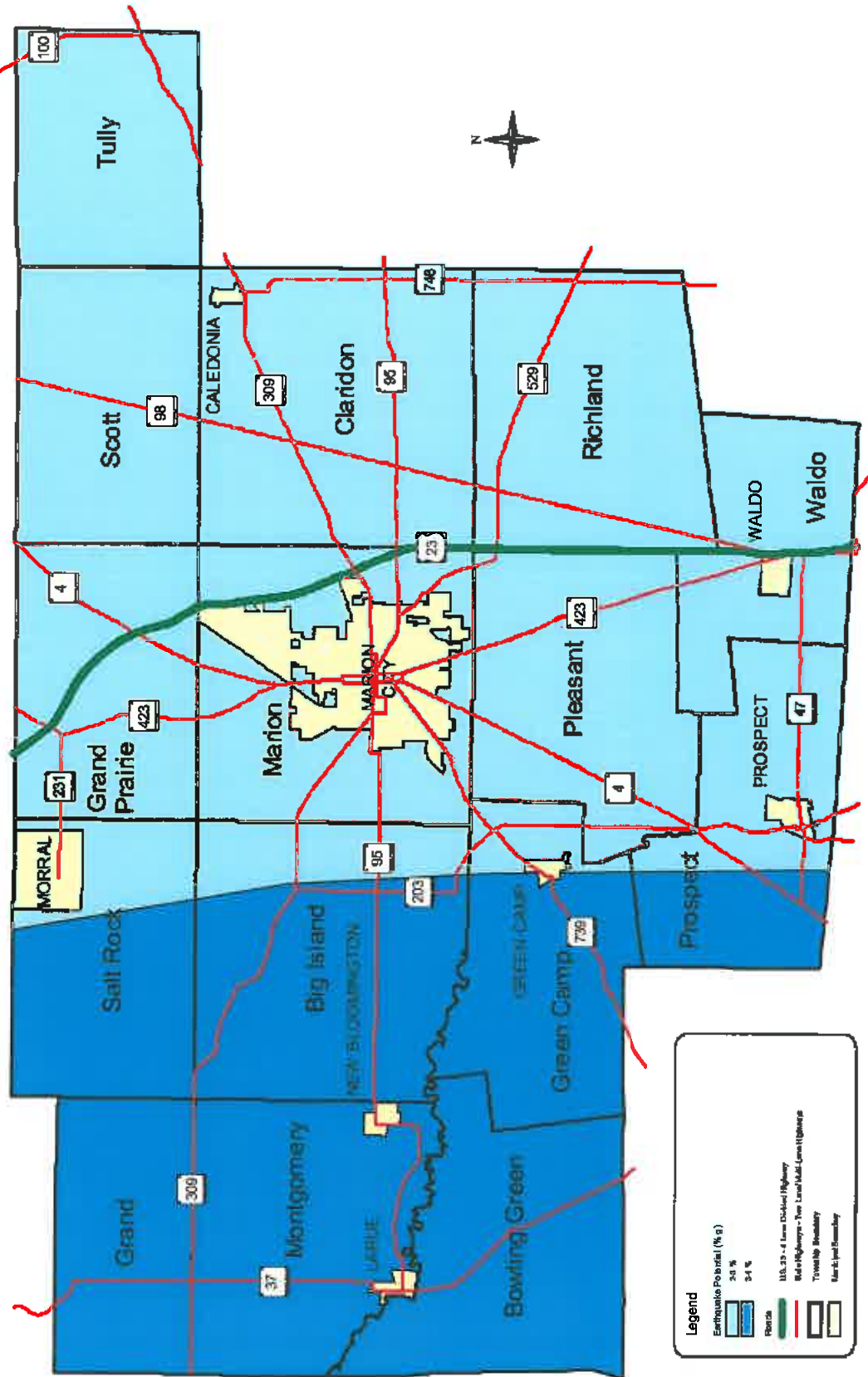
In the United States, approximately 93% of the earthquake events from 2000 to 2012 had a magnitude ranging from 2.0 to 4.9. Two deaths were attributed to earthquake events during this time period.

Similar to the United States, approximately 84% of worldwide earthquake events over the last 12 years had a magnitude ranging from 2.0 to 4.9. However, unlike the United States, worldwide deaths from earthquake events was estimated to be 813,865 during this time period. One possible reason for the high number of deaths may be due to high magnitude earthquakes occurring in highly populated areas located over unconsolidated sediments which tend to magnify seismic waves completely destroying most buildings and infrastructure.

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

(Source: Adapted from Ohio Department of Natural Resources, Division of Geological Survey, GeoFacts No. 3 Paper, Earthquakes and Seismic Risk in Ohio, Revised May, 2012)

Figure 7
Marion County Earthquake
Peak Acceleration Level (% g) Zones



Legend

- 54 %
- 54 %
- Road
- US, 20+ Lane Divided Highway
- Two-Lane Highway - Two Lane Road Lane Highway
- Township Boundary
- Meridian Boundary

Prepared by: Marion County RPC, 8/19/13

Map Source: ODNR & Marion County Auditor GIS Data

Magnitude	Number of Earthquakes in the United States for 2000-2012	Number of Earthquakes Worldwide for 2000-2012
No Magnitude	2,394 (4.8%)	20,888 (6.3%)
0.1 to 0.9	3 (0.0%)	259 (0.0%)
1.0 to 1.9	195 (0.4%)	7,219 (2.2%)
2.0 to 2.9	21,906 (44.1%)	58,905 (17.7%)
3.0 to 3.9	19,402 (39.1%)	87,012 (26.2%)
4.0 to 4.9	4,985 (10.0%)	134,832 (40.5%)
5.0 to 5.9	726 (1.5%)	21,516 (6.5%)
6.0 to 6.9	73 (0.1%)	1,890 (0.6%)
7.0 to 7.9	8 (0%)	185 (0.0%)
8.0 to 9.9	0 (0%)	17 (0.0%)
Total Earthquakes	49,683	332,726

(Source: U.S. Geological Survey, Earthquake Hazards Program, Earthquake Facts and Statistics)

	Estimated Deaths from Earthquakes for 2000-2012
United States	2
Worldwide	813,856

(Source: U.S. Geological Survey, Earthquake Hazards Program, Earthquake Facts and Statistics)

Profile of Hazard Events - Earthquake

According to the Ohio Seismic Network Map of Deep Structures in Ohio (see Figure 8), a fault (Marion Fault) is located in the western portion of the County. In addition, the Ohio Seismic Network reports that Marion County was the epicenter of an earthquake in 1930. The earthquake occurred on July 11, 1930 at 12:15 am local time. Its magnitude wave was 3.1 and had a Modified Mercalli Intensity of IV. According to Professor Edmund F. Pawlowicz in his Earthquake Statistics for Ohio, Published in 1975, his notes read that "small buildings were shook, some movement of furniture and vibration of dishes". Discussion with staff at the Ohio Seismic Network indicated that the earthquake epicenter was most likely located within the Marion Fault.

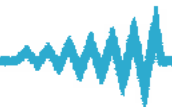
Discussion with the staff at the Ohio Seismic Network also revealed the following:

1. Marion County is considered a low risk for an earthquake hazard.
2. Marion County due to its proximity to the Anna-Champaign Fault is at risk to a 6.5

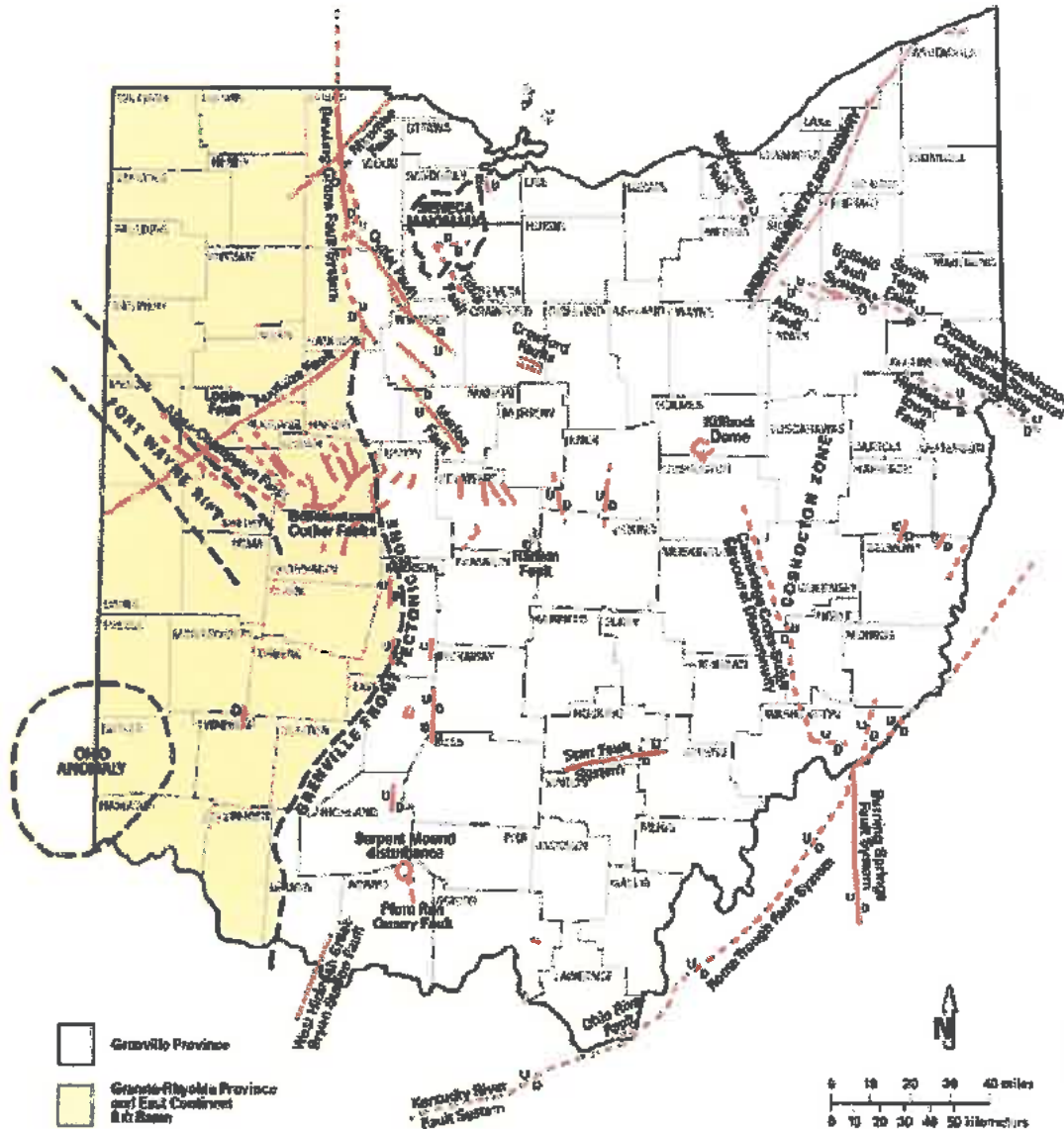
Figure 8

OhioSeis

The Ohio Seismic Network



Map of Deep Structures in Ohio



Basement structures in Ohio (modified from Division of Geological Survey Digital Chart and Map Series No. 7, 1991). This map portrays a number of deep faults and other structures that have been identified by a variety of geologic studies. Some faults are well known, whereas others are speculative. Very few of them are visible at the surface. The Anna, or Fort Wayne, rift in western Ohio is the site of numerous historic earthquakes

to 7.0 magnitude earthquake hazard occurring within this Fault (although the probability of an earthquake of this magnitude is relatively low).

Community Profile - Earthquake

For the purposes of this report, this a countywide event and affects all townships and jurisdictions.

Community Profile - Marion County

Marion County population in hazard area = 66,501

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area
Residential	47,186	\$2,220,109,430
Commercial	6,898	\$504,180,110
Industrial	990	\$207,617,536
Agricultural	8,827	\$205,145,900
Religious / Non-Profit	1,136	\$127,084,340
Government	1,017	\$169,191,540
Education	331	\$114,642,380
Utilities	235	\$10,820,540
Cemeteries	59	\$3,625,080
Total	66,679	\$3,562,416,856

SHARPP Community Profile Summary for Structures in Earthquake Hazard Area

Type of Parcel (Occupancy Class)	Number of Structures	Value of Structures
Residential	47,186	\$2,220,109,430
Non-Residential	16,715	\$916,943,546
Critical Facilities	2,719	\$421,738,800
Total	66,620	3,558,791,776

Estimation of Loses - Earthquake

Past earthquake events have resulted in little or no structural damage in Marion County. There have been no human losses through either injury or death. Based upon historical data, the entirety of Marion County would continue to have an earthquake potential.

HAZUS was used to generate an Earthquake Event Report for Marion County (see Appendix G). For the purposes of this report, a worst case scenario earthquake with a magnitude of 5.40 was used to generate a damage estimate for Marion County. A summary of countywide damage is listed below:

Type of Parcel (Occupancy Class)	Number of Structures in this Scenario	Value of Structures in this Scenario
Residential	3,669	\$592,727,936
Non-Residential	1,680	\$310,834,097
Critical Facilities	78	\$14,431,583
Total	5,427	\$917,993,616

Social Impact - Shelter Requirements

360 households displaced and 236 people will seek temporary shelter

Social Impact - Casualty Estimates:

People requiring medical attention = 471

Dead = 21

Induced Earthquake Damage - Fire

Four fires burning 0.25 square miles each and displacing 432 people and causing 30 million in building damage.

Induced Earthquake Damage - Debris Generation

0.160 million tons of debris will be generated requiring 6,240 truck loads to remove debris.

Economic Losses

709.18 million

Long term Economic Impact

15 years

Transportation System Economic Losses

7.9 million

Utility System Economic Losses

\$193.46 million

However, as previously stated, the probability of a devastating earthquake is considered low. If an earthquake event were to happen within the predicted Peak Acceleration (%g) Level Zones, damage losses incurred countywide would be estimated as minimal.

Flood

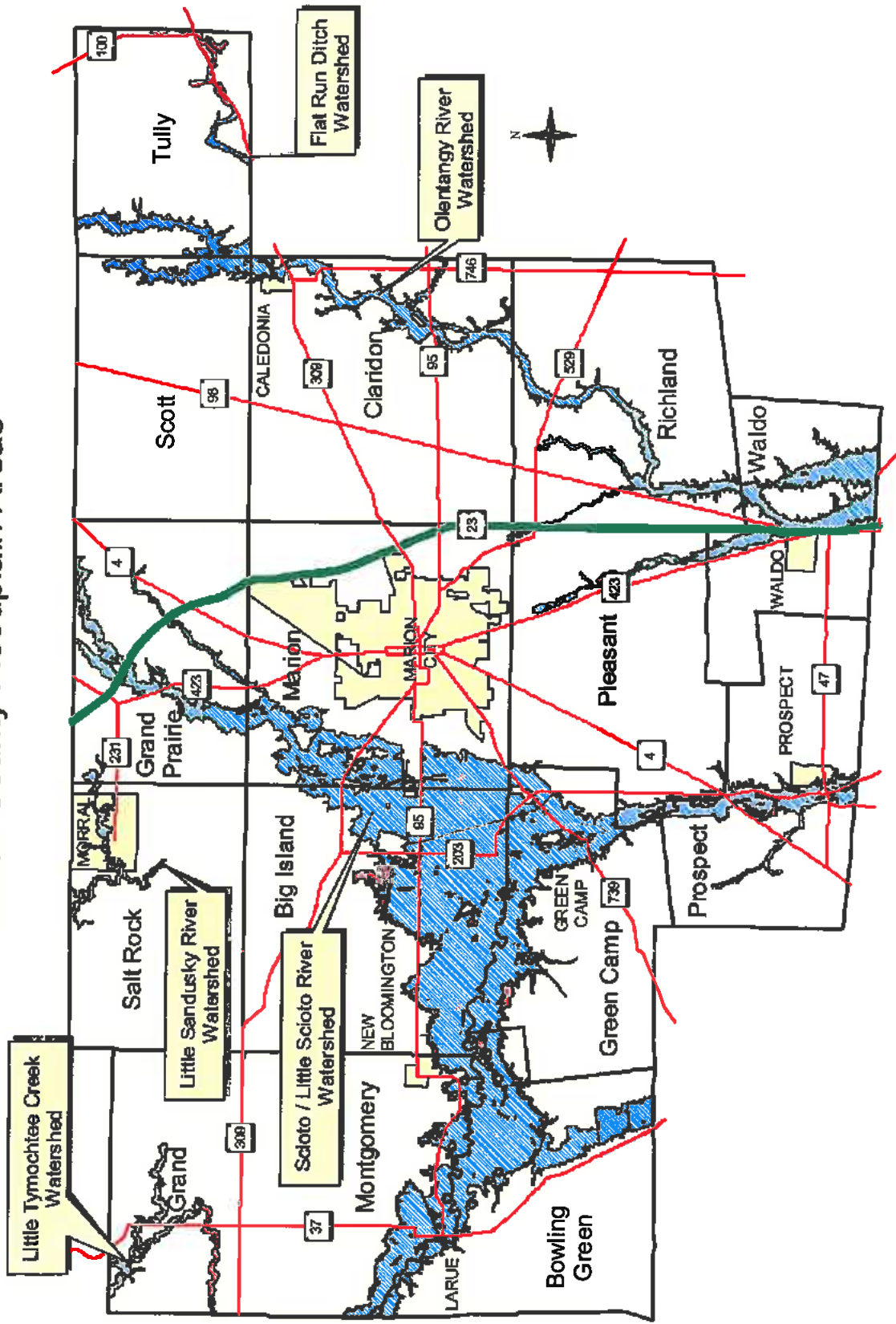
Marion County contains a number of rivers, streams, and ditches that could potentially flood. Severe flooding would affect most of Marion County waterways and, in turn, would impact properties that represent a variety of use groups. Depiction of the potential flooding during a 100- and 500-year floods is presented in Figure 9. Of most concern are the Scioto River / Little Scioto River watershed and the Olentangy River watershed. Flooding could result from torrential rains occurring for a short period of time (flash floods), moderate to heavy rains lasting an extended period of time, normal level rains on saturated lands, and from melting snow and ice, or from ice jams in waterways that release during increased water flow in winter.

Another item of concern are the Federal Flood Easements for the Delaware Dam within Marion County. In the early 1900's, the Federal Government purchased a flood easement on lands with a contour elevation of 947 or below within Marion County in the Olentangy River watershed (see Figure 10). Recent heavy rains caused the closure of the Delaware Dam resulting in the flooding of lands within Marion County within the flood easement areas. An analysis of properties within this area will also be included in this Chapter.

Profile of Hazard Events - Flood

The table below provides data on past flooding events. These data were primarily obtained from, but not limited to, the National Climatic Data Center, past editions of the Marion Star, and Marion City Library research. Due to the number of individual flooding events that have occurred in the past, only those of relative significance will be described. Mitigation planning for floods, however, will consider all occurrences.

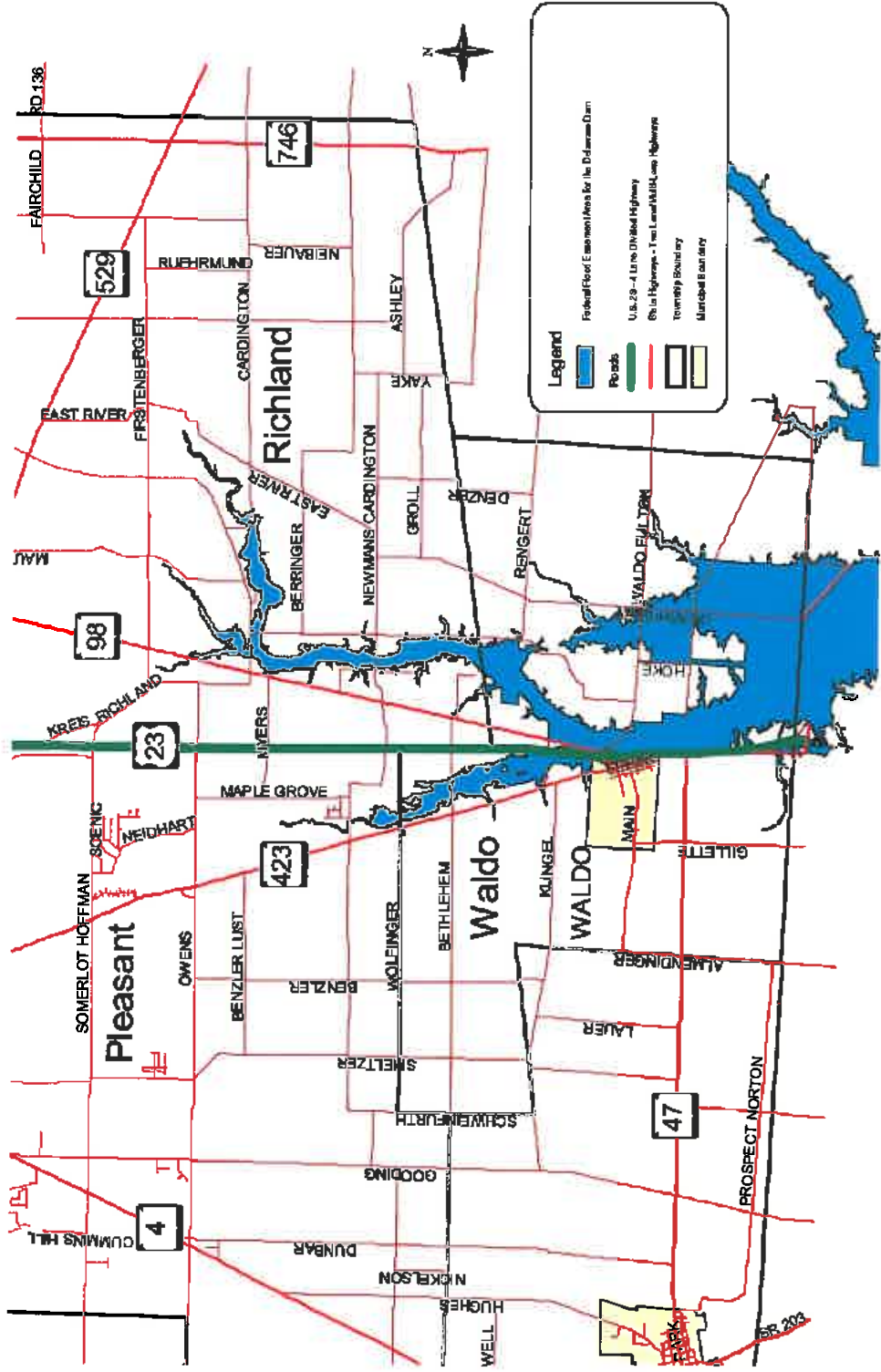
Figure 9
Marion County Floodplain Areas



Prepared by: Marion County RPC, 8/20/13

Map Source: FEMA & Marion County Auditor GIS Data

Figure 10
Marion County Federal Flood
Easement Area for the Delaware Dam



Map Source: US Army Corp. of Engineers &
 Marion County Auditor GIS Data

Prepared by: Marion County RPC, 8/20/13

Significant Floods

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Dollars)
March 1913	Marion City, LaRue, Green Camp, Prospect, lowlands in county inundated	Damage to homes, businesses, streets, railroad embankment, etc. throughout county	\$1,171,017
January 1959	Countywide	Buckled streets, flooded basements, and damaged furnaces throughout county.	\$55,246,643
July 1987	Countywide	Flooded basements and roads throughout county.	Property - \$14,156,378 Crop - \$4,044,679
January 1993	Countywide	Flooding of roads, homes, and businesses.	\$794,153
August 1995	Countywide	Flooding of small streams, low lying areas, streets and basements. 25 homes seriously damaged. Businesses also suffered losses. Some crop damage.	Property - \$1,806,967 Crop - \$225,919
June 1997	Countywide	Flooding of streets, streams, homes, fields, and low lying areas. Some crop damage.	Property - \$85,795 Crop - \$28,598
May 2004	Countywide	Flooding of roads, homes, and businesses.	\$182,314
March 1913	Marion City, LaRue, Green Camp, Prospect, lowlands in county inundated	Damage to homes, businesses, streets, railroad embankment, etc. throughout county	\$1,171,017
January 1959	Countywide	Buckled streets, flooded basements, and damaged furnaces throughout county.	\$55,246,643
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June 1997	Countywide	Flooding of streets, streams, homes, fields, and low lying areas. Some crop damage.	Property - \$85,795 Crop - \$28,598
May 2004	Countywide	Flooding of roads, homes, and businesses.	\$182,314
January 2005	Countywide	Heavy rain and runoff from snow caused extensive flooding. Worst flooding occurred along Scioto River. Extensive damage to buildings in LaRue and Prospect (20 to 30 homes heavily damaged).	\$1,410,716
July 2006	Countywide	Worse flooding reported in western northern portions of county from LaRue to Martel. Numerous roads closed.	\$85,414
January 2007	Prospect	Streets flooded and several homes damaged	\$221,464
February 2011	Countywide	Heavy rain and rapid snow melt caused widespread flooding. Numerous roads closed. Several people rescued from stranded vehicles. Hundreds of homes sustained damage (mainly from basement flooding).	\$765,521

Community Profile - Flood

Flooding of county rivers and streams may result in damage to structures, personal property, roadways, and other infrastructure. Depending upon the severity of the flooding, evacuation of individuals may be necessary. Backups of municipal sewerage systems would be possible as well as the pooling of water. The pooling of water poses the potential for mosquito breeding if the water remains for extended periods from spring to fall. Increased mosquito populations, in turn, increase the potential for the spread of mosquito-born diseases.

Repetitive loss structure are also of concern when considering flooding of the county properties. Their identification is a valuable component of mitigation planning. A repetitive loss structure is defined as a structure that is damaged in excess of \$1,000; occurring at a frequency of less than 10 years. An identification of those structures is maintained by FEMA. According to FEMA, there are 15 repetitive loss structures in Marion County (see table below). These structures are located in Green Camp Village (2), Prospect Village (3), LaRue Village (7), and Grand Township (1), Prospect Township (1), and Tully Township (1). The majority of these structures are located within the Scioto River Flood Plain Area. A review of repetitive loss structure claims by year indicates that Properties 1, 12, and 13 have not had any claims for 10 or more years. The majority of repetitive loss structure properties have had claims as recent as 2011 (one property had a claim in 2008).

Community Participation in National FIRM Program

CID	Name	Init FIBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Sanction Date	Does Not Participate
390774	Marion County	1/6/1976	2/4/1987	7/6/2010	2/4/1987		
	Marion City						X
390651	Caledonia Village	4/5/1974	2/4/1987	7/6/10 (M)	2/4/1987		
390374	Green Camp Village	11/16/1973	11/16/1973	7/6/2010	2/4/1987		
390375	LaRue Village	11/23/1973	2/4/1987	7/6/2010	2/4/1987		
390746	Morral Village	4/18/1975	2/4/1987	7/6/10 (M)	8/11/2009		
	New Bloomington Village						X
390377	Prospect Village	11/23/1973	2/4/1987	7/6/2010	2/4/1987		
390863	Waldo Village		2/4/1987	7/6/2010		2/4/1988	

M = No Elevation Determined - All Zones A, C, and X

Repetitive Loss Structures by Loss Date and Loss Amount

	Occupancy Type	Date of Losses	Building Payment	Contents Payment	Total Payments
Property 1	Single-Family Home	1980 1979	\$1,983.10 \$869.66	\$1,300.00 \$604.54	\$4,757.30
Property 2	Single-Family Home	2011 2008 2005	\$13,917.29 \$14,092.16 \$9,842.99	\$0.00 \$0.00 \$0.00	\$37,852.44
Property 3	Single-Family Home	2008 2005	\$4,400.89 \$8,467.80	\$0.00 \$0.00	\$12,868.69
Property 4	Single-Family Home	2011 2008	\$3,337.05 \$5,182.66	\$0.00 \$0.00	\$8,519.71
Property 5	Single-Family Home	2011 2008	\$25,653.17 \$16,203.47	\$0.00 \$0.00	\$41,856.64
Property 6	Single-Family Home	2011 2008	\$90,500.00 \$14,299.79	\$0.00 \$0.00	\$104,799.79
Property 7	Single-Family Home	2011 2008	\$44,898.43 \$45,010.00	\$20,894.29 \$0.00	\$110,802.72
Property 8	Single-Family Home	2011 2008	\$78,655.45 \$14,802.61	\$0.00 \$0.00	\$93,458.06
Property 9	Non-Residential	2011 2011	\$2,122.28 \$46,166.98	\$0.00 \$9,731.63	\$58,020.89
Property 10	Single-Family Home	2011 2008	\$33,877.19 \$9,311.27	\$5992.59 \$0.00	\$49,181.05
Property 11	Single-Family Home	2011 2008	\$15,000.00 \$3,702.22	\$0.00 \$0.00	\$18,702.22
Property 12	Single-Family Home	1999 1998	\$8,192.43 \$62,455.29	\$0.00 \$25,000.00	\$95,647.72
Property 13	Single-Family Home	1996 1992 1990 1987	\$2,013.10 \$1,689.68 \$1,608.95 \$8,141.94	\$0.00 \$0.00 \$50.00 \$0.00	\$13,503.67
Property 14	Single-Family Home	2011 2008 2005 1991	\$3,181.84 \$2,017.58 \$12,750.82 \$10,530.29	\$0.00 \$0.00 \$0.00 \$0.00	\$28,480.53
Property 15	Single-Family Home	2011 2005	\$5,025.14 \$12,174.45	\$0.00 \$0.00	\$17,199.59

It should be noted, that there are no severe repetitive loss structure properties in Marion County. The Marion County Mitigation Committee will assess the potential for mitigation of these structures as a part of Chapter Five of the Mitigation Plan.

For the purposes of this hazard analysis, projections of affected structures and associated monetary losses are based on the impacts resulting from the 100-year flood, 500-year flood, and the Federal Flood Easement for the Delaware Dam (for the rest of this report now referred to as the Flood Hazard Area). Projections made from this plan component relate to data obtained from FIRM (Flood Insurance Rate Maps) and parcel data obtained from the Marion County Auditor. The 2010 FIRM maps were utilized with the Auditor's GIS parcel data to quantify the parcel information below. Census block level data were utilized to generate an approximate number of people impacted by the Flood Hazard Area. The data are given for Marion County as a whole and the Flood Hazard Areas associated with the Scioto / Little Scioto Rivers, Olentangy River, Little Sandusky River, Little Tymochtee Creek, and Flat Run Ditch.

The data are separated into two categories within each flood plain area - total flood plain area (data consolidated from both unincorporated and incorporated areas) and the incorporated areas (data from specific villages) found within the corresponding flood plain. Data are provided on population and the numbers and types of structures and their respective values within the county. It should be noted, that the number of structures by type include all structures associated with a particular class. For example, the number of structures associated with the residential class include not only the dwelling unit but all associated outbuildings. This same rationale was applied to all structure classes.

These figures are compared with those structures by type determined to be within the hazard areas. Associated percentage values are also given. Community Profiles and Estimation of Losses are addressed for the entire County as well as individually for the five primary watersheds. Figures 14-20 show the Flood Hazard Areas (green shaded area) within the Villages of Marion County.

According to the Marion City / County EMA Director, Marion County Flood Plain Administrator, and GIS data the following critical facilities are located in the Flood Hazard Area:

1. 130 miles of road (12% of total roads in county)
2. 283 road bridges / culverts (13.19% of total bridges / culverts in county)
3. 17.2 miles of rail road track (8% of total rail road track in county)
4. 20 rail road bridges (30% of total rail road bridges in county)
5. 7.5 miles of electric transmission lines (13% of total electric transmission lines in county)
6. 28 miles of gas / oil transmission line (19% of total gas transmission line in county)

Caledonia Village Flood Hazard Area



Legend

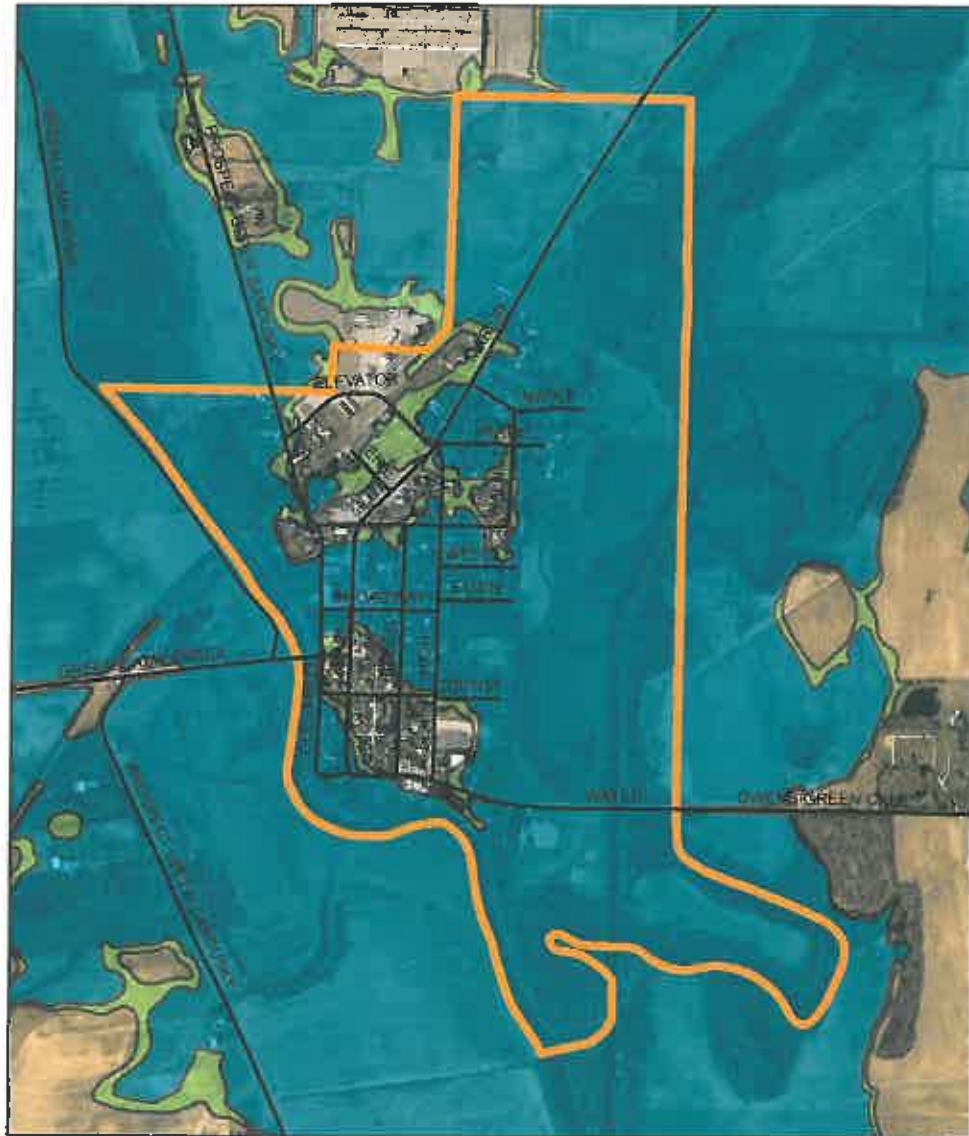
- Road
- ▭ Municipal Boundary

ZONE

- ▭ 100-Year Flood Area (Zone A)
- ▭ 100-Year Flood Area (Zone AE)
- ▭ 500-Year Flood Area



Green Camp Village Flood Hazard Area



Legend

- Road
- Municipal Boundary
- ZONE**
- 100-Year Flood Area (Zone A)
- 100-Year Flood Area (Zone AE)
- 500-Year Flood Area








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

LaRue Village Flood Hazard Area

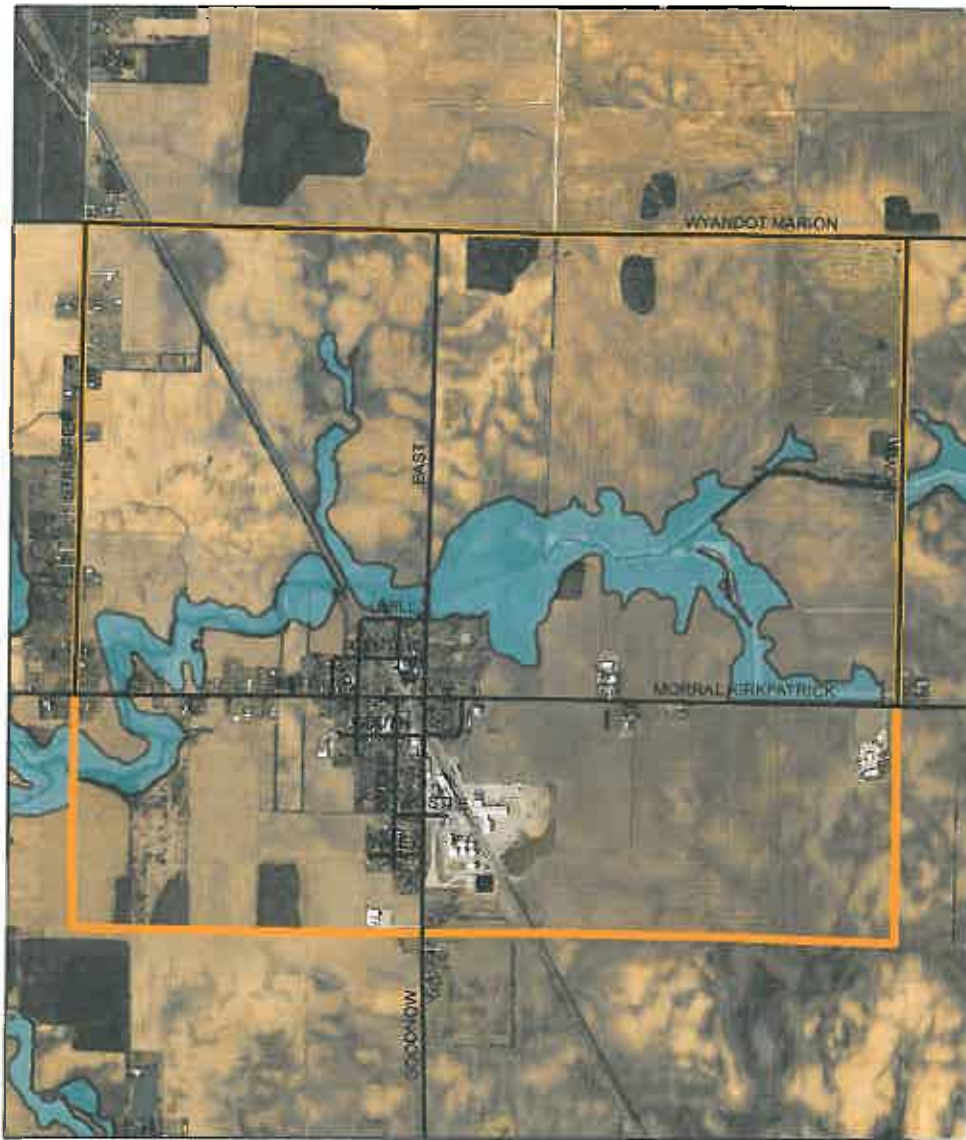


Legend





-  Road
-  Municipal Boundary
- ZONE**
-  100-Year Flood Area (Zone A)
-  100-Year Flood Area (Zone AE)
-  500-Year Flood Area



Morril Village Flood Hazard Area

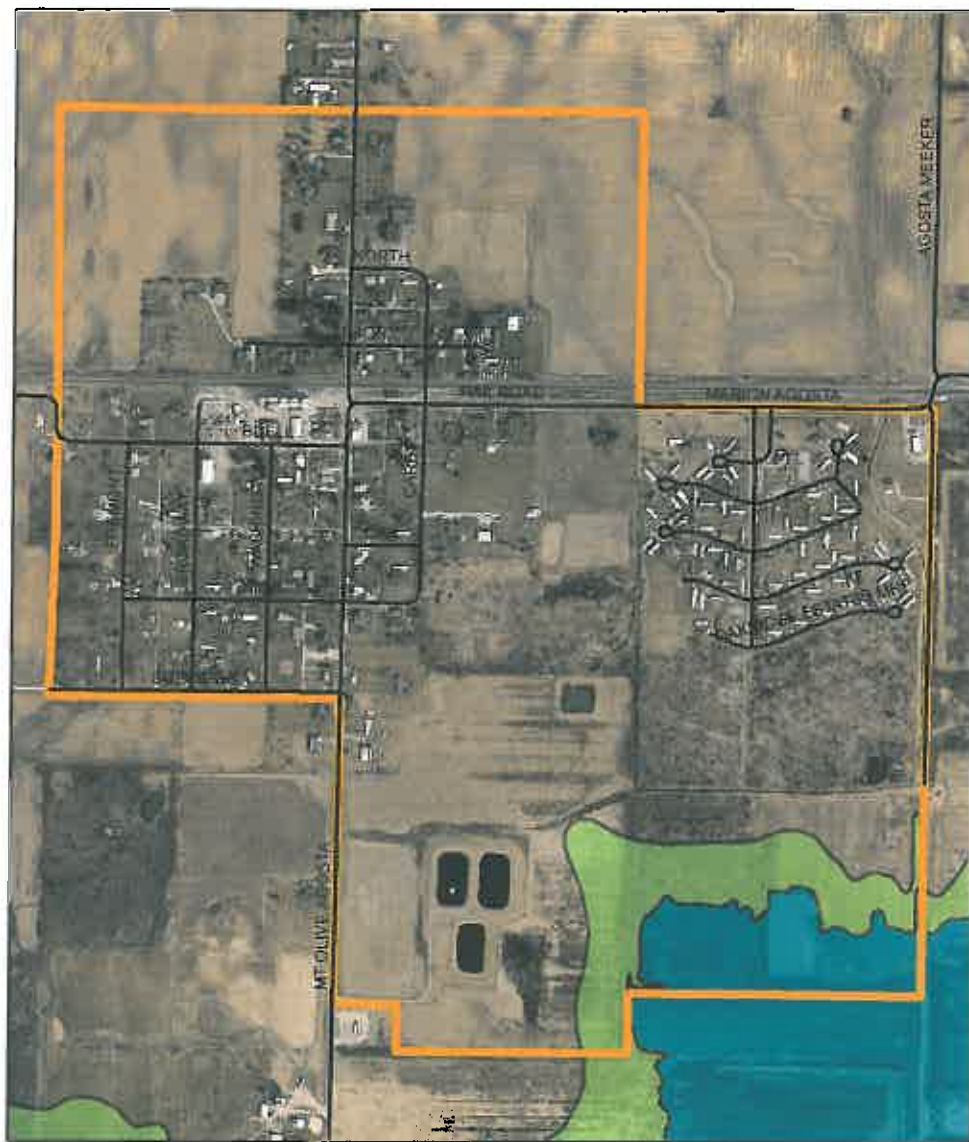


Legend


- Road
-  Municipal Boundary
- ZONE**
-  100-Year Flood Area (Zone A)
-  100-Year Flood Area (Zone AE)
-  500-Year Flood Area

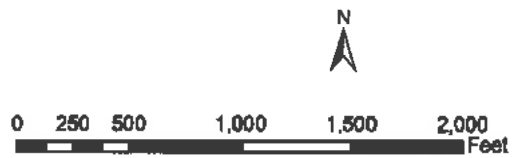


New Bloomington Village Flood Hazard Area

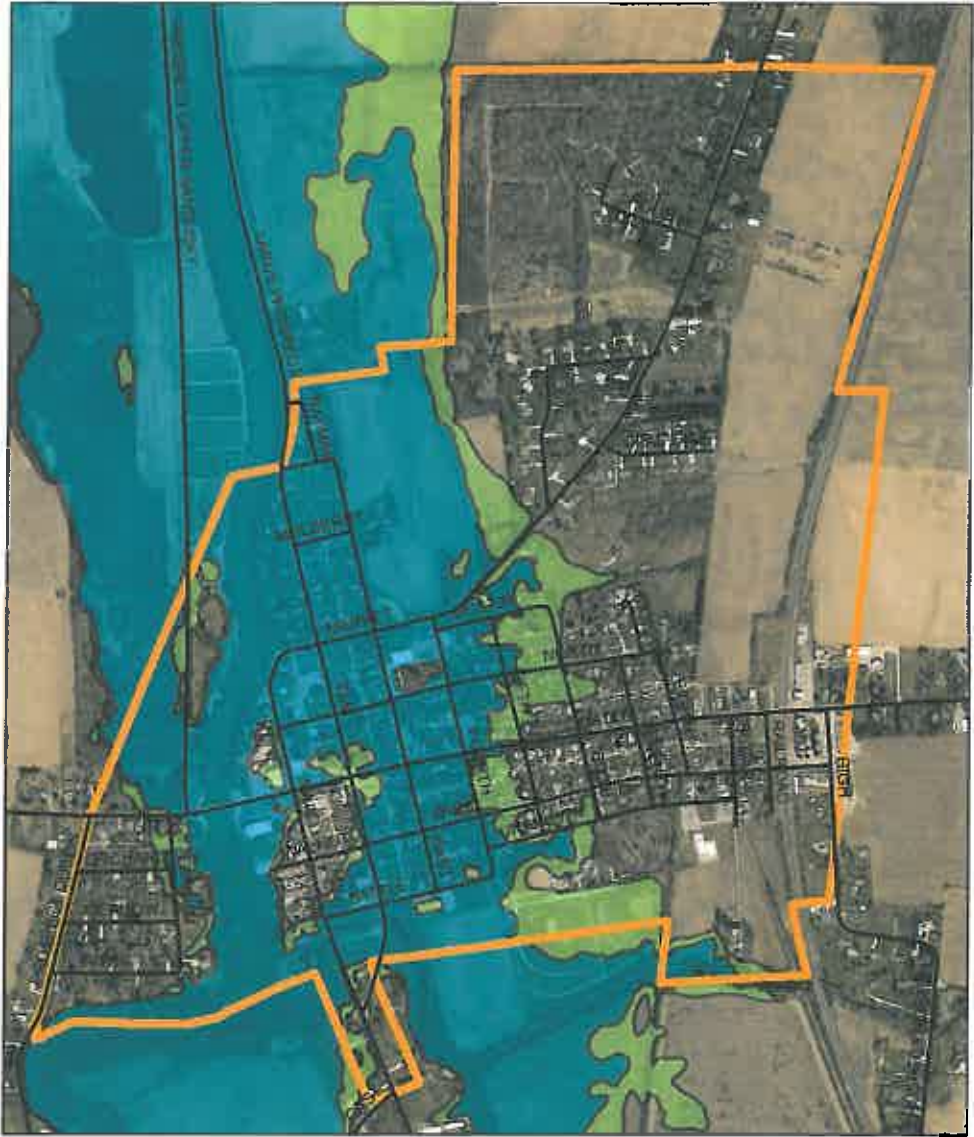


Legend

- Road
-  Municipal Boundary
- ZONE**
-  100-Year Flood Area (Zone A)
-  100-Year Flood Area (Zone AE)
-  300-Year Flood Area



Prospect Village Flood Hazard Area



Legend

- Road
- ▭ Municipal Boundary

ZONE



- ▭ 100-Year Flood Area (Zone A)
- ▭ 100-Year Flood Area (Zone AE)
- ▭ 500-Year Flood Area



Waldo Village Flood Hazard Area



Legend

- Road
-  Municipal Boundary
- ZONE**
-  100-Year Flood Area (Zone A)
-  100-Year Flood Area (Zone AE)
-  500-Year Flood Area



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

7. 3 fire stations: Scioto Valley - LaRue Village, Battle Run - Prospect Village, Green Camp - Green Camp Village.
8. 5 school buildings / properties: Elgin South Elementary - Prospect Village, Elgin Middle School - Green Camp Village, and Elgin West Elementary School - LaRue Village, Elgin Multi-Grade School (the Elgin Multi-Grade School is designed to accommodate grades K-12 - the current elementary school buildings and middle school building will no longer be used after August of 2013) River Valley - Heritage Elementary School (flood plain along southern portion of school property).
9. 2 wastewater treatment plants: Prospect Village and New Bloomington Village.
10. 3 natural gas pumping stations: LaRue Village, Green Camp Village, and Prospect Village

Community Profile - Marion County

Marion County Population	Population in Flood Hazard Area	Percent in Flood Hazard Area
66,501	10,190	15.32%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	3,805	8.06%	\$2,220,109,430	\$149,092,760	6.72%
Commercial	6,898	391	5.67%	\$504,180,110	\$13,993,490	2.78%
Industrial	990	60	6.06%	\$207,617,536	\$6,557,740	3.16%
Agricultural	8,827	1,895	21.47%	\$205,145,900	\$42,487,190	20.71%
Religious / Non-Profit	1,136	47	4.14%	\$127,084,340	\$3,578,950	2.82%
Government	1,017	244	23.99%	\$169,191,540	\$6,155,280	3.64%
Education	331	75	22.66%	\$114,642,380	\$12,958,790	11.30%
Utilities	235	26	11.06%	\$10,820,540	\$283,510	2.62%
Cemeteries	59	20	33.90%	\$3,625,080	\$429,290	11.84%
Total	66,679	6,563	9.84%	\$3,562,416,856	\$235,537,000	6.61%

SHARPP Community Profile Summary for Structures in Flood Hazard Area

Type of Parcel (Occupancy Class)	Number of Structures in Flood Hazard Area	Value of Structures in Flood Hazard Area
Residential	3,805	\$149,092,760
Non-Residential	2,346	\$63,038,420
Critical Facilities	392	\$22,976,530
Total	6,543	\$235,107,710

Scioto / Little Scioto Rivers

Community Profile - Incorporated / Unincorporated Areas

Marion County Population	Population in Flood Hazard Area	Percent in Flood Hazard Area
66,501	5,552	8.35%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	2,661	5.64%	\$2,220,109,430	\$94,228,010	4.24%
Commercial	6,898	114	1.65%	\$504,180,110	\$10,606,920	2.10%
Industrial	990	60	6.06%	\$207,617,536	\$6,557,740	3.16%
Agricultural	8,827	907	10.28%	\$205,145,900	\$19,759,040	9.63%
Religious / Non- Profit	1,136	47	4.14%	\$127,084,340	\$3,578,950	2.82%
Government	1,017	203	19.96%	\$169,191,540	\$3,248,830	1.92%
Education	331	71	21.45%	\$114,642,380	\$8,501,450	7.42%
Utilities	235	22	9.36%	\$10,820,540	\$249,600	2.31%
Cemeteries	59	12	20.34%	\$3,625,080	\$263,540	7.27%
Total	66,679	4,097	6.14%	\$3,562,416,856	\$146,994,080	4.13%

Industry	Square Footage	Annual Sales
Retail Trade	396,882	\$11,906,460
Light Industrial	288,163	\$36,596,701
Agriculture	1,016,439	\$84,364,437

Community Profile - Village of Green Camp

Green Camp Population	Green Camp Population in Flood Hazard Area	Percent in Flood Hazard Area
374	364	97.33%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Green Camp	# in Hazard Area	% in Hazard Area	\$ in Green Camp	\$ in Hazard Area	% in Hazard Area
Residential	340	304	89.41%	\$12,740,410	\$11,329,070	88.92%
Commercial	33	29	87.88%	\$881,130	\$587,430	66.67%
Industrial	6	6	100.00%	\$239,970	\$239,970	100.00%
Agricultural	4	4	100.00%	\$24,790	\$24,790	100.00%
Religious / Non-Profit	9	5	55.56%	\$470,820	\$232,540	49.39%
Government	14	10	71.43%	\$481,340	\$454,920	94.51%
Education	30	28	93.33%	\$1,062,460	\$886,780	83.46%
Utilities	3	3	100.00%	\$20,300	\$20,300	100.00%
Cemeteries	0	0	0.00%	\$0	\$0	0.00%
Total	439	389	88.61%	\$15,921,220	\$13,775,800	86.52%

Community Profile - Village of LaRue

LaRue Population	LaRue Population in Flood Hazard Area	Percent in Flood Hazard Area
747	680	91.03%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Green Camp	# in Hazard Area	% in Hazard Area	\$ in Green Camp	\$ in Hazard Area	% in Hazard Area
Residential	716	687	95.95%	\$23,361,610	\$22,274,060	95.34%
Commercial	94	60	63.83%	\$5,398,360	\$3,729,350	69.08%
Industrial	7	7	100.00%	\$559,630	\$559,630	100.00%
Agricultural	7	7	100.00%	\$141,540	\$141,540	100.00%
Religious / Non-Profit	11	11	100.00%	\$795,670	\$795,670	100.00%
Government	12	6	50.00%	\$561,810	\$272,420	48.49%
Education	4	4	100.00%	\$5,037,000	\$5,037,000	100.00%
Utilities	5	2	40.00%	\$32,250	\$1,600	4.96%
Cemeteries	0	0	0.00%	\$0	\$0	0.00%
Total	856	784	91.59%	\$35,887,870	\$32,811,270	91.43%

Community Profile - Village of New Bloomington

New Bloomington Population	New Bloomington Population in Flood Hazard Area	Percent in Flood Hazard Area
515	0	0.00%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in NB	# in Hazard Area	% in Hazard Area	\$ in NB	\$ in Hazard Area	% in Hazard Area
Residential	342	0	0.00%	\$8,024,510	\$0	0.00%
Commercial	42	0	0.00%	\$621,980	\$0	0.00%
Industrial	22	0	0.00%	\$1,447,950	\$0	0.00%
Agricultural	0	0	0.00%	\$0	\$0	0.00%
Religious / Non-Profit	4	0	0.00%	\$172,900	\$0	0.00%
Government	5	2	40.00%	\$110,900	\$2,220	2.00%
Education	0	0	0.00%	\$0	\$0	0.00%
Utilities	0	0	0.00%	\$0	\$0	0.00%
Cemeteries	0	0	0.00%	\$0	\$0	0.00%
Total	415	2	0.48%	\$10,378,240	\$2,220	0.02%

Community Profile - Village of Prospect

Prospect Population	Prospect Population in Flood Hazard Area	Percent in Flood Hazard Area
1,112	761	68.44%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Prospect	# in Hazard Area	% in Hazard Area	\$ in Prospect	\$ in Hazard Area	% in Hazard Area
Residential	1,034	571	55.22%	\$46,883,980	\$25,166,570	53.68%
Commercial	150	132	88.00%	\$9,089,940	\$5,278,900	58.07%
Industrial	26	1	3.85%	\$545,730	\$387,160	70.94%
Agricultural	6	6	100.00%	\$140,840	\$140,840	100.00%
Religious / Non-Profit	31	31	100.00%	\$2,550,740	\$2,550,740	100.00%
Government	132	92	69.70%	\$1,714,660	\$1,186,090	69.17%
Education	8	8	100.00%	\$1,006,380	\$1,006,380	100.00%
Utilities	7	0	0.00%	\$37,950	\$0	0.00%
Cemeteries	3	3	0.00%	\$28,080	\$28,080	100.00%
Total	1,397	844	60.42%	\$61,998,300	\$35,744,760	57.65%

Olentangy River

Community Profile - Incorporated / Unincorporated Areas

Marion County Population	Population in Flood Hazard Area	Percent in Flood Hazard Area
66,501	3,553	5.34%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	966	2.05%	\$2,220,109,430	\$48,474,590	2.18%
Commercial	6,898	80	1.16%	\$504,180,110	\$2,874,900	0.57%
Industrial	990	0	0.00%	\$207,617,536	\$0	0.00%
Agricultural	8,827	779	8.83%	\$205,145,900	\$18,341,230	8.94%
Religious / Non- Profit	1,136	0	0.00%	\$127,084,340	\$0	0.00%
Government	1,017	27	2.65%	\$169,191,540	\$2,859,560	1.69%
Education	331	4	1.21%	\$114,642,380	\$4,457,340	3.89%
Utilities	235	1	0.43%	\$10,820,540	\$1,200	0.01%
Cemeteries	59	8	13.56%	\$3,625,080	\$165,750	4.57%
Total	66,679	1,865	2.80%	\$3,562,416,856	\$77,174,570	2.17%

Industry	Square Footage	Annual Sales
Retail Trade	109,513	\$3,285,390
Agriculture	826,861	\$68,629,463

Community Profile - Village of Caledonia

Caledonia Population	Caledonia Population in Flood Hazard Area	Percent in Flood Hazard Area
577	75	13.00%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Caledonia	# in Hazard Area	% in Hazard Area	\$ in Caledonia	\$ in Hazard Area	% in Hazard Area
Residential	574	46	8.01%	\$21,268,660	\$1,666,950	7.84%
Commercial	114	7	6.14%	\$3,129,600	\$180,200	5.76%
Industrial	11	0	0.00%	\$133,050	\$0	0.00%
Agricultural	0	0	0.00%	\$0	\$0	0.00%
Religious / Non-Profit	16	0	0.00%	\$1,341,160	\$0	0.00%
Government	7	0	0.00%	\$282,240	\$0	0.00%
Education	0	0	0.00%	\$0	\$0	0.00%
Utilities	5	0	0.00%	\$105,400	\$0	0.00%
Cemeteries	0	0	0.00%	\$0	\$0	0.00%
Total	727	53	7.29%	\$26,260,110	\$1,847,150	7.03%

Community Profile - Village of Waldo

Due to recent changes in flood map boundaries in 2010, there are no structures in the flood plain in Waldo Village.

Little Sandusky River

Community Profile - Incorporated / Unincorporated Areas

Marion County Population	Population in Flood Hazard Area	Percent in Flood Hazard Area
66,501	333	0.50%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	36	0.08%	\$2,220,109,430	\$1,124,090	0.05%
Commercial	6,898	0	0.00%	\$504,180,110	\$0	0.00%
Industrial	990	0	0.00%	\$207,617,536	\$0	0.00%
Agricultural	8,827	64	0.73%	\$205,145,900	\$1,644,140	0.80%
Religious / Non- Profit	1,136	0	0.00%	\$127,084,340	\$0	0.00%
Government	1,017	14	1.38%	\$169,191,540	\$46,890	0.03%
Education	331	0	0.00%	\$114,642,380	\$0	0.00%
Utilities	235	2	0.85%	\$10,820,540	\$4,900	0.05%
Cemeteries	59	0	0.00%	\$3,625,080	\$0	0.00%
Total	66,679	116	0.17%	\$3,562,416,856	\$2,820,020	0.08%

Industry	Square Footage	Annual Sales
Agriculture	81,438	\$6,759,354

Community Profile - Village of Morral

Morral Population	Morral Population in Flood Hazard Area	Percent in Flood Hazard Area
399	192	48.12%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Morral	# In Hazard Area	% in Hazard Area	\$ in Morral	\$ in Hazard Area	% in Hazard Area
Residential	400	28	7.00%	\$13,917,030	\$786,600	5.65%
Commercial	39	0	0.00%	\$1,810,850	\$0	0.00%
Industrial	32	0	0.00%	\$896,480	\$0	0.00%
Agricultural	27	12	44.44%	\$760,830	\$469,800	61.75%
Religious / Non-Profit	4	0	0.00%	\$268,940	\$0	0.00%
Government	21	14	66.67%	\$471,060	\$46,890	9.95%
Education	0	0	0.00%	\$0	\$0	0.00%
Utilities	4	2	50.00%	\$49,420	\$4,900	9.92%
Cemeteries	0	0	0.00%	\$0	\$0	0.00%
Total	527	56	10.63%	\$18,174,610	\$1,308,190	7.20%

Little Tymochtee Creek

Community Profile - Unincorporated Area

Marion County Population	Population in Flood Hazard Area	Percent in Flood Hazard Area
66,501	183	0.28%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	48	0.10%	\$2,220,109,430	\$1,277,560	0.06%
Commercial	6,898	4	0.06%	\$504,180,110	\$3,020	0.00%
Industrial	990	0	0.00%	\$207,617,536	\$0	0.00%
Agricultural	8,827	88	1.00%	\$205,145,900	\$1,511,850	0.74%
Religious / Non- Profit	1,136	0	0.00%	\$127,084,340	\$0	0.00%
Government	1,017	0	0.00%	\$169,191,540	\$0	0.00%
Education	331	0	0.00%	\$114,642,380	\$0	0.00%
Utilities	235	0	0.00%	\$10,820,540	\$0	0.00%
Cemeteries	59	0	0.00%	\$3,625,080	\$0	0.00%
Total	66,679	140	0.21%	\$3,562,416,856	\$2,792,430	0.08%

Industry	Square Footage	Annual Sales
Retail Trade	384	\$11,520
Agriculture	110,693	\$9,187,519

Flat Run Ditch

Community Profile - Unincorporated Area

Marion County Population	Population in Flood Hazard Area	Percent in Flood Hazard Area
66,501	572	0.86%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	94	0.20%	\$2,220,109,430	\$3,988,510	0.18%
Commercial	6,898	13	0.19%	\$504,180,110	\$536,460	0.11%
Industrial	990	0	0.00%	\$207,617,536	\$0	0.00%
Agricultural	8,827	67	0.76%	\$205,145,900	\$1,496,000	0.73%
Religious / Non- Profit	1,136	0	0.00%	\$127,084,340	\$0	0.00%
Government	1,017	0	0.00%	\$169,191,540	\$0	0.00%
Education	331	0	0.00%	\$114,642,380	\$0	0.00%
Utilities	235	0	0.00%	\$10,820,540	\$0	0.00%
Cemeteries	59	0	0.00%	\$3,625,080	\$0	0.00%
Total	66,679	174	0.26%	\$3,562,416,856	\$6,020,970	0.17%

Industry	Square Footage	Annual Sales
Retail Trade	32,952	\$988,560
Agriculture	91,439	\$7,589,437

Estimate of Losses - Flood

As with the previous component, estimates of losses will be provided for each watershed. Specific flood plain data represent both the incorporated and the unincorporated areas.

Estimate of Losses - Marion County

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Flood Hazard Area	Value of Structures in Flood Hazard Area	Value of Structure Contents	Total Loss
Residential	3,805	\$149,092,760	\$74,546,380	\$223,639,140
Commercial	391	\$13,993,490	\$13,993,490	\$27,986,980
Industrial	60	\$6,557,740	\$9,836,610	\$16,394,350
Agricultural	1,895	\$42,487,190	\$42,487,190	\$84,974,380
Religious / Non-Profit	47	\$3,578,950	\$3,578,950	\$7,157,900
Government	244	\$6,155,280	\$6,155,280	\$12,310,560
Education	75	\$12,958,790	\$12,958,790	\$25,917,580
Utilities	26	\$283,510	\$0	\$283,510
Cemeteries	20	\$429,290	\$0	\$429,290
Total	6,563	\$235,537,000	\$163,556,690	\$399,093,690

SHARPP Summary of Estimated Losses in Flood Hazard Area

Type of Parcel (Occupancy Class)	Number of Structures in Flood Hazard Area	Total Loss of Buildings and Contents in Flood Hazard Area
Residential	3,805	\$223,639,140
Non-Residential	2,346	\$129,355,710
Critical Facilities	392	\$45,669,550
Total	6,543	\$398,664,400

Estimate of Losses - Scioto / Little Scioto Rivers

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	2,661	\$94,228,010	47,144,005	\$141,372,015
Commercial	114	\$10,606,920	\$10,606,920	\$21,213,840
Industrial	60	\$6,557,740	\$9,836,610	\$16,394,350
Agricultural	907	\$19,759,040	\$19,759,040	\$39,518,080
Religious / Non-Profit	47	\$3,578,950	\$3,578,950	\$7,157,900
Government	203	\$3,248,830	\$3,248,830	\$6,497,660
Education	71	\$8,501,450	\$8,501,450	\$17,002,900
Utilities	22	\$249,600	\$0	\$249,600
Cemeteries	12	\$263,540	\$0	\$263,540
Total	4,097	\$146,994,080	\$102,675,805	\$249,669,885

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Retail Trade	\$11,906,460	\$992,205	\$2,976,615	\$5,953,230
Light Industrial	\$36,596,701	\$3,049,725	\$9,149,175	\$18,298,350
Agriculture	\$84,364,437	\$7,030,370	\$21,091,109	\$42,182,220

Estimate of Losses - Olentangy River

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	966	\$48,474,590	\$24,237,295	\$72,711,885
Commercial	80	\$2,874,900	\$2,874,900	\$5,749,800
Industrial	0	\$0	\$0	\$0
Agricultural	779	\$18,341,230	\$18,341,230	\$36,682,460
Religious / Non-Profit	0	\$0	\$0	\$0
Government	27	\$2,859,560	\$2,859,560	\$5,719,120
Education	4	\$4,457,340	\$4,457,340	\$8,914,680
Utilities	1	\$1,200	\$0	\$1,200
Cemeteries	8	\$165,750	\$0	\$165,750
Total	1,865	\$77,174,570	\$5,277,0325	\$129,944,895

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Retail Trade	\$3,285,390	\$273,783	\$821,348	\$1,642,695
Agriculture	\$68,629,463	\$5,719,122	\$17,157,366	\$34,314,732

Estimate of Losses - Little Sandusky River

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	36	\$1,124,090	\$562,045	\$1,686,135
Commercial	0	\$0	\$0	\$0
Industrial	0	\$0	\$0	\$0
Agricultural	64	\$1,644,140	\$1,644,140	\$3,288,280
Religious / Non-Profit	0	\$0	\$0	\$0
Government	14	\$46,890	\$46,890	\$93,780
Education	0	\$0	\$0	\$0
Utilities	2	\$4,900	\$4,900	\$9,800
Cemeteries	0	\$0	\$0	\$0
Total	116	\$2,820,020	\$2,257,975	\$5,077,995

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Agriculture	\$6,759,354	\$563,280	\$1,689,839	\$3,379,677

Estimate of Losses - Little Tymochtee Creek

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	48	\$1,277,560	\$638,780	\$1,916,340
Commercial	4	\$3,020	\$3,020	\$6,040
Industrial	0	\$0	\$0	\$0
Agricultural	88	\$1,511,850	\$1,511,850	\$3,023,700
Religious / Non-Profit	0	\$0	\$0	\$0
Government	0	\$0	\$0	\$0
Education	0	\$0	\$0	\$0
Utilities	0	\$0	\$0	\$0
Cemeteries	0	\$0	\$0	\$0
Total	140	\$2,792,430	\$2,153,650	\$4,946,080

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Retail Trade	\$11,520	\$960	\$2880	\$5,760
Agriculture	\$9,187,519	\$765,627	\$2,296,881	\$4,593,762

Estimate of Losses - Flat Run Ditch

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	94	\$3,988,510	\$1,994,255	\$5,982,765
Commercial	13	\$536,460	\$536,460	\$1,072,920
Industrial	0	\$0	\$0	\$0
Agricultural	67	\$1,496,000	\$1,496,000	\$2,992,000
Religious / Non-Profit	0	\$0	\$0	\$0
Government	0	\$0	\$0	\$0
Education	0	\$0	\$0	\$0
Utilities	0	\$0	\$0	\$0
Cemeteries	0	\$0	\$0	\$0
Total	174	\$6,020,970	\$4,026,715	\$10,047,685

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Retail Trade	\$988,560	\$82,380	\$247,140	\$494,280
Agriculture	\$7,589,437	\$632,453	\$1,897,359	\$3,794,719

Based on the above data, the high potential for flooding in Marion County will continue to pose a hazard for structures and populations located in flood prone areas. Mitigation activities associated with flooding from a planning perspective are considered as having a high priority.

Hailstorm

Hail is a product of raindrops that are frozen in the upper atmosphere that fall to earth due to gravity. The size of individual hailstones vary, contingent upon their being repeatedly blown into higher elevations. Hailstorms are always associated with heavy rain, gusty winds, thunderstorms, and lightning. Depending upon the size of the hailstones and the severity of the respective storm, damage can occur to property (structures, vehicles, etc.) as well as to crops.

Hailstone sizes are classified according the following table:

Hail Diameter Size in Inches	Description
1/4"	Pea
1/2"	Plain M&M
3/4"	Penny
7/8"	Nickel
1"	Quarter
1 1/4"	Half Dollar
1 1/2"	Walnut or Ping Pong Ball
1 3/4"	Golf Ball
2"	Hen Egg / Lime
2 1/2"	Tennis Ball
2 3/4"	Baseball
3"	Teacup / Large Apple
4 1/2"	Softball

NOAA considers hail one inch or larger in diameter to be severe.

Profile of Hazard Events - Hailstorm

According to data obtained from the National Climatic Data Center, 83 hailstorms have occurred within Marion County from 1957 to the present. Most have not been quantified in terms of financial losses. Specific incidents of hailstorms with quantified losses are identified in the table below.

Hailstorms

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
June 1995	Countywide	Trees were downed and large hail was reported in a number of locations (0.75 inch diameter).	\$6,025
August 1998	Marion	Crop damage (2.50 inch diameter)	\$7,042
April 2002	Marion	Losses to property (1.00 inch diameter).	\$12,757
July 2002	Marion	Losses to property east of Marion (0.75 inch diameter).	\$2,554
July 2002	Caledonia	Losses to property (0.75 inch diameter).	\$2,554
November 2002	Morril	Tennis to golf ball size hail was observed in Salt Rock Township south of Morrill. The hail caused an estimated \$25,000 in damage to a school building that had over thirty windows broken. Many vehicles in the area were also damaged (2.50 inch diameter).	\$319,177
November 2002	Marion	Losses to property north of Marion (1.00 inch diameter).	\$6,383
May 2003	Caledonia	Losses to property (0.88 inch diameter).	\$2,495
March 2011	Marion	Losses to property (0.25 inch diameter).	\$1,021
March 2011	Prospect	Losses to property (1.00 inch diameter).	\$2,041
May 2011	Marion	Losses to property (0.25 inch diameter).	\$1,021
June 2011	Countywide	Losses to property (1.50 inch diameter).	\$51,035
June 2011	Countywide	Losses to property (1.50 inch diameter).	\$51,035
November 2011	LaRue	Losses to property (1.50 inch diameter).	\$51,035
June 2013	New Bloomington	Losses to property (1.25 inch diameter).	\$10,000
June 2013	Countywide	Losses to property, vehicles, crops (2.50 inch diameter)	Property - \$250,000 Crops - \$100,000
June 2013	Countywide	Losses to vehicles (1.50 inch diameter)	Vehicles - \$50,000
June 2013	Countywide	Losses to vehicles and crops (1.75 inch diameter)	Vehicles - \$100,000 Crops - \$100,000
		Total	\$1,126,185

Community Profile - Hailstorm

For the purposes of this report, this a countywide event and affects all townships and jurisdictions.

Community Profile - Marion County

Marion County population in hazard area = 66,501

Type of Parcel (Occupancy Class)	Number of Structures in Hailstorm Hazard Area	Value of Structures in Hailstorm Hazard Area
Residential	47,186	\$2,220,109,430
Commercial	6,898	\$504,180,110
Industrial	990	\$207,617,536
Agricultural	8,827	\$205,145,900
Religious / Non-Profit	1,136	\$127,084,340
Government	1,017	\$169,191,540
Education	331	\$114,642,380
Utilities	235	\$10,820,540
Cemeteries	59	\$3,625,080
Total	66,679	\$3,562,416,856

SHARPP Community Profile Summary of Structures in Hailstorm Hazard Area

Type of Parcel (Occupancy Class)	Number of Structures in Hailstorm Hazard Area	Value of Structures in Hailstorm Hazard Area
Residential	47,186	\$2,220,109,430
Non-Residential	16,715	\$916,943,546
Critical Facilities	2,719	\$421,738,800
Total	66,620	\$3,558,791,776

Estimation of Losses - Hailstorm

As noted, hailstorms have, and will continue to provide, the potential for causing damage to structures, personal property, and crops throughout Marion County (it should be noted that crop damage is believed to be greatly under reported and more damage is occurring than indicated in the above table). Impact on infrastructure is considered minimal.

2013 hailstorm area event damage estimates are:

Type of Parcel (Occupancy Class)	Number of Structures in Hailstorm Hazard Area	Hailstorm Hazard Area Structure and Crop Damage Estimate
Residential	16	\$149,000
Non-Residential	6	\$252,000
Critical Facilities	1	\$9,000
Total	23	\$410,000

*(52,500 in structural damage, \$200,000 in crop damage)

Although the above damage estimate assumed a uniform hailstorm coverage over a specific geographic area, this is not normally the case with hailstorm events which are typically found to be isolated and variable across a geographic area. Damage costs resulting from hailstorms can be also extremely variable, depending upon the severity of a specific event. Although financial losses can be somewhat expensive, mitigation activities associated with hailstorms from a planning perspective are considered as having a low priority.

Severe Winter Storm

Severe winter storms can produce a variety of adverse weather conditions. These include heavy snow, blizzards, ice storms, and extreme cold. Damage to structures due to severe winter storms is not as likely to occur as are loss of services - primarily electrical service. Severe winter storms can contribute to other losses including vehicular accidents, personal injuries, and loss of life.

Profile of Hazard Events - Severe Winter Storm

Over the past 27 years, there have been a number of severe winter storms that have affected Marion County. Most have involved multiple counties in Ohio. Those most notable are described in the table below. Due to the fact that severe winter weather events usually involve multiple counties, quantifications of losses are typically based on the region affected. Losses incurred to Marion County have not been specifically identified until 2007.

Significant Severe Winter Storms

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
Jan. 1978	Countywide (NE US)	Damage to some homes, roads closed, personal property damage (35 lives lost in Ohio).	\$11.9 M statewide
Dec. 1993	Countywide (50 counties)	Extreme cold - numerous water main breaks and fires. One death.	\$794,395 - Property Damage
Feb. 1994	Countywide (23 counties)	Ice storm - six injuries.	\$774,157 - Property Damage \$774,157 - Crop Damage
Jan. 1995	Countywide (15 counties)	Heavy snow - power outages were reported in some areas from snow accumulating on lines and downing trees. Several buildings collapsed under the heavy snow. Eight injuries.	\$1.5 M - Property Damage
Feb. 1995	Ohio (88 counties)	Extreme cold - four deaths.	\$150,611 - Property Damage
Dec 1995	Countywide (32 counties)	Extreme cold - numerous water main breaks. Three deaths.	\$316,282 - Property Damage
Jan. 1996	Countywide (11 counties)	Heavy snow - roads closed and several buildings damaged. One injury.	\$1.6 M - Property Damage
Feb. 1996	Countywide (30 counties)	Extreme cold - numerous water main breaks. One death.	\$5.0 M - Property Damage
Mar. 1996	Countywide (22 counties)	Heavy snow - power lines were downed in many areas as well as trees and tree limbs from the combination of wind and heavy snow. Numerous traffic accidents.	\$514,839 - Property Damage
Jan. 1997	Countywide (8 counties)	Snow - numerous traffic accidents. One injury.	\$35,748 - Property Damage

**Significant Severe Winter Storms
-Continued-**

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
Jan. 1997	Countywide (30 counties)	Extreme cold - numerous water main breaks. Four deaths.	\$278,833 - Property Damage
Jan. 1999	Countywide (28 counties)	Winter storm - numerous traffic accidents. 56 injuries.	\$826,820 - Property Damage
Jan. 1999	Countywide (23 counties)	Winter storm - numerous traffic accidents.	\$63,389 - Property Damage
Jan. 1999	Countywide (23 counties)	Winter storm - numerous traffic accidents and downed power lines.	\$79,926 - Property Damage
Dec. 2000	Countywide (24 counties)	Winter storm - numerous traffic accidents and power outages.	\$3.3 M - Property Damage
Mar. 2002	Countywide (28 counties)	Winter storm - treacherous road conditions definitive.	\$2.0 M - Property Damage
Mar. 2002	Countywide (24 counties)	Winter storm - treacherous road conditions.	\$4.6 M - Property Damage
Jan. 2004	Countywide (9 counties)	Winter storm - treacherous road conditions and downed power lines.	\$3.8 M - Property Damage
Dec. 2004	Countywide (12 counties)	Winter storm - drifting snow, hundreds of traffic accidents, numerous power outages, dozens of buildings damaged.	\$6.7 M - Property Damage
Jan. 2005	Countywide (29 counties)	Ice storm - significant ice accumulation, thousands of downed trees, widespread power outages.	\$146.9 M - Property Damage
Feb. 2007	Countywide (29 Counties)	Winter storm - considerable blowing and drifting snow.	3.3 M - Property Damage \$44,293 - Property Damage*
Feb. 2007	Countywide (11 Counties)	Ice storm - some accidents and minor power outages.	\$287,903 - Property Damage \$27,683 - Property Damage*
Mar. 2007	Countywide (11 Counties)	Ice storm - few power outages and accidents reported.	\$996,588 - Property Damage \$110,723 - Property Damage*
Mar. 2008	Countywide (27 Counties)	Winter storm - between a quarter and half inch of ice accumulated across the area, and numerous trees and power lines were reported down across the area. Many accidents were also reported..	\$3.0 M - Property Damage \$ 533,188 - Property Damage*
Mar. 2008	Countywide (27 Counties)	Winter storm - significant snow accumulation, wind gusts caused considerable blowing and drifting of snow with drifts several feet deep across the area. Many accidents were reported	\$798.4 M - Property Damage \$ 639,826 - Property Damage*
Dec. 2008	Countywide (29 Counties)	Winter storm - few accidents.	\$1.1 M - Property Damage \$21,328 - Property Damage*
Jan. 2009	Countywide (29 Counties)	Winter storm - widespread blowing and drifting snow was reported with drifts in some areas a couple of feet deep, travel hampered, many accidents reported.	\$7.7 M - Property Damage \$133,773 - Property Damage*

**Significant Severe Winter Storms
-Continued-**

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
Feb. 2010	Countywide (17 Counties)	Winter storm - blizzard conditions, drifts two to three feet deep, travel nearly impossible, many accidents reported.	\$6.6 M - Property Damage \$210,584 - Property Damage*
Feb. 2011	Countywide (29 Counties)	Winter storm - strong winds with freezing rain, sleet and snow up to two inches thick. Numerous power outages.	\$7.3 M - Property Damage \$306,208 - Property Damage*
Dec. 2012	Countywide (19 Counties)	Winter storm - strong winds, reduced visibility, considerable blowing and drifting.	\$1.5 M - Property Damage \$75,000 - Property Damage**
		Totals: Region	\$999.5 M - Property Damage \$774,157 - Crop Damage
		Marion County 2007-2012	\$2.1 - Property Damage

* Property damage specific to Marion County

Community Profile - Severe Winter Storm

For the purposes of this report, this hazard is assumed to be a countywide event and affects all townships and jurisdictions.

Community Profile - Marion County

Marion County population in hazard area = 66,501

Type of Parcel (Occupancy Class)	Number of Structures in Severe Winter Storm Hazard Area	Value of Structures in Severe Winter Storm Hazard Area
Residential	47,186	\$2,220,109,430
Commercial	6,898	\$504,180,110
Industrial	990	\$207,617,536
Agricultural	8,827	\$205,145,900
Religious / Non-Profit	1,136	\$127,084,340
Government	1,017	\$169,191,540
Education	331	\$114,642,380
Utilities	235	\$10,820,540
Cemeteries	59	\$3,625,080
Total	66,679	\$3,562,416,856

SHARPP Community Profile Summary for Structures in Severe Winter Storm Hazard Area

Type of Parcel (Occupancy Class)	Number of Structures in Severe Winter Storm Hazard Area	Value of Structures in Severe Winter Storm Hazard Area
Residential	47,186	\$2,220,109,430
Non-Residential	16,715	\$916,943,546
Critical Facilities	2,719	\$421,738,800
Total	66,620	\$3,558,791,776

Estimation of Losses - Severe Winter Storm

In consideration that winter storms can adversely impact the entirety of Marion County during any winter season with varying severity, projected losses cannot be estimated with any degree of certainty. With few exceptions, structural damage from future severe winter storms, as well as, the impact on infrastructure is predicted to be minimal. As previously indicated, losses of services and personal property through vehicular accidents and similar maladies would be more indicative of this type of natural disaster. Prior to 2007, significant sever winter storms events are listed for illustrative purposes since county-based losses are either not available or are only available as part of multi-county incidents. From 2007 to 2011 , both multi-county and Marion County specific loss data are available. For the purposes of this report the severe winter storm data from 2007 to 2011 will be standardized in two ways to give an idea of potential property and crop damage in Marion County: average damage amounts by storm event and average annual damage amounts.

There were nine winter storm events involving the North Central Ohio Region and Marion County from 2007 to 2011. The region sustained \$828.4 million in property damage during this time period. No crop damage was reported. Marion County sustained \$2.0 million in property damage during this five-year time period.

Marion County Average Damage Amount Per Storm Event

The average annual property damage estimate is \$210,000 (\$2.1 million / 10 storm events) per storm event.

Marion County Average Annual Damage Amount

The average annual property damage estimate is \$350,000 (\$2.1 million / 6 (6 year data period) per year from 2007 to 2012.

2012 severe winter storm event damages estimates are:

Type of Parcel (Occupancy Class)	Number of Structures in Severe Winter Storm Hazard Area	Damage Estimate of Structures in Severe Winter Storm Hazard Area
Residential	12	\$54,000
Non-Residential	4	\$18,000
Critical Facilities	1	\$4,500
Total	17	\$75,000

The severity of an impact of a severe winter storm in Marion County is considered high and mitigation activities associated with a severe winter storm event from a planning perspective are considered as having a high priority.

Tornado

Tornados are violent storms with rotating winds of high velocity. They appear as funnel-shaped clouds extending toward the ground from the base of a thunderstorm cloud (wall cloud). Tornados are discerned by the velocity of their rotating winds. The table below identifies the Fujita Scale for different types of tornados. The purpose of this scale is to categorize each tornado by its intensity and its area and estimate a wind speed associated with the damage caused by the tornado.

Fujita Scale

Category	Wind Speed	Potential Damage
F0	Gale Tornado (40-72 mph)	Light damage. Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate Tornado (73-112 mph)	Moderate damage. 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 Tornado (113-157 mph)	Significant damage. Considerable damage. Roofs torn off frame houses; mobile homes demolished; box cars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe Tornado (158-206 mph)	Sever damage. Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted. Cars lifted off ground and thrown.
F4	Devastating Tornado (207-260 mph)	Devastating damage. Well constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated
F5	Incredible Tornado (261-318 mph)	Incredible damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobiles sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.

Weaknesses with the Fujita Scale such as subjectivity, no recognition in difference in construction, difficulty to apply with no damage indicators, subject to bias, based on the worst damage, and overestimation of wind speeds greater than F3, lead to the development of the Enhanced Fujita Scale. The Enhanced Fujita Scale was designed to be maintain and support the original F-Scale database. The Enhanced Fujita Scale uses 28 damage indicators. Each one of these indicators have a description of the typical construction for that category of indicator. A Degree of Damage (DOD) for each construction category is given and expected estimate of wind speed, a lower bound of wind speed and upper bound of wind speed. Use of the Enhanced Fujita Scale began on February 1, 2007. The table below identifies the Enhanced Fujita Scale for different types of tornados.

Enhanced Fujita Scale

Category	Wind Speed	Potential Damage
EF0	60-85 mph 105-137 km/h	Light damage. Peels surface off roofs; some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; mobile homes pushed off foundations or overturned; sign boards damaged..
EF1	86-110 mph 138-179 km/h	Moderate damage. Roofs torn off frame houses; windows and glass doors broken;, moving autos blown off roads; mobile homes demolished; boxcars overturned.
EF2	111-135 mph 180-217 km/h	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165 mph 218-266 km/h	Sever damage. Some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200 mph 267-324 km/h	Devastating damage. Well constructed houses and whole frame houses completely leveled; structures with weak foundations blown away some distance; trees debarked; cars thrown and small missiles generated.
EF5	> 200 mph > 324 km/h	Incredible damage. Strong frame houses leveled off foundations and swept away; with strongest winds , brick houses completely wiped off foundations; automobiles sized missiles fly through the air in excess of 100 meters (109 yds); incredible phenomena will occur.

Marion County is located on the northeast fringe of a geography area within the United States known as "Tornado Alley". This designation indicates an area of the United States that has a greater potential for occurrence of tornados. The relative strength of the storms most likely to impact Tornado Alley is also greater than in other locations of the country. According to the American Society of Civil Engineers (ASCE), Marion County is located in Wind Zone IV. This indicates that community shelters within this zone should be constructed to withstand a wind speed of 250 mph. Losses resulting from tornados within Marion County include those to personal property, agricultural components (crops, livestock, etc.), services, as well as injuries and deaths of community residents.

Profile of Hazard Events - Tornado

According to the National Climatic Data Center, there have been 15 tornados in Marion County between August 1960 and November 2002 (no tornado events in the county since 2002). These 15 tornados are categorized by strength as follows:

- Six tornados - F0 strength
- Five tornados - F1 strength
- Four tornados - F2 strength

The following table describes all 15 of the tornados that have occurred in Marion County since 1960. The loss data is limited to property damage only. No data were available for crop damage.

Tornados

Date of Occurrence	Fujita Scale Strength	Location	Description of Losses	\$ in Losses (2012 Value)
August 1960	F2	Marion	None reported	\$159,236
April 1963	F1	Marion	None reported	\$187,566
May 1969	F1	Marion	None reported	\$156,262
May 1969	F1	Marion	None reported	\$18,795
May 1970	F1	Marion	None reported	\$148,222
May 1971	F2	Marion	None reported - three injuries	\$1.4 M
May 1973	F2	Marion	None reported	\$15,516
August 1979	F2	Marion	None reported	\$791,293
May 1989	F1	Marion	None reported	\$463,196
July 1979	F0	Marion	None reported	\$0
August 1991	F0	Marion	None reported	\$0
July 1997	F0	Marion	Damage to homes and other structures	\$107,243
August 1998	F0	Marion	Damage to homes and other structures. Numerous trees and power lines were downed.	\$422,513
May 2000	F2	Martel	Damage to several homes	\$266,541
November 2002	F0	Marion	No damage other than downing several trees.	\$12,767
Total Property Damage				\$4.2 M

Community Profile - Tornado

As mentioned, the entirety of Marion County is at risk for the occurrence of tornados of varying strengths during any period when climatic conditions are favorable. Damage to structures, personal property, infrastructure, as well as injuries and deaths are possible. Potential losses were evaluated based on specific damage to individual parcels along a projected tornado path.

Community Profile - Marion County

Marion County population in hazard area = 20,207

Worst case scenario summary of Marion County incurring all three tornados scenarios listed below at one time:

Type of Parcel (Occupancy Class)	Number of Structures in Tornado Hazard Area Scenarios 1, 2, and 3	Value of Structures in Tornado Hazard Area Scenarios 1, 2, and 3
Residential	9,866	\$438,282,300
Commercial	1,482	\$75,598,440
Industrial	411	\$116,903,641
Agricultural	609	\$13,364,500
Religious / Non-Profit	203	\$52,009,330
Government	313	\$7,739,610
Education	90	\$44,859,860
Utilities	40	\$6,615,020
Cemeteries	15	\$209,760
Total	13,029	\$755,582,461

SHARPP Community Profile Summary for Structures in Tornado Hazard Area

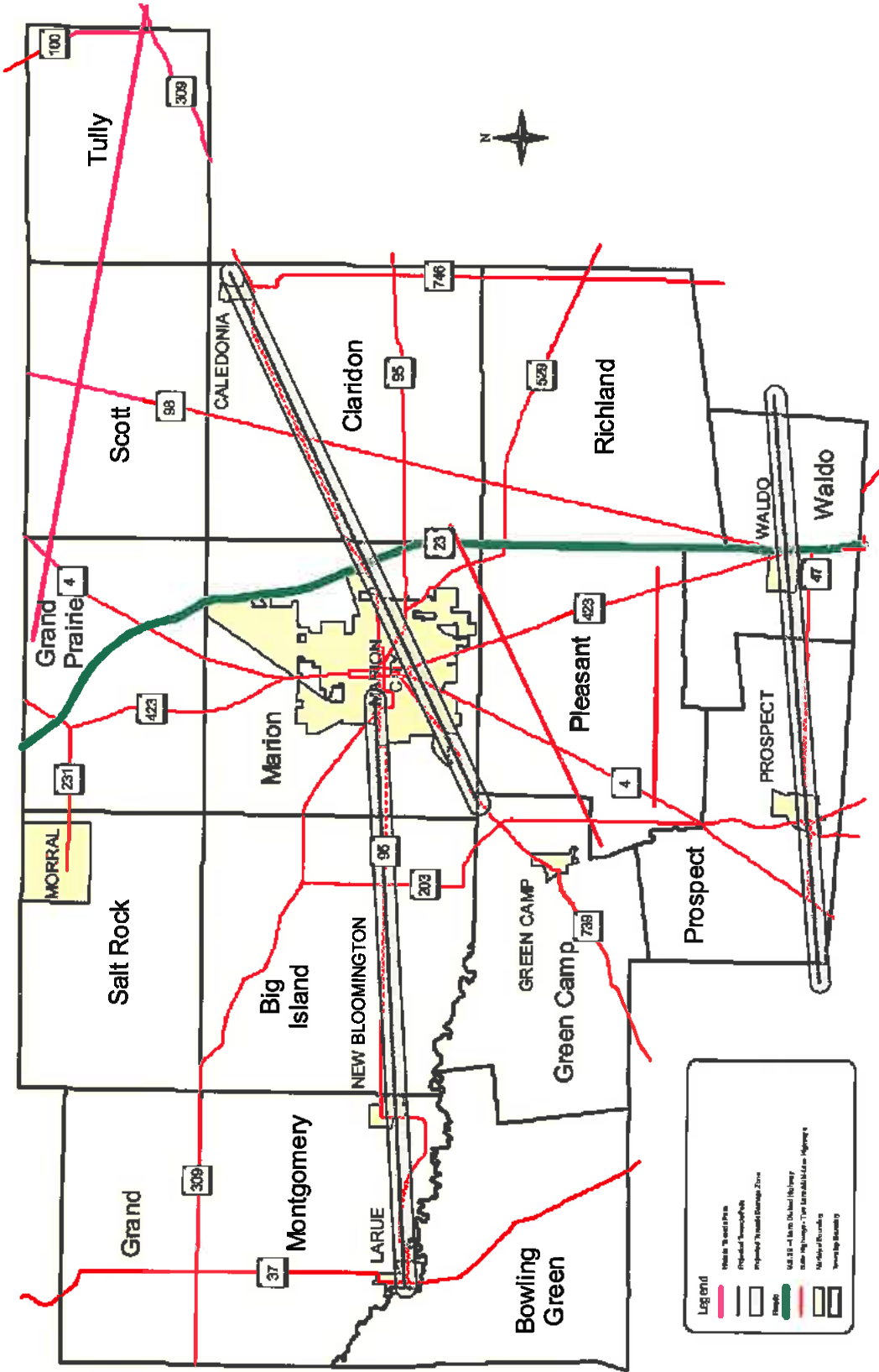
Type of Parcel (Occupancy Class)	Number of Structures in Tornado Scenario 1, 2, and 3	Value of Structures in Tornado Scenario 1, 2, and 3
Residential	9,866	\$438,282,300
Non-Residential	2,502	\$205,866,581
Critical Facilities	646	\$111,223,820
Total	13,014	\$755,372,701

In addressing the potential losses that might be incurred to parcels within the county due to a tornado, three tornado path scenarios have been devised that would be considered as worst case. The three tornado path scenarios projected here incorporated the following assumptions: considering tornado strength, an F4 and EF4 tornados was selected to be the most logical of the worst case tornados to impact the County. In determining length / width of the projected path, several sources were consulted. First, an average was taken of both parameters for all the F4 and EF4 tornados identified in Ohio from 1950 to present by the National Climatic Data Center. Based on the information obtained, the estimated length of

the path was set at 13 miles and the width at 400 yards.

Plotting this path, in a direction not untypical of tornados (west to east), resulted in the visual representations of three scenarios. Tornado scenario one plots the path of a tornado moving through the western central section of the County; taking in the populated areas of LaRue, New Bloomington, and Marion City (see Figure 21). A second scenario considers a tornado beginning in the central portion of the County involving Marion City and Caledonia. A third scenario depicts the path of a tornado moving east through Prospect and Waldo Villages. Also included in Figure 21 are representations of the paths of three past tornados. The starting and ending coordinates of these tornados were obtained from the National Climatic Data Center.

Figure 21
Marion County Historic
and Project Tornado Paths



Map Source: NCDC & Marion County Auditor GIS Data

Prepared by: Marion County RPC, 8/23/13

The following tables depict projected losses using the three tornado scenarios:

Tornado Scenario 1 - Community Profile - LaRue, New Bloomington, and Marion City

Marion County Population	Population in Tornado Hazard Area	Percent in Tornado Hazard Area
66,501	3,964	5.96%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	1,618	3.43%	\$2,220,109,430	\$58,332,940	2.63%
Commercial	6,898	350	5.07%	\$504,180,110	\$14,647,860	2.91%
Industrial	990	159	16.06%	\$207,617,536	\$94,766,511	45.64%
Agricultural	8,827	121	1.37%	\$205,145,900	\$2,232,060	1.09%
Religious / Non-Profit	1,136	52	4.58%	\$127,084,340	\$2,482,760	1.95%
Government	1,017	76	7.47%	\$169,191,540	\$2,068,350	1.22%
Education	331	6	1.81%	\$114,642,380	\$5,532,440	4.83%
Utilities	235	9	3.83%	\$10,820,540	\$38,700	0.36%
Cemeteries	59	0	0.00%	\$3,625,080	\$0	0.00%
Total	66,679	2,391	3.59%	\$3,562,416,856	\$180,101,621	5.06%

Industry	Square Footage	Annual Sales
Retail Trade	907,806	\$27,234,180
Heavy Industrial	500,809	\$200,323,600
Light Industrial	1,507,458	\$191,447,166
Agriculture	113,127	\$9,389,541

Tornado Scenario 2 - Community Profile - Marion City and Caledonia Village

Marion County Population	Population in Tornado Hazard Area	Percent in Tornado Hazard Area
66,501	16,601	24.96%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	6,776	14.36%	\$2,220,109,430	\$319,669,410	14.40%
Commercial	6,898	881	12.77%	\$504,180,110	\$49,226,230	9.76%
Industrial	990	176	17.78%	\$207,617,536	\$19,465,510	9.38%
Agricultural	8,827	189	2.14%	\$205,145,900	\$4,016,970	1.96%
Religious / Non-Profit	1,136	103	9.07%	\$127,084,340	\$45,761,000	36.01%
Government	1,017	91	8.95%	\$169,191,540	\$3,353,180	1.98%
Education	331	76	22.96%	\$114,642,380	\$38,321,040	33.43%
Utilities	235	15	6.38%	\$10,820,540	\$6,472,950	59.82%
Cemeteries	59	11	18.64%	\$3,625,080	\$164,400	4.54%
Total	66,679	8,318	12.47%	\$3,562,416,856	\$486,450,690	13.66%

Industry	Square Footage	Annual Sales
Retail Trade	2,171,540	\$65,146,200
Heavy Industrial	596,512	\$238,604,800
Light Industrial	631,124	\$80,152,748
Agriculture	196,425	\$16,303,275

Tornado Scenario 3 - Community Profile - Prospect Village and Waldo Village

Marion County Population	Population in Tornado Hazard Area	Percent in Tornado Hazard Area
66,501	3,606	5.42%

Type of Parcel (Occupancy Class)	Number of Structures			Value of Structures		
	# in Marion County	# in Hazard Area	% in Hazard Area	\$ in Marion County	\$ in Hazard Area	% in Hazard Area
Residential	47,186	1,472	3.12%	\$2,220,109,430	\$60,279,950	2.72%
Commercial	6,898	251	3.64%	\$504,180,110	\$11,724,350	2.33%
Industrial	990	76	7.68%	\$207,617,536	\$2,671,620	1.29%
Agricultural	8,827	299	3.39%	\$205,145,900	\$7,115,470	3.47%
Religious / Non-Profit	1,136	48	4.23%	\$127,084,340	\$3,765,570	2.96%
Government	1,017	146	14.36%	\$169,191,540	\$2,318,080	1.37%
Education	331	8	2.42%	\$114,642,380	\$1,006,380	0.88%
Utilities	235	16	6.81%	\$10,820,540	\$103,370	0.96%
Cemeteries	59	4	6.78%	\$3,625,080	\$45,360	1.25%
Total	66,679	2,320	3.48%	\$3,562,416,856	\$89,030,150	2.50%

Industry	Square Footage	Annual Sales
Retail Trade	364,090	\$10,922,700
Light Industrial	106,373	\$13,509,371
Agriculture	366,123	\$30,388,209

Estimation of Losses - Tornado

The following tables estimate losses from the three tornado scenarios described above:

Tornado Scenario 1 - Estimation of Losses - LaRue, New Bloomington, and Marion City

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	1,618	\$58,332,940	\$29,166,470	\$87,499,410
Commercial	350	\$14,647,860	\$14,647,860	\$29,295,720
Industrial	159	\$94,766,511	\$142,149,767	\$236,916,278
Agricultural	121	\$2,232,060	\$2,232,060	\$4,464,120
Religious / Non-Profit	52	\$2,482,760	\$2,482,760	\$4,965,520
Government	76	\$2,068,350	\$2,068,350	\$4,136,700
Education	6	\$5,532,440	\$5,532,440	\$11,064,880
Utilities	9	\$38,700	\$38,700	\$77,400
Cemeteries	0	\$0	\$0	\$0
Total	2,391	\$180,101,621	\$198,318,407	\$378,420,028

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Retail Trade	\$27,234,180	\$2,269,515	\$6,808,545	\$13,617,090
Heavy Industrial	\$200,323,600	\$16,693,633	\$50,080,890	\$100,161,800
Light Industrial	\$191,447,166	\$15,953,931	\$47,861,792	\$95,723,583
Agriculture	\$9,389,541	\$782,462	\$2,347,385	\$4,694,771

Injury estimate = 2 (based on NOAA tornado injury / fatality data)

Tornado Scenario 2 - Estimation of Losses - Marion City and Caledonia Village

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	6,776	\$319,669,410	\$159,998,205	\$479,667,615
Commercial	881	\$49,226,230	\$49,226,230	\$98,452,460
Industrial	176	\$19,465,510	\$29,198,265	\$48,663,775
Agricultural	189	\$4,016,970	\$4,016,970	\$8,033,940
Religious / Non- Profit	103	\$45,761,000	\$45,761,000	\$91,522,000
Government	91	\$3,353,180	\$3,353,180	\$6,706,360
Education	76	\$38,321,040	\$38,321,040	\$76,642,080
Utilities	15	\$6,472,950	\$6,472,950	\$12,945,900
Cemeteries	11	\$164,400	\$164,400	\$328,800
Total	8,318	\$486,450,690	\$336,512,240	\$822,962,930

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Heavy Industrial	\$238,604,800	\$19,883,733	\$59,651,200	\$119,302,400
Light Industrial	\$80,152,748	\$6,679,396	\$20,038,187	\$40,076,374
Retail Trade	\$65,146,200	\$5,428,850	\$16,286,550	\$32,573,100
Agriculture	\$16,303,275	\$1,358,606	\$4,075,819	\$8,151,637

Injury estimate = 2 (based on NOAA tornado injury fatality data)

Tornado Scenario 3 - Estimation of Losses - Prospect Village and Waldo Village

Buildings and Contents

Type of Parcel (Occupancy Class)	Number of Structures in Hazard Area	Value of Structures in Hazard Area	Value of Structure Contents	Total Loss
Residential	1,472	\$60,279,950	\$30,139,975	\$90,419,925
Commercial	251	\$11,724,350	\$11,724,350	\$23,448,700
Industrial	76	\$2,671,620	\$4,007,430	\$6,679,050
Agricultural	299	\$7,115,470	\$7,115,470	\$14,230,940
Religious / Non-Profit	48	\$3,765,570	\$3,765,570	\$7,531,140
Government	146	\$2,318,080	\$2,318,080	\$4,636,160
Education	8	\$1,006,380	\$1,006,380	\$2,012,760
Utilities	16	\$103,370	\$103,370	\$206,740
Cemeteries	4	\$45,360	\$45,360	\$90,720
Total	2,320	\$89,030,150	\$60,225,985	\$149,256,135

Business Revenue

Industry	Annual Sales	One Month Loss of Revenue	Three Months Loss of Revenue	Six Months Loss of Revenue
Retail Trade	\$10,922,700	\$910,225	\$2,730,675	\$5,461,350
Light Industrial	\$13,509,371	\$1,125,781	\$3,377,343	\$6,754,686
Agriculture	\$30,388,209	\$2,532,351	\$7,597,052	\$15,194,105

Injury estimate = 2 (based on NOAA tornado injury fatality data)

Marion County is considered at moderate risk for the potential for a tornado to occur during any particular tornado season, based on the above loss data and a local tornado that devastated the Village of Cardington in 1981 (Cardington is located in Morrow County five miles east of Marion County's eastern boundary). A tornado went through the village damaging commercial buildings and homes. Three people were killed and damages were estimated at \$1,000,000), the severity of impact of a tornado in Marion County is considered high and mitigation activities associated with tornados from a planning perspective are considered as having a high priority.

Windstorm

Windstorms could be characterized as periods where either of the following occurs: 1) sustained non-rotating surface winds (1-minute average) of 40 mph (35 knots) or greater lasting for 1 hour or longer, or 2) sustained non-rotating winds or gusts of 58 mph (50 knots) or greater for any duration. These could also be considered as “straight-line” winds.

Windstorms are prevalent within Marion County due to its topographical features which indicate that, for the most part, the county is relatively flat. With the exception of large concentrations of multi-story structures in the urban areas, there are few obstructions to limit the intensity of the winds that routinely move across the county. Severe winds as those identified above, do present conditions that have caused damage throughout areas of Marion County.

Profile of Hazard Events - Windstorm

Incidents of windstorms and their resulting damages have occurred frequently in the past within the county. According to the National Climatic Data Center, approximately 195 incidents of windstorms (local thunderstorm winds and regional windstorms) have occurred in Marion County since 1959. Generally damage is limited to the downing of tree limbs and power lines, partial losses to structures, and similar conditions that reflect a moderate range of damage. The following sections list some of the more destructive thunderstorm wind and regional windstorm events to occur in Marion County.

Thunderstorm Winds

According to the National Climatic Data Center, approximately 158 incidents of thunderstorm winds have occurred in Marion County since 1959. Total property damage estimates from these storm events are \$8.1 million while crop damage is limited to one event in 2003 causing \$15,400 (2012 - \$19,216) in damage. The following table lists property damage from the more notable thunderstorm wind events to occur in the county:

Significant Thunderstorm Winds

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
June 1998	Countywide	Numerous trees and power lines were downed. Trees fell on two houses in the city of Marion.	\$112,670
July 1998	Countywide	Numerous trees were downed, especially around Prospect. In Grand Township, a tree fell on a bridge, collapsing the main span.	\$211,263
August 1998	Countywide	Trees and power lines were downed, some falling on cars and houses and some blocking roads. One house under construction was destroyed.	\$211,263
July 1999	Countywide	Trees and power lines were downed across the county. A large tree fell in Marion and completely destroyed a 24 foot above ground swimming pool. A car was damaged by a falling tree in New Bloomington.	\$82,682
November 2002	Countywide	Thunderstorm winds downed many trees in the western half of the county. At least two homes in Marion were damaged by fallen trees.	\$127,671
August 2003	Countywide	Thunderstorm winds downed many trees across the county. The worst damage occurred in the western half of the county. Two cars were damaged by fallen trees in Marion.	\$124,823
May 2004	Countywide	A line of severe thunderstorms moved across Marion County and downed dozens of trees. Scattered power outages were also reported. Several homes, including at least one in Marion, sustained damage during the storm.	\$182,314
August 2007	Countywide	Numerous trees, large limbs, utility poles and power lines came down during the storm. Reports indicate that many trees fell onto homes, garages and cars throughout the city. Several houses damaged. One of the houses was damaged enough to be considered destroyed. Several injuries and one death reported. Between 30 and 35 utility poles had to be replaced because of trees and large limbs falling onto them. Additional support was called in to help clean up in Marion. Electric companies and municipal agencies coordinated to help clean up debris. Estimated costs for clean up in Marion were approximately \$91 thousand. 369 loads of debris were cleaned up throughout the city.	1.4 M
August 2009	Countywide	Utility poles, power poles, and a tree was reported down throughout western portions of the county.	\$21,404
June 2010	Countywide	Thunderstorm winds snapped a power pole.	\$10,529
August 2010	Countywide	Two barns collapsed due to thunderstorm winds.	\$78,968
June 2011	Countywide	Thunderstorm winds downed several large trees. Numerous power poles downed as well.	\$51,035

**Significant Thunderstorm Winds
- Continued -**

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
June 2011	Countywide	A supercell thunderstorm produced a significant downburst which damaged and destroyed several large grain silos in the area. A garage roof was blown off and shingles were blown off several structures. A large barn was blown off its foundation. Large limbs were downed as well as four power poles.	\$306,208
July 2011	Countywide	Thunderstorm winds downed a few trees.	\$10,207
July 2011	Countywide	Thunderstorm winds leveled a barn and damaged another building just outside of Marion.	\$35,724
September 2011	Countywide	Thunderstorm winds downed several trees and large limbs.	\$10,207
May 2012	Countywide	Thunderstorm winds downed a few trees.	\$10,000
June 2012	Countywide	An intense line of thunderstorms or Derecho moved across Marion County during the afternoon of June 29th causing extensive damage. Winds were estimated to be as much as 80 mph and a 62 mph gust was measured by an automated sensor on the north end of the county. Over 75 percent of residents lost power during this event. Power was not completely restored till July 5th. Hundreds, if not thousands of trees were downed across the county along with many utility poles forcing the closure of dozens of roads and streets. Damage to homes and buildings was also extensive. Hundreds of homes and buildings lost roofing or siding with many other homes damaged by fallen trees. At least one semi truck was overturned by the strong winds. Clean up costs were extensive. The clean up was hampered by an ongoing heat wave with afternoon temperatures in the upper 90s. Significant crop losses are also expected. Damage from this storm was comparable to the remnants of Hurricane Ike in September 2008.	\$4.0 M
July 2012	Countywide	Thunderstorm winds snapped the top off a utility pole.	\$10,000
Total:			\$ 7.0 M

Regional Windstorm Events

According to the National Climatic Data Center, approximately 37 incidents of regional wind-storm events have occurred in Marion County since 1994. The following table lists property damage from the more notable regional wind events to occur in north central Ohio:

Significant Regional Windstorms

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
November 1994 (3 incidents)	Countywide (41, 52, 43 counties)	Damage to homes, trees downed, electrical services lost fires started (several injuries)	Property Damage - 2.1 M
October 1996	Countywide (30 counties)	Trees, limbs, power lines downed electrical services lost, severe damage to buildings (one dead, two injured)	Property Damage - 9.3 M
December 2000	Countywide (27 counties)	Severe damage to homes, trees downed, electrical services lost	Property Damage - 6.4 M
March 2002	Countywide (28 counties)	Sever damage to homes, trees downed, electrical services lost.	Property Damage - 11.9 M Property Damage - \$255,246*
November 2003	Countywide (28 counties)	Sever damage to homes, trees downed, electrical services lost. Significant crop damage.	Property Damage - 2.9 M Property Damage - \$93,585*
March 2003	Countywide (28 counties)	Sever damage to homes, trees downed, electrical services lost. At storm peak. 250,000 people without electric service.	Property Damage - 2.9 M Property Damage - \$85,080*
February 2006	Countywide (24 counties)	Several homes and buildings also sustained damage from the gusty winds. Scattered power outages were reported across most of northern Ohio.	Property Damage - \$1.1 M Property Damage - \$17,083*
January 2008	Countywide (35 counties)	Numerous trees and power lines were reported down north of the City of Marion. Also just north of Marion, a semi-truck was blown over.	Property Damage - \$1.0 M Property Damage - \$74,646*
September 2008	Countywide (29 counties)	The damage across the area was extensive with thousands of trees, power lines and utility poles downed. Thousands of homes and buildings sustained varying degrees of damage from the high winds. Two deaths and several injuries occurred as a result of this storm. As many as two million people in northern Ohio lost power as a result of this storm..	Property Damage - \$181.8 M Property Damage - \$9.6 M* Crop Damage - \$16.4 M Crop Damage - \$1.3 M*

**Significant Regional Windstorms
- Continued -**

Date of Occurrence	Location	Description of Losses	\$ in Losses (2012 Values)
February 2009	Countywide (37 counties)	Two semi trucks blown over near Marion resulting in one semi driver being injured. Hundreds of trees and utility poles were downed in the county causing scattered power outages. Many buildings in the county sustained damage. Most of this was from lost shingles, but a few buildings lost gutters or sections of siding. A large tree fell on a home in southern Marion County causing significant structural damage. Two vehicles in an adjacent garage were also severely damaged.	Property Damage - \$18.1 M Property Damage - \$802,638*
December 2009	Countywide (27 counties)	The high winds downed a few trees, utility poles and power lines in Marion County. Scattered power outages were reported. Some homes and buildings in the county sustained minor damage. Most of this was from lost siding or roofing.	Property Damage - \$9.7 M Property Damage - \$321,055*
April 2011	Countywide (44 counties)	High winds blew over a semi tractor trailer on Route 23. Numerous trees and power lines were also downed due to the high winds. Many homes sustained damage, mainly from lost roofing or siding.	Property Damage - \$2.2 M Property Damage - \$122,483*
February 2012	Countywide (24 counties)	A few trees and tree limbs were downed	Property Damage - \$1.1 M Property Damage - \$15,000*
October 2012	Countywide (33 counties)	Hurricane Sandy post tropical high winds downed dozens of trees and large limbs in Marion County. A few electric customers lost power during the storm.	Property Damage - \$55.3 M Property Damage - \$75,000*

* Property and crop damage specific to Marion County

Community Profile - Windstorm

As previously mentioned, windstorms present potential damaging effects on structures and other personal property throughout the entirety of the county.

Community Profile - Marion County

Marion County population in hazard area = 66,501

Type of Parcel (Occupancy Class)	Number of Structures in Windstorm Hazard Area	Value of Structures in Windstorm Hazard Area
Residential	47,186	\$2,220,109,430
Commercial	6,898	\$504,180,110
Industrial	990	\$207,617,536
Agricultural	8,827	\$205,145,900
Religious / Non-Profit	1,136	\$127,084,340
Government	1,017	\$169,191,540
Education	331	\$114,642,380
Utilities	235	\$10,820,540
Cemeteries	59	\$3,625,080
Total	66,679	\$3,562,416,856

SHARPP Community Profile Summary for Structures in Windstorm Hazard Area

Type of Parcel (Occupancy Class)	Number of Structures in Windstorm Hazard Area	Value of Structures in Windstorm Hazard Area
Residential	47,186	\$2,220,109,430
Non-Residential	16,715	\$916,943,546
Critical Facilities	2,719	\$421,738,800
Total	66,620	\$3,558,791,776

Effects on infrastructure would be considered minimal with the exception of downed utility lines and poles. Damage is generally be limited and total destruction is rare. Losses resulting from thunderstorm wind are quantified for Marion County while losses from regional windstorm events are quantified for both the region and Marion County starting in 2002.

As noted above, there have been a number of windstorms that have affected Marion County.

Most have involved multiple counties in Ohio. Those most notable are described in the tables above. Prior to 2002, regional windstorm events are listed for illustrative purposes since county-based losses are only available as part of multi-county incidents. From 2002 to 2012, both multi-county and Marion County specific loss data are available. For the purposes of this report the regional windstorm data from 2002 to 2012 will be standardized in two ways to give an idea of potential property and crop damage in Marion County: average damage amounts by storm event and average annual damage amounts.

Estimate of Losses - Thunderstorm Wind Event

Average annual storm event data is derived by dividing the total property damage estimate of \$8.1 million and the total crop damage estimate of \$18,718 by 53 (53 year data period). This reveals that Marion County can expect:

1. An average annual property damage amount of \$152,830 (8.1 million / 53).
2. An average annual crop damage amount of \$353 (\$18,718 / 53).

2012 thunderstorm wind event estimate of losses are:

Type of Parcel (Occupancy Class)	Number of Structures in Thunderstorm Wind Hazard Area	Thunderstorm Wind Hazard Area Damage Estimate
Residential	269	\$1,774,000
Non-Residential	95	\$627,000
Critical Facilities	15	\$99,000
Total	379	\$2,500,000

Estimate of Losses - Regional Wind Event

Average annual regional windstorm damage estimate:

1. An average annual property damage estimate is \$1.1 million (\$11.5 million / 11 (11 year data period) in property damage per year from 2002 to 2012.
2. An average annual crop damage estimate is \$8,451 (\$92,957 / 11 (11 year data period) in crop damage per year from 2002 to 2012.

2012 regional wind event estimate of losses are:

Type of Parcel (Occupancy Class)	Number of Structures in Regional Wind Hazard Area	Regional Wind Event Damage Estimate
Residential	8	\$54,000
Non-Residential	3	\$21,000
Critical Facilities	0	\$0
Total	11	\$75,000

The potential of windstorm occurrence in Marion County would be considered high while the severity of the impact of these events would be considered moderate. Mitigation activities associated with windstorms from a planning perspective are considered as having a low priority.

3.3 Conclusions

Hazard analysis, as it relates to the mitigation of natural disasters within Marion County, involves several processes. The first is to obtain data and information on relevant hazards that have, and will continue to, affect County property and populations. Subsequently, these data and relevant information are reviewed and analyzed using established parameters. Once completed, the results of this review can be used to develop and implement specific mitigation efforts that will be of most benefit to Marion County and its citizens.

The review and analysis of the Hazard Analysis section was performed by the Marion County Mitigation Planning Committee. This review entailed the initial consideration of the entirety of the data and information contained in this section. Each natural disaster identified as a part of Hazard Identification was then rated on the basis of three criteria: the potential for the occurrence of the disaster; the severity of the impact on populations and property; and the level of need for implementing mitigation activities relating to that specific natural disaster. The natural disasters were then assessed using those criteria. Criteria parameters were set at three levels; low, moderate, and high. These parameters are defined below:

High Mitigation Potential

A countywide or isolated area natural hazard event with the probability of occurring four or more times in a year and with the potential to cause substantial damage to property or crops, displacement of residents from their homes, and injury and / or loss of human life.

Moderate Mitigation Potential

A countywide or isolated area natural hazard event with the probability of occurring two

to three times in a year and with the potential to cause moderate damage to property or crops, may involve the displacement of residents from their homes, but not likely to cause injury or loss of life.

Low Mitigation Potential

A countywide or isolated area natural hazard event with the probability of occurring one or fewer times in a year and with the potential to cause limited damage to property or crops, usually does not involve the displacement of residents from their homes, and no injury or loss of life.

Utilizing the above definitions, the results from this review are as follows:

Natural Hazard Mitigation Potential

Type of Hazard	Potential for Occurrence	Potential Severity of Impact	Mitigation Potential
Class II Dam Failure	Low	Moderate	Low
Drought / Extreme Heat	Moderate / Moderate	High* / Moderate	Low** / Moderate**
Earthquake	Low	Low	Low
Flood	High	High	High***
Hailstorm	Moderate	Moderate	Low
Severe Winter Storm	Moderate	Moderate	High**
Tornado	Moderate	High	High***
Windstorm	High	Moderate	Low

- * Agricultural damage
- ** Potential for public information only
- *** Potential for mitigation including public information

As stated, these determinations will be valuable in identifying and proposing specific mitigation projects. The mitigation projects proposed in forthcoming chapters of the Plan will be based upon this overall assessment and will be designed to lessen adverse impacts of natural disasters on the citizens of Marion County.

Chapter Four

Mitigation Goals and Activities

4.1 Mitigation Goals

Establishing achievable goals forms the foundation for the activities that will assist Marion County in attaining the overall mission of the Mitigation Planning Committee.

Prior to the identification of specific mitigation goals, existing county plans were reviewed to determine their potential impact on the goals. The plans reviewed included local comprehensive land use plans, subdivision regulations, flood plain regulations, building codes, zoning ordinances, proposed five-year capital budgets, and MCCEMA's Emergency Operations Plan. Many of the comprehensive land use plans and subdivision regulations addresses multiple initiatives including flood plain management, zoning and land use, agricultural resources, infrastructure, transportation, and other planning issues that help to mitigate the impact of natural hazards on property and residents in the county. The following tables summarizes Marion County and municipal plans and regulations by subdivision.

Some of the action plan goals outlined in the 2006 Natural Hazard Mitigation Plan have been completed or partially completed over the past five years. The MCCEMA Director has been successful in helping implement:

1. Strengthening partnerships at the federal, state and local levels.
2. Determinating information on natural hazards via printed material, local radio, and television.
3. Adjustments have been made to various local plans such as the 2011 Marion County Land Use Plan which recognized natural hazards such as flooding. The plan noted the need to make the flood prone areas in the county conservation areas with limited development potential.
4. Identification of funding sources to help carry out mitigation projects. For example, several new tornado sirens were installed (Kirkpatrick, Martel, southern Pleasant Township, southern Marion Township) in the county with grant money and participation with local subdivisions.
5. A new emergency generator was installed at the Battle Run Fire Department.
6. Ten portable generators were purchased to power Marion City traffic signals in the event of a power outage.

Provisions within the established plans reflected satisfactory applications of mitigation considerations. Continuation and strengthening of mitigation provisions in these existing plans and ordinances is addressed in Chapter Five: Mitigation Action Plans.

Potential goals were established by the Mitigation Planning Committee based upon their relationship to the potential adverse impact upon the community. These goals were

Local Plans and Regulations

COMMUNITY	PLANNING COMMISSION	COMPREHENSIVE PLAN	FLOOD PLAIN REGULATIONS	BUILDING CODES*	ZONING ORDINANCE	CAPITAL BUDGET**	PUBLIC WORKS BUDGET**
Marion County	YES	YES	YES	YES	NO	NONE	Limited to In-kind Wages Only
Marion City	YES	YES	NO	YES	YES	NONE	Limited to In-kind Wages Only
Caledonia Village	YES	YES	YES	YES	YES	NONE	Limited to In-kind Wages Only
Green Camp Village	YES	NO	YES	YES	YES	NONE	Limited to In-kind Wages Only
LaRue Village	YES	YES	YES	YES	YES	NONE	Limited to In-kind Wages Only
Morrall Village	YES	NO	YES	YES	NO	NONE	Limited to In-kind Wages Only
New Bloomington Village	YES	NO	NO	YES	NO	NONE	Limited to In-kind Wages Only
Prospect Village	YES	YES	YES	YES	YES	NONE	Limited to In-kind Wages Only
Waldo Village	YES	NO	NO	YES	YES	NONE	Limited to In-kind Wages Only

* Only local building codes are related to plumbing and construction within a flood plain. Other than plumbing or flood plain regulations, there are no local building codes for one-, two-, or three-family housing. All commercial and industrial projects are subject to state building codes.

* Budget that would allow the jurisdiction to devote financial resources towards hazard mitigation activities.

identified and separated by hazard. Those goals that address mitigation for the entirety of the natural hazards that might impact the County are provided under the heading of “multi-hazard goals”. Additional goals specifically addressing tornados and floods are listed under their respective headings. The goals adopted reflect the consensus of the Committee and are as follows:

4.2 Multi-Hazard, Tornado, Flood, and Sever Winter Goals

Multi-Hazard Goals

- A. Enhance public information and educational programs for both pre-disaster and post-disaster situations.
- Adequate knowledge of natural disasters and their effects is paramount to the protection of the citizens of Marion County. Timely dissemination of educational materials can reduce the adverse effects to life and property both before and after the occurrence of a natural disaster.
 - Develop a web page for Marion County EMA and explore use of social media to disseminate education materials and information before and after a natural disaster.
 - Develop a list of smart phone applications that can aid / help citizens of Marion County before and after a natural disaster.
- B. Strengthen existing partnerships among all public (especially adjoining county EMA Offices) and private sectors within and outside Marion County.
- Cooperative relationships among all sectors of the community enhance planning efforts, the development of mitigation initiatives, and the ability to appropriately respond to the impacts of natural disasters.
- C. Integrate, as necessary, mitigation components within the existing Marion County plans whose provisions are influenced by the mitigation of natural disasters.
- Assuring the presence of natural disaster mitigation components within all relevant Marion County plans, enhances the protection of citizens, personal property, and natural systems throughout the County.
 - The 2011 Marion County Land Use Plan recognizes the impacts of flooding on the citizens of Marion County and recommended the 100-year flood plain areas be used for conservation purposes.

- D. Identify and pursue opportunities for funding of mitigation projects.
 - Adequate funding sources must continually be identified and solicited, and monies successfully obtained, in order to fully achieve the intended purpose of natural disaster mitigation within Marion County.
- E. Solidify mitigation initiatives directed toward critical facilities (schools, medical facilities, emergency services, etc.).
 - Critical facilities, such as schools, hospitals, nursing homes, fire departments, and law enforcement offices, must be afforded maximum consideration for mitigation initiatives to assure their ability to function following occurrences of natural disasters.
 - 100kw generator recently obtained and installed at Battle Run Fire Station allowing the station to function with loss of electrical power and to serve as a community shelter.

Tornado Goals

- A. Enhance early warning systems to maximize public notification.
 - Early warning of Marion County residents on impending natural disasters is crucial in minimizing injuries, deaths, and losses to personal property.
- B. Implement a countywide one-, two-, and three-family residential building code.
 - Adoption of a countywide residential building code for new construction only that incorporates a tornado / wind hazard resistant design (i.e. roof materials / construction) which could be implemented over a five-year period.
 - Ongoing talks with the various subdivisions about this issue. Also, talked with an architect about having an office in Marion for plan review so builders do not have to travel to Columbus to obtain building permits.
- C. Require mobile / manufactured homes on individual lots to be tied down to their foundations.
 - This will reduce possible damage to the unit as well as injury / death to the occupants.

This goal was recently achieved with the establishment of the Ohio Manufactured Homes Commission which oversees the installation of manufactured homes on individual lots in Marion County.

Flood Goals

- A. Modify County and village flood plain regulations to require propane fuel cylinders to be tied down.
 - This will reduce the risk of a fuel cylinder floating away during a flooding event and becoming an explosive hazard.

- B. Minimize flood losses to structures and properties within Marion County.
 - Repetitive losses to structures and properties due to flooding need to be minimized to limit financial losses.
 - Removal of the Scioto River Dam at the Marion County border with Delaware County coupled with the reconstruction of the Cecil Oiler Bridge in Prospect Village has reduced flood levels along the Scioto River. This may reduce the need to remove repetitive loss structures.

- C. Work with townships that have a flood hazard area to develop conservation zoning regulations in these areas.
 - The township zoning resolutions could be modified to allow passive uses only within the flood hazard areas (i.e. athletic fields, parks, etc.).
 - Talks are ongoing with the townships with zoning that have flood plain areas.

- D. Work with the Ohio Department of Transportation, Marion County Engineer's Office, township, and village officials in the areas of LaRue Village, New Bloomington Village, Green Camp Village, Prospect Village, and Waldo Village to identify and develop a strategy for the elevation of road sections which periodically flood and are deemed to be priority access roads in the western and southern portions of Marion County.
 - Periodically roads in the western and southern portions of Marion County flood. This can make vehicular movement to and from the villages of LaRue, New Bloomington, Green Camp, Prospect, and Waldo extremely difficult especially in the western and southwestern portions of the county

when there is a need to travel to Marion City for emergency medical treatment.

- This is currently under study with the various subdivisions.

E. Flood Study for the village of LaRue

Study flooding issues within the village of LaRue. Also, identify storm water infrastructure within and outside the village that needs to be repaired or upgraded to alleviate flooding issues within the village.

Severe Winter Storm

A. Encourage local power companies to trim tree limbs near power lines.

- This will help reduce the likelihood of a power outage to Marion County residents during a severe winter storm event.
- This is an ongoing maintenance effort by local power companies.

B. During an extended period of power outage caused by a severe winter storm or blizzard, perform a door to door home check on residents in impacted areas to determine if anyone is at risk especially the elderly or disabled.

- Have individuals from local fire departments, police, Red Cross, neighborhood watch groups, etc. go door to door to check on residents.
- Various groups are in place to do this.

C. Snow Plowing.

- Normal Snow Fall Events.

Work with the local Ohio Department of Transportation County Manager to encourage the local ODOT County Manager to give priority to the snow plowing of the state highways linking each of the seven villages of Caledonia, Green Camp, LaRue, New Bloomington, Morral, Prospect, and Waldo with Marion City. In this instance, different state highways may need more attention due to wind direction and possible snow drifting. Coordination is through the Marion County Sheriff's Office.

- Level 3 Snow Emergencies.

Once the Marion County Sheriff's Office has declared a Level 3 Snow Emergency, the County's *Emergency Operations Plan* gives authority to the MCCEMA Director to order the snow plowing of the state highways linking

the seven villages of Caledonia, Green Camp, LaRue, New Bloomington, Morral, Prospect, and Waldo with Marion City by any subdivision(s) with an available snow plow.

Depending on wind direction and speed, different state highways will drift over faster and will need more attention during a given storm. For example, State Route 95 in Big Island Township experiences snow drifts when the wind direction is from the north or northwest.

4.3 Mitigation Activities

Mitigation activities are those which direct the implementation of tasks that will accomplish the goals established by the Mitigation Committee. These activities are also directed towards hazards outlined in the Hazard Analysis section and their respective priority levels. The mitigation activities identified will be used to develop action plans and specific tasks associated with those plans.

Developing or continuing existing mitigation activities is contingent upon an understanding of those activities currently in place. The following provides an explanation of the major mitigation activities already implemented by County political subdivisions.

There are, at this time, no definitive mitigation activities that address Class II dam failure, drought, earthquake, hailstorm, and windstorm. There are, however, public information and response activities in place that may be implemented to lessen the impact of these disasters. Preliminary notification of an impending hailstorm or high wind advisories, for example, would be managed through the National Weather Service via local news media sources and the Emergency Alert System. Lessening the impacts of the adverse effects from a Class II dam failure or earthquake (flood damage, power outage, debris removal, etc.) may involve both public information and formal response actions undertaken by public entities.

Formal mitigation activities are currently in place for those natural disasters deemed to be of greatest concern to the County: tornado, flood, and severe winter storm. Some of the more important activities are as follows:

Tornado

The presence of early warning tornado sirens dispersed through the County provides the most substantial mitigation effort relating to tornados. Installation and placement of warning sirens is a function of cooperative efforts between the political subdivision in question and the Marion City / County Emergency Management Agency (MCCEMA). Testing of these warning devices is conducted routinely under the auspices of MCCEMA. Formal activation of tornado sirens follows procedures established by MCCEMA and other public safety entities within the County.

Pre-Disaster Mitigation Activities:

Pre-disaster information on tornado topics (definitions of watches / warning, sheltering issues, etc.) are available through and disseminated by various entities including the Marion City / County EMA and others. Prior to and during tornado season, , the Marion County EMA Director talks about tornado issues in Marion County on the local radio station (WMRN) and TV Channels 4 and 10 out of Columbus.

Public notification relating to the potential development and sighting of tornados is primarily through the watches / warnings issued by the National Weather Service and disseminated via the local TV / radio stations and the National Oceanic and Atmospheric Administration (NOAA) weather radio system.

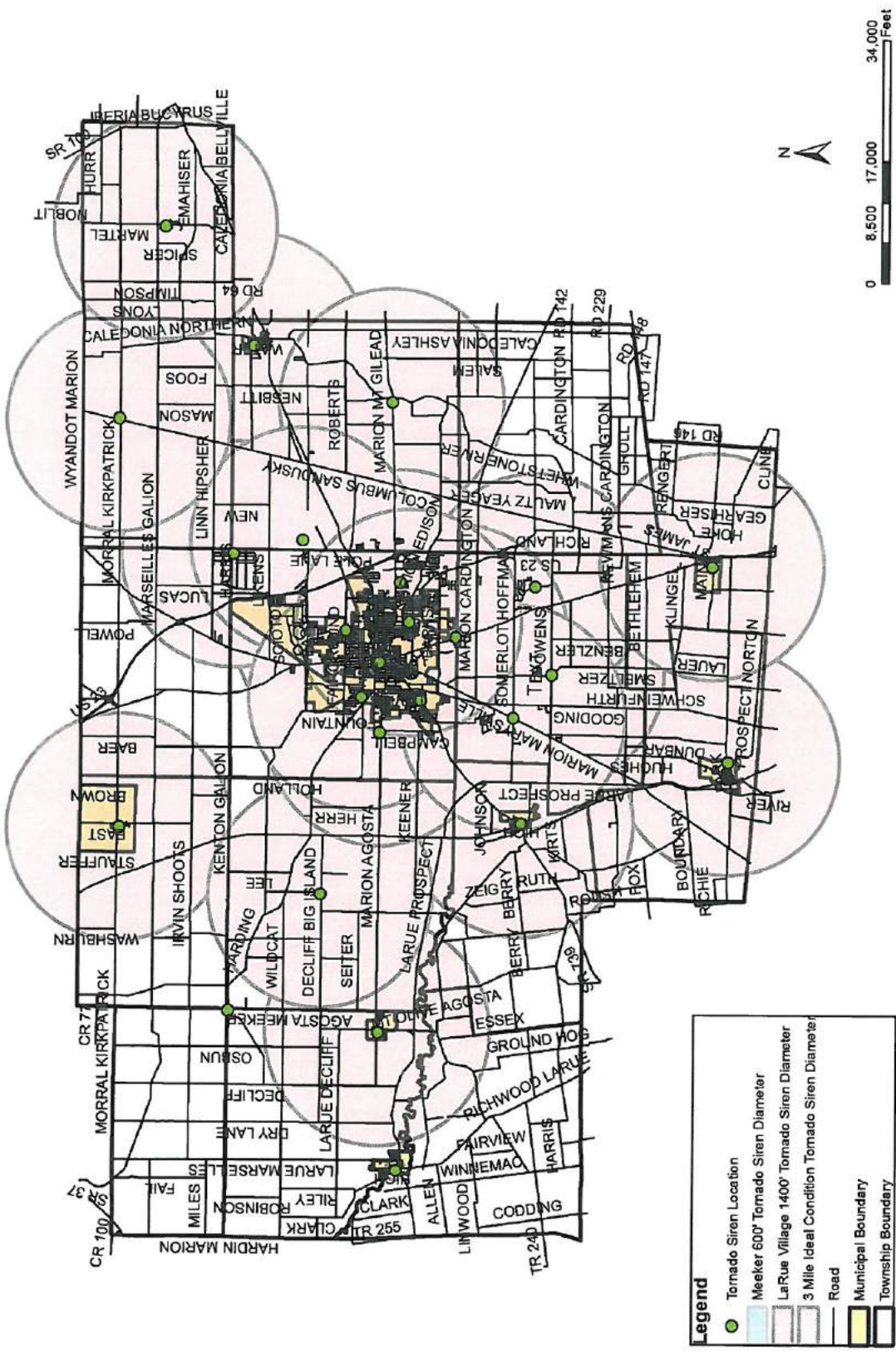
Figure 22 shows the current locations of early warning tornado sirens and their range under ideal conditions in Marion County. A review of Figure 22 reveals that tornado sirens cover the Marion urban area, seven incorporated villages, and several small unincorporated village areas. In total, tornado sirens cover approximately 75% of Marion County.

There are several small clusters of fairly dense housing in Richland Township are not covered by tornado sirens. Mitigation activities over the next five years will include:

1. Placing tornado sirens in Richland Township.
 - Placement of tornado sirens in Richland Township is an ongoing project pending funding sources.
2. Begin a process of tornado siren placement in the rural areas of Marion County not presently served by a tornado siren.
 - Placement of tornado sirens in rural areas of Marion County is an ongoing project pending funding sources.

Presently, the state of Ohio has building codes in place in Marion County which regulate the construction of residential dwellings with four or more units and commercial / industrial buildings. One mitigation activity to consider is the adoption of a countywide residential building code (for one-, two-, and three-family dwelling units) for new construction only that incorporates a tornado / wind hazard resistant design (i.e. roof materials / construction)

FIGURE 22
TORNADO SIREN DIAMETERS



MAP SOURCE: MARION CITY/COUNTY EMA DIRECTOR & AUDITOR GIS DATA

PREPARED BY: MARION COUNTY RPC, 12/12/13

which could be implemented over a five-year period.

- Ongoing talks with the various subdivisions about this issue.

One activity to consider pursuing is the requirement that all mobile / manufactured homes on individual lots in the County are placed on an approved foundation and tied down (presently, the State Health Department, which regulates mobile / manufactured homes parks, requires homes in the parks to be placed on foundations and tied down). Requiring these homes to have approved foundations and tie downs lessens the possibility that these units will blow over (reducing damaging to the unit as well as possible loss of life) during a tornado event.

- This goal was recently achieved with the establishment of the Ohio Manufactured Homes Commission which oversees the installation of manufactured homes on individual lots in Marion County.

Post-Disaster Mitigation Activities:

Post-disaster mitigation activities may involve both preventative and response components. Public information to lessen the impacts of the disaster, are, as well, available from the Marion City / County EMA, the Marion County Health Department, and other public service organizations. Removal of debris, repairing downed power lines, traffic control, and other response activities are a function of cooperative efforts outlined in MCCEMA's *Emergency Operations Plan*.

One mitigation activity to consider is requiring any existing residential, commercial, or industrial building sustaining 50% or more damage by a tornado hazard to be rebuilt to current county / state building codes which would require a tornado / wind hazard resistant design.

Flood

The County's *Comprehensive Land Use Plan* and Subdivision Regulations address multiple initiatives including flood plain management, zoning and land use, agricultural resources, infrastructure, transportation, and other planning issues that may impact the County.

The County and village *Flood Plain Regulations* incorporate specific requirements relating to construction and other types of development within determined flood plain areas. The County and villages established these regulations as part of the National Flood Insurance Program. Flood plain areas within the County (both incorporated and unincorporated) are identified by the Federal Emergency Management Agency (FEMA) from Flood Insurance Studies conducted by the Ohio Department of Natural Resources. Flood Insurance Rate Maps (FIRM) and other flood data form the foundation of these reports.

The flood plain map modernization program began with a scoping meeting on June 3, 2008

and preliminary maps were released on June 4, 2009. An Open House was conducted on July 23, 2009 to provide information to government agencies and the general public to review the maps. Any comments or appeals were accepted from August 24, 2009 through September 23, 2009. The Letter of Final Determination was issued on January 6, 2010. The revised flood plain maps were by the county and became effective on July 6, 2010.

The Marion County Flood Plain Regulations name a County Flood Plain Administrator who is in charge of maintaining and enforcing these regulations. Some of the duties that are included are routinely monitoring the flood plain and providing community assistance (such as encouraging owners to maintain flood insurance).

The Marion City / County Emergency Management Agency's *Emergency Operations Plan* addresses mitigation activities from both preventative and response perspectives. Information from the National Weather Service to County citizens is provided through the Marion City / County Emergency Management Agency, local news media, and the National Oceanic and Atmospheric Administration (NOAA) weather radio system.

Pre-Disaster Mitigation Activities:

Distribute educational information to citizens in the flood hazard areas on post flood disaster activities (cleanup procedures, managing water / food supplies contaminated by flood waters, etc). This information is available through the Marion City / County EMA. In addition, several times a year the Marion County EMA Director talks about flooding issues in Marion County on the local radio station (WMRN) and TV Channels 4 and 10 out of Columbus.

Modify the current County *Flood Plain Regulations* (suggest the impacted villages due the same) to require propane fuel cylinders (the type used to heat a home) to be securely anchored so they do not float away during a flood event and become an explosive hazard.

- Ongoing talks with the various subdivisions about this issue.

There are 12 active repetitive loss structures in Marion County. One way to mitigate this problem is to purchase these structures and demolish them. However because of recent changes resulting in the lowering of the flood level (going down due to dam removal and redesign and rebuilding of bridge in Prospect Village) of the Scioto River in southern Marion County, an ongoing study will be necessary to evaluate which if any of the 12 active repetitive loss structures need to be mitigated.

Another possible mitigation activity is to work with the townships that have flood hazard areas to modify their zoning resolutions to prohibit the development of residential, commercial, and industrial structures in these areas (this only applies to townships that have zoning). The zoning resolutions could be modified to allow passive uses only within the flood hazard areas (i.e. athletic fields, parks, etc.).

- The Marion County Regional Planning Commission is currently working with the townships with zoning and flood plain areas on this issue.

Work with various government officials in the areas of LaRue Village, New Bloomington Village, Green Camp Village, Prospect Village, and Waldo Village to identify and develop a strategy for the elevation of road sections which periodically flood and are deemed to be a priority access roads in the western and southern portions of Marion County.

- This issue is currently under study with the various subdivisions.

Post-Disaster:

After a flood has occurred, the removal of debris, repairing downed power lines, traffic control, and other response activities are a function of cooperative efforts outlined in MCCEMA's *Emergency Operations Plan*.

Severe Winter Storm

Existing mitigation activities relating to severe winter storms come in the form of preliminary notification and post-disaster response. Public information of an impending severe winter storm is provided by area news media affiliates and the National Oceanic and Atmospheric Administration (NOAA) weather radio system based on predictions from the National Weather Service.

As previously mentioned, the adverse effects of severe winter storms can also be reduced by mitigation procedures outlined in the Marion City / County EMA's *Emergency Operations Plan*.

Pre-Disaster Mitigation Activities:

Distribute educational information to citizens about how they can prepare for a severe winter event (managing water / food supplies and using supplemental heating sources safely). This information is available through the Marion City / County EMA. Prior to and during the winter, the Marion County EMA Director talks about severe winter storm issues in Marion County on the local radio station (WMRN) and TV Channels 4 and 10 out of Columbus.

Encourage local power companies to trim tree limbs near power lines. This will help reduce the likelihood of a power outage.

- This is an ongoing maintenance effort by the various local power companies.

Post Disaster:

After a severe winter storm has occurred, the County response activities are a function of

cooperative efforts outlined in MCCEMA's *Emergency Operations Plan*.

During an extended period of power outage caused by a severe winter storm or blizzard, perform a door to door home check on residents in impacted areas to determine if anyone is at risk especially the elderly or disabled.

- Various groups are in place to check on senior citizens.

Once the Marion County Sheriff's Office has declared a Level 3 Snow Emergency, the MCCEMA Director may find it necessary to order the snow plowing of the state highways linking the seven villages of Caledonia, Green Camp, LaRue, New Bloomington, Morral, Prospect, and Waldo with Marion City by any subdivision(s) with an available snow plow. Coordination is through the Marion County Sheriff's Office.

4.4 Identification and Prioritization of Activities

Given the examples of existing mitigation activities, the Mitigation Committee's efforts focused on the development of additional mitigation activities. These new or expanded activities serve as the basis for the creation of action plans that will be implemented as a part of the Marion County Mitigation Plan. Specific action plans as described in Chapter Five.

There were two informally established categories of mitigation initiatives that were reviewed by the Committee. One category included those activities considered to be general in nature. These were compiled by the Mitigation Planning Committee itself and were approved through the consensus of the Committee. These general activities addressed the multi-hazard goals identified above, as well as, the general goals related to tornado and flood hazards.

Definitive mitigation activities, also referred to as mitigation projects, were those submitted by many political subdivisions within Marion County. Consistent with the determinations from the Hazard Analysis, the majority of proposed comments / projects submitted by the various subdivisions were primarily directed towards tornado, flood, and severe winter storm.

As mentioned, mitigation activities developed to address multi-hazard and other general goals were determined by the Committee following their review of proposed initiatives. This method of selection was chosen due to the absence of financial, social, and environmental considerations. Conversely, mitigation activities / proposals submitted by County political subdivisions were selected using a formal evaluation described below.

Prior to their formal evaluation and review, the Planning Committee requested specific mitigation proposals from all political subdivisions within the County. A mitigation activity survey was developed and sent to each political subdivision in the County.

The individual mitigation surveys submitted by the County political subdivisions were evaluated by the Committee using a table matrix. The matrix correlated four specific criteria: cost effectiveness, technically feasible, environmentally sound, and social impacts as shown below. Each specific activity was rated on a five-point scale as follows:

	PROPOSED ACTIVITIES			
CRITERIA	Activity 1	Activity 2	Activity 3	Activity 4
Cost Effective				
Technically Feasible				
Environmentally Sound				
Social Impacts				
Total				

- 4 - Excellent
- 3 - Good
- 2 - Fair
- 1 - Poor
- 0 - Unacceptable

Where cost effectiveness was addressed, consideration was given not only to the availability of County funding sources (both incorporated and unincorporated areas), but also on the potential availability of outside sources of funding (State, federal, and other grant-based organizations).

The Regional Planning Commission staff evaluated and totaled the scores for each mitigation activity. At a subsequent Mitigation Planning Committee meeting, the scores were presented to the group to determine the various mitigation activities. The mitigation activities selected are identified in Chapter Five.

Chapter Five

Mitigation Action Plans

5.1 Action Plan Development

The development of action plans is the final stage in setting the direction for the implementation of mitigation activities and the achievement of established goals. An action plan is a composite of a defined goal, mitigation activities identified to achieve the goal, and specific tasks directed to address the mitigation activities.

During a meeting of the Mitigation Committee, Action Plans were established that would serve as the guide for Marion County for the five-year implementation period of the Mitigation Plan. Proposed mitigation activities were discussed individually. Initial discussions centered on determining whether the individual projects warranted inclusion within the Plan. Those in question were considered using benefit / cost review and their applicability on mitigation as a criteria. Several proposals were rejected by the Committee based on those parameters.

Benefit / cost review compares the projected overall costs of the project with the benefits to community citizens, their properties, and their applicability to mitigation. This concept is reflected as well in the evaluation of mitigation projects using the “Cost Effective” parameter as described above. Benefit / cost review is an extremely useful tool when making determinations among a variety of projects; particularly where the protection of County residents and properties within the County are concerned. In making these analysis, several proposals were rejected by the Committee based on those parameters. Estimated costs of projects that will involve grant funding requests are included as a part of the Mitigation Proposal Status Sheet found in Appendix D.

5.2 Action Plans

The Action Plans described below are those adopted by the Marion County Mitigation Planning Committee. The Action Plans include an identification of: the specific goals being addressed; the mitigation activity (ies) directed to accomplish each goal; the lead agency(ies) / individual (s) that will assist with the implementation of the particular activity; the projected time line to complete the activity; and the specific tasks that will be conducted to fulfill the intended purpose of the goal.

The following Action Plans are established for multi-hazard goals and the goals identified specifically for tornado, flood, and severe winter storm.

5.3 Action Plans for Multi-Hazard Goals

Goal 1: Enhance public information and educational programs for pre-disaster and post disaster situations.

Activity 1: Update and distribute, as necessary, existing public educational materials that relate to the mitigation of natural disasters to include references to the Marion County Mitigation Plan and public participation in the planning effort. These educational materials include safety and other relevant information specifically directed toward tornado safety tips, safe rooms as shelters, flood-damaged property, precautions during severe winter weather, etc. to citizens within Marion County.

Lead: Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2014 - June 2014

Task 1: Identify existing types and distribution methods of natural disaster information.

Task 2: Assess composition of education information, updating as necessary, including the implementation of the Marion County Mitigation Plan.

Task 3: Assess the strategies for dissemination of public information and modify, as necessary.

Task 4: Identify any necessary funding.

Task 5: Implement enhanced public informational releases.

Task 6: Explore the creation of a Marion County EMA web site and the use of social media such as Facebook and Twitter to disseminate pre- and post-disaster natural disaster information.

Task 7: Develop a list of smartphone applications that can aid / help citizens of Marion County before and after a natural disaster.

Status: Ongoing.

Activity 2: Disseminate updated natural disaster mitigation educational materials to citizens residing within Marion County. In addition, schedule presentations

with various local service clubs, township trustees' quarterly meetings, county commissioners' meetings, fire chiefs, and local law enforcement.

Lead: Safety Service Director, Marion City
Mayor of Caledonia Village
Mayor of Green Camp Village
Mayor of LaRue Village
Mayor of Morral Village
Mayor of New Bloomington Village
Mayor of Prospect Village
Mayor of Waldo Village
Environmental Director, Marion Area Health Department
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: July 2014 - October 2014

Task 1: Identify existing types and distribution methods of natural disaster information within the County.

Task 2: Assess the strategies for dissemination of public information and modify as necessary.

Task 3: Identify any necessary sources of funding.

Task 4: Disseminate updated public informational releases on natural disaster mitigation.

Status: Ongoing.

Goal 2: Strengthen existing partnerships among all public (especially adjoining county EMA Offices) and private sectors within and beyond Marion County.

Activity: Expand the understanding of existing partnerships to include knowledge of Marion County Mitigation planning; increasing the potentials for cooperative mitigation initiatives.

Lead: Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2007 - June 2007

Task 1: Identify all existing and potential partnerships with federal, State, and local agencies / organizations / political subdivisions

that have some involvement with the issue of natural disaster mitigation.

Task 2: Develop strategies to expand those partnerships.

Task 3: Initiate and maintain formed partnerships.

Task 4: Meet with all EMA directors within two counties of Marion to define Marion County's roll in a regional natural disaster.

Status: Ongoing.

Goal 3: Integrate, as necessary, mitigation components within the existing Marion County plans whose provisions are influenced by the mitigation of natural disasters.

Activity: Update as necessary the Marion County Comprehensive Land Use Plan, county and village flood plain regulations, city, village, and township zoning plans.

Lead: Caledonia Village Flood Plain Administrator, Zoning Commission
Green Camp Village Flood Plain Administrator, Zoning Commission
LaRue Village Flood Plain Administrator, Zoning Commission
Morrall Village Flood Plain Administrator, Zoning Commission
Prospect Village Flood Plain Administrator, Zoning Commission
Waldo Village Zoning Commission
Safety Service Director, Marion City
Big Island Township Zoning Commission
Claridon Township Zoning Commission
Grand Township Zoning Commission
Grand Prairie Township Zoning Commission
Marion Township Zoning Commission
Montgomery Township Zoning Commission
Pleasant Township Zoning Commission
Prospect Township Zoning Commission
Richland Township Zoning Commission
Salt Rock Township Zoning Commission
Scott Township Zoning Commission
Tully Township Zoning Commission
Waldo Township Zoning Commission
Marion County Flood Plain Administrator
Director, Marion City / County Emergency Management Agency (MCCEMA)
Assistant Director of Development, Marion County Regional Planning

Commission

Time line: January 2014- January 2015

Task 1: Identify all pertinent plans for Marion County political subdivisions (both incorporated and unincorporated where mitigation for natural is, or could potentially be, a component.

Task 2: Identify and contact primary planning constituents of selected Marion County planning efforts.

Task 3: Cooperatively develop constructive mitigation language for proposed inclusion within applicable plans.

Task 4: Submit formal proposals of mitigation language for inclusion in appropriate Marion County plans.

Task 5: Establish and maintain cooperative relationships with relevant Marion County planning constituents per Goal 2.

Status: Ongoing

Goal 4: Identify and pursue opportunities for funding of mitigation projects.

Activity: Adequate funding sources must continually be identified and solicited, and monies successfully obtained, in order to fully achieve the intended purpose of natural disaster mitigation within Marion County.

Lead: Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2014 - January 2019

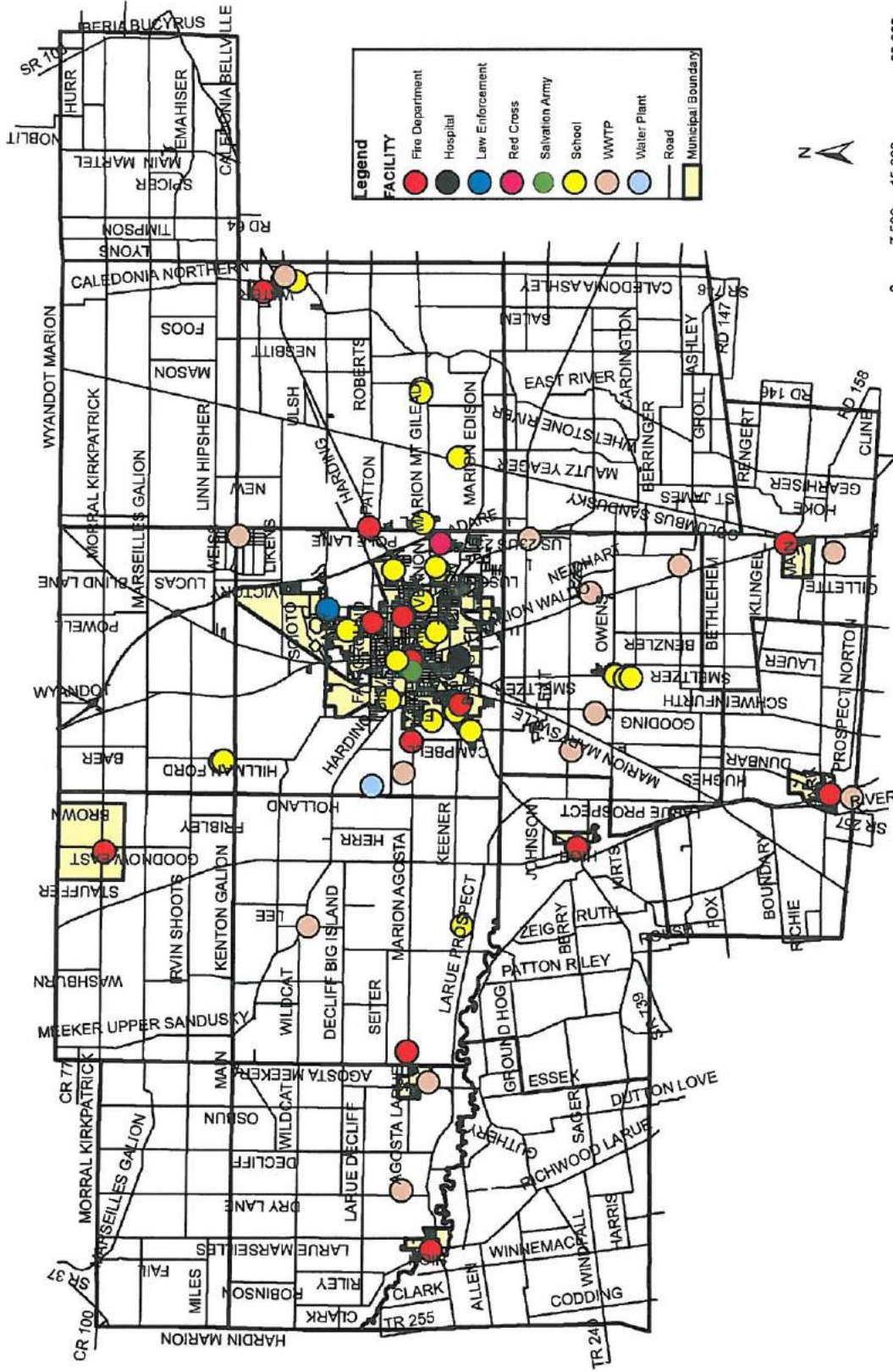
Status: Ongoing

Goal 5: Solidify mitigation initiatives for critical facilities (schools, nursing homes, fire departments, law enforcement agencies, and hospitals) within Marion County.

Activity: Improve natural disaster mitigation impacting Marion County critical facilities (see Figure 23), as necessary.

Lead: Director, Marion City / County Emergency Management Agency (MCCEMA)

FIGURE 23
CRITICAL FACILITIES



PREPARED BY: MARION COUNTY RPC, 12/12/13

MAP SOURCE: MARION CITY/COUNTY EMA DIRECTOR & AUDITOR GIS DATA

Time line: June 2014 - June 2016

Task 1: Identify all existing critical facilities within Marion County.

Task 2: Determine existing mitigation initiatives within these facilities.

Task 3: Identify potential mitigation initiatives within these facilities.

Task 4: Initiate cooperative assessments of potential initiatives with applicable representatives of relevant critical facilities.

Task 5: Assist critical facilities in the development and submission of formal mitigation projects.

Status: Ongoing

Goal 6: Ensure adequate emergency electrical power is available to operate pumps, etc. for adequate sewage disposal.

Activity 1: Install fuel-powered electrical generator(s) and electrical disconnect box at the Marion City Sewage Plant.

Lead: Safety Service Director, Marion City
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2014 - January 2009 2015

Task 1: Identify most feasible location(s) for generator installation and electrical disconnect box.

Task 2: Obtain cost estimates relevant to installations.

Task 3: Identify potential sources of funding.

Task 4: Assist in the development and submission of funding requests as needed.

Status: Ongoing

Activity 2: Obtain two mobile fuel-powered electrical generators and four disconnect boxes to power four small sewage plants operated by the Marion County Sewer Department.

Lead: Marion County Commissioners
Marion County Sanitary Engineer
Director, Marion City / County Emergency Management Agency
(MCCEMA)

Time line: January 2014 - January 2016

Task 1: Identify most feasible locations for electrical disconnect box.

Task 2: Obtain cost estimates relevant to installations.

Task 3: Identify potential sources of funding.

Task 4: Assist in the development and submission of funding requests as needed.

Status: Ongoing

Goal 7: Ensure adequate emergency electrical power is available to Battle Run Fire Department.

Activity: Install fuel-powered electrical generator and electrical disconnect box at the Battle Run Fire Department Headquarters.

Lead: Battle Run Fire Chief
Director, Marion City / County Emergency Management Agency
(MCCEMA)

Time line: January 2007 - January 2009

Task 1: Identify most feasible location(s) for generator installation and electrical disconnect box.

Task 2: Obtain cost estimates relevant to installations.

Task 3: Identify potential sources of funding.

Task 4: Assist in the development and submission of funding requests as needed.

Status: Completed

Goal 8: Ensure adequate emergency electrical power is available to key main intersection

traffic lights in Marion City.

Activity: Install electrical equipment to allow mobile generator to power traffic lights.

Lead: Safety Service Director, Marion City
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2007 - January 2009

Task 1: Identify traffic intersections that need emergency electrical power.

Task 2: Obtain cost estimates relevant to installations.

Task 3: Identify potential sources of funding.

Task 4: Assist in the development and submission of funding requests as needed.

Status: Completed

Goal 9: Obtain a mobile fuel-powered electrical generator and possible disconnect box for the Marion County Garage.

Activity: Install disconnect box and electrical generator at Marion County Garage

Lead: Marion County Commissioners
Marion County Engineer
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2014 - January 2016

Task 1: Identify most feasible locations for electrical disconnect box.

Task 2: Obtain cost estimates relevant to installations.

Task 3: Identify potential sources of funding.

Task 4: Assist in the development and submission of funding requests as needed.

Status: New

5.4 Action Plans for Tornado Hazard Goals

Goal 1: Enhanced early warning systems to maximize public notification.

Activity: Install new tornado sirens with battery backup within the following political subdivisions:

1. Southern Pleasant Township
2. Unincorporated village of Martel
3. Unincorporated village of Kirkpatrick (just received a tornado siren)
4. Richland Township
5. Marion Township - by Southland Mall
6. As funds permit, in the unincorporated / rural areas of Marion County

Lead: Big Island Township Trustee - Phillip Schaber
Bowling Green Township Trustee - Jeffery Mallett
Grand Township Trustee - John Hickman
Grand Prairie Township Trustee - Wilfred Thiel, Jr.
Green Camp Township Trustee - Robert Clunk
Marion Township Trustee - Lynn Clabaugh
Montgomery Township Trustee - Pearl Gamble
Prospect Township Trustee - Alfred Wasserbeck
Richland Township Trustee - Roger Groll
Salt Rock Township Trustee - John Burchett
Scott Township Trustee - Mark Croman
Tully Township Trustee - Everett Douce
Waldo Township Trustee - Steve Wetzel
Director, Marion City / County Emergency Management Agency (MCEMA)

Time line: June 2014 - January 2017

Task 1: Identify most relevant location for siren installations.

Task 2: Identify sources of potential funding.

Task 3: Assist political subdivisions, as necessary, in the development and submission of funding requests.

Task 4: Install warning sirens contingent upon available funding.

Status: Partially completed and ongoing.

Goal 2: Development of a countywide residential building code.

Activity: Implementing a countywide one-, two-, and three-family dwelling unit building code.

Lead: Marion City Council
Director, Marion County Regional Planning Commission
Marion County Commissioners
Environmental Director, Marion Area Health Department
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: June 2014 - January 2017

Task 1: Approach Marion City Council and Marion County Commissioners about the possibility of implementing a building code.

Task 2: If the Marion City Council and Marion County Commissioners are agreeable to a building code, help coordinate the implementation between Marion City and Marion County.

Task 3: Establish the Building Department.

Status: Ongoing

Goal 3: Require mobile / manufactured homes on individual lots to be tied down to their foundations.

Activity: Until such time as a countywide building code is implemented, work with township and village zoning officials to require mobile / manufactured homes on individual lots to be tied down to their foundations.

Lead: Assistant Director of Development, Marion County Regional Planning Commission

Time line: June 2007 - June 2008

Task 1: Review the zoning resolutions / codes for all townships and villages in Marion County to identify those jurisdictions that do not presently require mobile / manufactured homes to be tied down.

Task 2: Work with the identified townships and villages to add language to their zoning resolutions / ordinances to require mobile manufactured homes to be tied down.

Status: Completed

5.5 Action Plans for Flood Hazard Goals

Goal 1: Review current County and Village *Flood Plain Regulations* to determine if there is a requirement for tie downs on propane fuel cylinders (this may also include fuel and fuel oil tanks).

Activity: Modify the current County and impacted village *Flood Plain Regulations* to require propane fuel cylinders (home heating type) in flood hazard areas to be securely anchored.

Lead: Caledonia Village Flood Plain Administrator
Green Camp Village Flood Plain Administrator
LaRue Village Flood Plain Administrator
Morril Village Flood Plain Administrator
Prospect Village Flood Plain Administrator
Marion County Flood Plain Administrator
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2014- January 2015

Task 1: Approach and assist county and village Flood Plain Administrators in the development of propane fuel cylinder regulations.

Task 2: Work with appropriate government body to pass new regulations.

Task 3: Implement the new regulations.

Status: Ongoing

Goal 2: Minimize flood losses to structures and properties within Marion County.

Activity: Mitigate, as necessary, all repetitive loss structures within Marion County.

Lead: Mayor of Green Camp Village
Mayor of LaRue Village

Mayor of Prospect Village
Director, Marion City / County Emergency Management Agency
(MCCEMA)

Time line: January 2014- June 2019

Task 1: Identify all repetitive loss structures within Marion County.

Task 2: Determine specific cause of flooding for each structure (watercourse, inadequate sewer capacity, etc.).

Task 3: Assess potential strategies for corrective action (property buy out / demolition of affected structures, relocation, watercourse cleaning, infrastructure improvements, etc.).

Task 4: Determine most appropriate corrective action for each repetitive loss structure.

Task 5: Obtain applicable cost estimates for identified corrective actions.

Task 6: Identify potential sources of funding.

Task 7: Assist relevant political subdivisions in the acquisition of available funding, as needed.

Task 8: Implement corrective measures.

Status: Ongoing

Goal 3: Help townships with zoning develop conservation regulations for their flood hazard areas.

Activity: Work with townships that have flood hazard areas to modify their zoning resolutions to prohibit the development of residential, commercial, or industrial structures in flood hazard areas.

Lead: Big Island Township Zoning Commission
Claridon Township Zoning Commission
Grand Township Zoning Commission
Grand Prairie Township Zoning Commission
Marion Township Zoning Commission
Montgomery Township Zoning Commission
Pleasant Township Zoning Commission
Prospect Township Zoning Commission

Richland Township Zoning Commission
Salt Rock Township Zoning Commission
Scott Township Zoning Commission
Tully Township Zoning Commission
Waldo Township Zoning Commission
Director, Marion City / County Emergency Management Agency (MCCEMA)
Assistant Director of Development, Marion County Regional Planning Commission

Time line: January 2014 - January 2017

Task 1: Approach and assist the various townships with the development or zoning regulations to prohibit the development of residential, commercial, or industrial buildings in flood hazard areas.

Task 2: Implement the new regulations.

Status: Ongoing

Goal 4: Identify and develop a strategy for the elevation of road sections which periodically flood and are deemed to be priority access roads in the western and southern portions of Marion County.

Activity: Elevate various road segments above annual flooding levels.

Lead: Marion County Engineer
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time Line: January 2014 - January 2019

Task 1: Establish a working committee of individuals representing ODOT, Marion County Engineer's Office, and various township and village officials to formulate plans on identifying and correcting the sections of priority access roads prone to periodic flooding.

Task 2: Seek out funding opportunities to defray the cost of elevating the various priority road sections.

Task 3: Rebuild the various priority road sections to elevate them above annual flood levels.

Status: Ongoing

Goal 5: Minimize flooding within the village of LaRue.

Activity: Mitigate, as necessary, flooding within the village of LaRue which is detrimental to existing residential, commercial, and industrial structures and limits commercial and industrial growth and expansion within the village.

Lead: Mayor of LaRue
LaRue Village Council
LaRue Village / Montgomery Township Concerned Citizens Group
Director, Marion City / County Emergency Management Agency (MCCEMA)
Director, Marion County Regional Planning Commission

Time line: January 2014 - January 2019

Task 1: Flood study to determine cause of flooding issues within and around the village of LaRue. Study could turn into a regional study encompassing the entire length of the Scioto River and involving the villages of LaRue, Green Camp, and Prospect as well as six townships.

Task 2: Identify potential strategies for corrective action for each identified flood issue. Several identified issues possibly contributing to flooding problems in the village are:

1. S.R. 37 Bridge crossing the Scioto River south of the village has debris and sediment in the small span areas on either side of the main river span. Observations of the bridge during flooding conditions indicates that water is impounded on the west side of the bridge resulting in the west side water level being 10" higher than water level on the east side of the bridge.
2. Drainage tiles along the north river bank of the Scioto River have collapsed resulting in back pressure and slow drainage of stormwater within the village.
3. Davis Ditch (north-south ditch) going through center of town maybe undersized for the amount of land area it is draining.
4. The S.R. 37 culvert north of town at the at the 90 degree western turn is a bottleneck for western stormwater draining

east to the Terry Ditch.

5. Cleaning of the Scioto River from the Clark Road Bridge to the S.R. 37 Bridge south of town to improve river flow in this area.

Task 3: Determine most appropriate corrective action for each identified flood issue.

Task 4: Obtain applicable cost estimates for identified corrective actions.

Task 5: Identify potential sources of funding.

Task 6: Assist relevant political subdivisions in the acquisition of available funding, as needed.

Task 7: Implement corrective measures.

Status: New

Goal 6: Minimize flooding within the village of Prospect.

Activity: Mitigate, as necessary, flooding within the village of Prospect which is detrimental to existing residential, commercial, and industrial structures and limits commercial and industrial growth and expansion within the village.

Lead: Mayor of Prospect
Prospect Village Council
Prospect Village Flood Plain Administrator
Director, Marion City / County Emergency Management Agency (MCCEMA)
Director, Marion County Regional Planning Commission

Time line: January 2014 - January 2019

Task 1: Ditch from Northeast Street to the Scioto River (passing near the Senior Center) floods during heavy rain events

Task 2: Identify potential strategies for corrective action.

Task 3: Determine most appropriate corrective action.

Task 4: Obtain applicable cost estimates for identified corrective actions.

Task 5: Identify potential sources of funding.

Task 6: Assist relevant political subdivisions in the acquisition of available funding, as needed.

Task 7: Implement corrective measures.

Status: New

5.6 Action Plans for Severe Winter Storm Hazard Goals

Goal 1: Minimize the loss of electrical power to properties / citizens of Marion County.

Activity: Contact all electric companies in Marion County with regard to their tree trimming programs.

Lead: Director, Marion City / County Emergency Management Agency (MCCEMA)

Time line: January 2014 - June 2019

Task 1: Meet with representatives of all electric companies to determine the status of their tree trimming programs.

Task 2: Encourage as necessary the various electric companies to maintain an aggressive tree trimming program.

Status: Ongoing

Goal 2: During an extended period of power outage caused by a severe winter storm or blizzard, perform a door to door home check on residents in impacted areas to determine if anyone is at risk especially the elderly or disabled.

Activity: Have individuals from local fire departments, police, Red Cross, neighborhood watch groups, etc. go door to door to check on residents.

Lead: Red Cross Marion Chapter
Director, Marion City / County Emergency Management Agency (MCCEMA)

Time Line: January 2014- January 2019

Task 1: Director, MCCEMA and Red Cross meet to formulate plans for the door to door home check.

Task 2: Meet with representatives from local fire, police, and neighborhood groups to encourage them to participate in door to door check and outline their responsibilities.

Status: Completed and ongoing

Goal 3: Insure the state highways linking the seven villages of Caledonia, Green Camp, LaRue, New Bloomington, Morral, Prospect, and Waldo with Marion City are adequately cleared of snow.

Activity: Identify which state highways linking the seven villages to Marion City need immediate snow plowing.

Lead: Director, Marion City / County Emergency Management Agency (MCCEMA)

Time Line: January 2014 - January 2019

Task 1: Prioritize which state highways linking the seven villages to Marion City need immediate snow removal.

Task 2: Determine which subdivision(s) have available snow plows for snow removal and enlist these units to help remove snow from the state highways deemed as having a high priority.

Status: Ongoing

5.7 **Prioritized Action Plans per Jurisdiction**

Marion City

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 6, Activity 1
Multi-Hazard Goal 8
Tornado Goal 2

Village of Caledonia

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3
Flood Hazard Goal 1

Village of Green Camp

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3
Flood Hazard Goal 1
Flood Hazard Goal 2

Village of LaRue

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3
Flood Hazard Goal 1
Flood Hazard Goal 2
Flood Hazard Goal 5

Village of Moral

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3
Flood Hazard Goal 1

Village of New Bloomington

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3

Village of Prospect

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3
Flood Hazard Goal 1

Flood Hazard Goal 2
Flood Hazard Goal 6

Village of Waldo

Multi-Hazard Goal 1, Activity 2
Multi-Hazard Goal 3
Flood Hazard Goal 1

Marion County

Multi-Hazard Goal 1, Activity 2

Multi-Hazard Goal 3
Multi-Hazard Goal 6, Activity 2
Multi-Hazard Goal 9
Tornado Hazard Goal 2
Flood Hazard Goal 1
Flood Hazard Goal 2
Flood Hazard Goal 4

Big Island Township

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Bowling Green Township

Tornado Hazard Goal 1

Claridon Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Grand Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Grand Prairie Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Green Camp Township

Tornado Hazard Goal 1
Flood Hazard Goal 3

Marion Township Zoning Commission

Multi-Hazard Goal 3

Tornado Hazard Goal 1
Flood Hazard Goal 3

Montgomery Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Pleasant Township Zoning Commission

Multi-Hazard Goal 3
Flood Hazard Goal 3

Prospect Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Richland Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Salt Rock Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Scott Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Tully Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

Waldo Township Zoning Commission

Multi-Hazard Goal 3
Tornado Hazard Goal 1
Flood Hazard Goal 3

The subsequent phase of finalizing the Action Plan section was to prioritize those activities that would direct the implementation of specific activities. Committee members again divided the activities into two categories - general and specific. General goals that were initially presented and approved were given high priority. Proposals relating to specific activities within individual political subdivisions were grouped by type (tornado warning devices, generators, educational information dissemination, etc.) to determine relative priority. Those groupings were prioritized using the evaluations described above as well as by cost / benefit criteria. Higher priority was given to the installation of tornado devices and obtaining gas powered generators. The creation and adjustment of the various regulations was given a lower priority.

The Mitigation Committee also decided that, regardless of priority considerations, activities will be pursued concurrently.

During the extent of the five-year implementation period of the Mitigation Plan, there will indeed be other proposed mitigation activities that the Mitigation Committee will need to consider. Proposals for additions or modifications to the Action Plan Chapter may result from conditions noted during a particular task(s) performed in conjunction with a specific mitigation activity. Modifications or activities may also be prompted by public responses as a part of their ongoing opportunities to participate in the mitigation planning and implementation process. The Mitigation Committee will evaluate proposed modifications to the Action Plan section and determine their viability for inclusion by using the procedures described in Chapter Four. Incorporation of any additions or changes to the Plan are also discussed in the Plan Maintenance component of Chapter Seven.

Chapter Six

Community Participation

6.1 Overview

Community involvement in the planning and implementation of mitigation initiatives must be a continual process. The success of the Marion County Mitigation Plan is contingent upon this premise. It is the obligation of the Planning Committee to inform the community of the Plan's purpose and to consider all public input during the entirety of Plan implementation. The Marion County Mitigation Plan functions as a means to address community issues and concerns as they relate to mitigation of natural disasters in relation for it is toward their protection and the protection of their properties that this Mitigation Plan is directed.

6.2 Initial Notification

Initial notification of the public was accomplished by releases through news media sources, discussions with community groups by Committee representatives and formal meetings with community leaders representing the general populace.

Information presented during these formal and informal notifications centered on the development and passage of the federal Mitigation Act of 2000 and the parameters established by that legislation. Descriptions were provided on the underlying purpose of the Act and how the County, through an established Mitigation Planning Committee, would achieve the goals outlined within the completion.

6.3 Preliminary and Continued Involvement

During the developmental stages and eventual completion of the Hazard Analysis Chapter of the Marion County Mitigation Plan, public responses were received that provided needed historical data of natural disaster occurrences within the County. These data were obtained from County citizens, community leaders, and others knowledgeable of past natural disasters and their personal and financial impacts upon the county.

Forthcoming public participation efforts will come in several forms. First of all, public input will be requested following the completion of the draft Plan. Through various news media sources, Marion County citizens will be apprised of the progress of the Plan as well as being informed of ways to view the draft Plan. Hard copy versions of the draft Plan will be made available for public viewing in the Office of the Marion City / County Emergency Management Agency as well as in several other governmental offices. Once the final Plan has been accepted by FEMA, copies of the approved Plan will be maintained in these locations for review by the public. As a part of this hard copy review process, instructions

will be provided to citizens who wish to comment or make suggestions on Plan components.

Secondly, citizens, using Mitigation Planning Committee members as points of contact, will also be afforded the opportunity to receive digital copies of the draft Plan via email attachments. They may also print the draft Plan, if desired. This resource will be made available on a continual basis, once the final Plan has been approved. Periodic news releases and other community educational efforts, as referenced in Chapter Five, will continually provide citizens the opportunity to review the Plan and comment.

A more formal means of gathering input for the general populace will be through an established Open House. The Open House, which has been scheduled for mid February, will provide an occasion for citizens to meet some of the Mitigation Planning Committee members on the overall concepts and processes involved in the mitigation of natural disasters. The public will be informed on how they can participate in the process by their reviewing the Plan and providing constructive assessments of any Plan component. They will also be afforded the opportunity to ask questions about the Plan or planning process.

An ongoing method of providing information to County citizens will be the development and continued maintenance of a web page. This web page will be a component of the Marion County Emergency Management Agency web site. Maintaining and updating of the web page will be the responsibility of the Marion City / County EMA in conjunction with the Marion County Mitigation Planning Committee. The web page will incorporate a means for individuals to comment on the content of the page. A questionnaire will be included that will allow the completed form to be submitted to the Director of the Marion City / County EMA. As necessary, responses from the web-based questionnaire will be submitted to the Mitigation Planning Committee for their consideration.

Chapter Seven

Plan Development, Adoption, Distribution, Implementation, and Maintenance

7.1 Overview

Prior to initiating the mitigation activities designed within the Plan, formal adoption by those County subdivisions served by the Plan must be accomplished. Adoption of the Plan by the political subdivisions within the County, demonstrates their commitment toward the implementation of currently proposed and future mitigation initiatives.

Continued updating of any formal plan is vital to achieving established goals. Without periodic reviews, the entire effort loses its effectiveness and jeopardizes the overall purposes of the plan. The Marion County Mitigation Plan is a working Plan. Under the time frame outlined by FEMA in the Mitigation Act of 2000, plan implementation was set at five years. Within that period of time, additions and revisions must be expected. In order for this Plan to succeed, systematic maintenance will be necessary.

The time frame for the development of the Marion County Mitigation Plan for Natural Disasters spanned approximately one year. This period extends from obtaining data for the Hazard Analysis Section to the submission of the final report.

The following presents the methods by which the Marion County Mitigation Plan will be adopted, distributed, implemented, and maintained.

7.2 Plan Development

Throughout the course of Mitigation Plan development, Planning Committee members, interested County citizens, and representatives from State and local organizations and agencies took the opportunity to become involved, either directly or indirectly, in the formation of the finished Plan. The Marion County Mitigation Plan could not have been completed successfully without the diligent efforts of these concerned individuals. Committee members, representing a wide variety of governmental and other public and private entities provided needed information and data to produce this valuable document.

The Planning Committee met during formal committee meetings, and discussed specific issues received via mail (surveys), telephone conversations, and informal one-on-one discussions. Information obtained during these activities was shared with all Committee members to gain consensus of all decisions regarding Plan development.

As indicated throughout the Plan, citizens were given many opportunities to express their views and concerns related to provisions outlined in the Plan. Individuals representing State

and local organizations such as the Ohio Department of Natural Resources, Ohio State Climatologist, and the National Weather Service provided valuable information and data needed to address particular planning issues.

It is the compilation of all of these voluntary efforts that have resulted in the completion of the Marion County Mitigation Plan for Natural Disasters. This Plan will not only benefit the citizens of Marion County but also those citizens residing in adjacent counties.

A copy of the final quarterly report can be found in Appendix C.

7.3 Plan Adoption

During the course of this mitigation planning effort, each political subdivision has been given the opportunity to participate in all phases of Plan development as described in Chapter Two. Plan adoption completes this portion of their commitment to mitigate natural disasters.

Formal adoption of the Marion County Mitigation Plan occurred following the completion of the draft Plan. The governing bodies of all political subdivisions identified as a part of the Plan were provided copies of the draft Plan for review. Representing the political subdivisions effected are the Marion County Commissioners, Marion City Council, and the seven village councils within Marion County.

Representatives of the Mitigation Planning Committee solicited the support and full adoption of the Plan by direct contact with the Marion County Commissioners and the mayors of Marion City and the seven villages. This contact served to solidify understanding of their responsibilities under the mitigation planning process. It also allowed for any final questions or concerns related to the provisions outlined in the Plan.

To assist in the timely Plan approvals by the affected political subdivisions, the Committee requested formal consideration of Plan approval be placed on the meeting agendas of relevant political subdivisions during the month of February, 2006. The scheduling for final adoption of the Plan by individual political subdivision governing bodies will vary. It is anticipated that some political subdivisions will adopt the Plan as an emergency measure, while others will pursue the full course of three separate readings.

Once the individual approvals are completed, copies of the resolutions will be submitted to the Mitigation Planning Committee and maintained as a part of the Mitigation Plan within Appendix A. Copies of the resolutions will also be forwarded to the Ohio Emergency Management Agency for their files.

7.4 Plan Distribution

The final version of the Marion County Mitigation Plan for Natural Disasters will be

disseminated following the formal approval of the Federal Emergency Management Agency. Plan distribution, initially as well as any subsequent modifications of the Plan will be the responsibility of the Marion City / County Emergency Management Agency.

Mitigation Plans will be submitted to the following entities:

1. Marion County Commissioners
2. All Marion County Political Subdivisions
3. Marion City / County Emergency Management Agency
4. All Members of the Marion County Mitigation Planning Committee
5. Marion County Health Department
6. Ohio Emergency Management Agency
7. Marion County Regional Planning Commission
8. Marion County Engineer
9. Marion County Sanitary Engineer
10. Marion County Library
11. Others as requested

7.5 Plan Implementation

The Marion County Mitigation Plan for Natural Disasters will be implemented according to the action plans established in Chapter Five. Responsibility of overseeing the execution of the action plans will be a cooperative effort between the Marion City / County Emergency Management Agency, the Marion County Mitigation Planning Committee, and the various public and private entities identified throughout the Plan having involvement with natural disaster mitigation issues. The lead for implementation of the Plan will come from the Marion City / County Emergency Management Agency. The Mitigation Planning Committee will be kept informed of progress of implementation activities through formal and informal contacts by the Marion City / County Emergency Management Agency. Completion of specific mitigation activities will be documented within the Plan as described below.

7.6 Plan Maintenance

Periodically, throughout the five-year implementation period of the Marion County Mitigation Plan, additions and other modifications will need to be incorporated within the Plan. These changes include names of individuals who may be added to or removed from membership on the Mitigation Planning Committee, modifications and completion dates of specific mitigation activities, and any other alterations deemed necessary to keep the Plan current. The status and completion dates of current mitigation projects are updated on a Mitigation Project Status Sheet which is provided in Appendix E. As modifications are made, information to that effect is provided to Planning Committee members. Replacement of distributed copies of the Plan will follow procedures as described within this Chapter.

Plan alterations, other than those considered insignificant, will be reviewed and approved by the Planning Committee prior to being added to or eliminated from the Plan. Proposed changes to the Plan can be made by any Committee member. Suggestions for Plan modification by Marion County citizens or other individuals not a part of the Planning Committee may be routed through a Planning Committee member or through the governing body of their respective political subdivision. If warranted, the Planning Committee may request clarification or further explanation of the proposal by the individual(s) submitting the modification. Proposed changes will be reviewed by the Committee and accepted only upon their consensus. Approved changes will then be forwarded to the respective political subdivisions for review and approval. The political subdivisions will have 30 days to comment or object to the proposed changes. Subdivision comments will be sent to the Marion City / County EMA Director who will forward them to the Planning Committee for consideration. If no comments are received from the political subdivisions, the proposed changes become effective at the end of the 30 day period.

All approved changes will be incorporated within the web version of the Plan as soon as practical. Changes to the hard copy versions will be disseminated to those entities identified in Section 7.4 above. Modifications will also be sent to all Committee members for inclusion within their respective Plans.

The Marion County Mitigation Planning Committee will formally evaluate the Marion County Plan on an annual basis; prior to the yearly anniversary of its approval by FEMA. At that time, any changes made to the Plan will be included within the hard copy versions of the Plan distributed throughout the County. All changes will also be sent to the Ohio Emergency Management Agency for their files.

Prior to the adoption of any significant Plan alterations to the Marion County Plan a public meeting will be held by the Marion County Mitigation Planning Committee. Various news media sources will be used to inform Marion County citizens of the proposed Plan alterations. After the public meeting, the Mitigation Planning Committee will meet to evaluate any public comments on the proposed Plan alteration.

After the Marion County Mitigation Planning Committee adopts a significant alteration to the Marion County Plan, existing plans such as the Marion County *Comprehensive Land Use Plan*, *Marion County / City Subdivision Regulations*, MCCEMA's *Emergency Operations Plan*, *Zoning Codes / Resolutions*, and *Flood Plain Regulations* will be reviewed by the appropriate agency to determine if they need to be adjusted to complement the alteration.

Appendix A

Adopting Resolutions

RECORD OF RESOLUTIONS

0081

Division Legal Blank, Inc., Form No. 50045

Resolution No. 2014-09

APR 14 2014

Passed _____, 20__

RESOLUTION ADOPTING THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS, MARION COUNTY, OHIO, AND DECLARING AN EMERGENCY

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion City / County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the county, and prepared the required Plan; and

WHEREAS, Marion City was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version; therefore

BE IT RESOLVED by the Council of the City of Marion, Marion County, Ohio

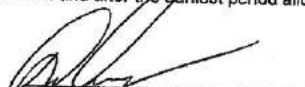
Section 1 The Council of the City of Marion, Marion County, Ohio shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

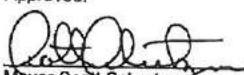
Section 2. The foregoing resolution was adopted and all actions and deliberations of the Council of the City of Marion, Marion County, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

Section 3. That this resolution is hereby declared to be an emergency measure necessary for the immediate preservation of the public health, welfare, and safety of the City of Marion and the inhabitants thereof and for the further reason that it is necessary to be eligible for the Mitigation Plan Grant Funds; and as such shall take effect and be enforced immediately upon its' passage and approval by the Mayor, provided it receives the affirmative vote of two thirds of all members elected to Council; otherwise it shall become effective from and after the earliest period allowed by law.

I, Irene Fulton, Clerk of Council, of the City of Marion, Ohio, do hereby certify that the foregoing is a true and correct copy of Resolution 2014-09 as passed by the legislative authority of Marion, Ohio on the 14th day of April, 2014. In witness whereof, I have hereunto subscribed my name and affixed seal 15th Day of April, 2014.

Irene Fulton, Clerk of Marion City Council


Dave Edwards
President of Council

Approved: APR 15 2014

Mayor Scott Schertzer

Attest:

Clerk of Council

R2014-08

Resolution No. 2014-103

**IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO**

Jim Waddell moved the adoption of the following resolution. Tim Reston seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, Caledonia Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the Caledonia Village Council that Caledonia Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the Caledonia Village Council of Caledonia Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows:

April Moreland	yes
Shane Wappere	yes
Tim Reston	yes
Scott Iles	yes
Jim Waddell	yes

Adopted this 2nd Day of April, 2014.
Jon Miracle
Clark Treasurer
Maurice E. Walek
Mayor

4/21/14

**IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO**

JOHN AUSTIN moved the adoption of the following resolution. ELLEN DEWITT seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, Green Camp Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the Green Camp Village Council that Green Camp Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the Green Camp Village Council of Green Camp Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows:

ELLEN DEWITT - YES
DAN CAMPBELL - YES
JOHN AUSTIN - YES.
JEREMY JOHNSTON - YES

Keith Bradley
CLERK/TREASURER

IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO

Sean Barbey moved the adoption of the following resolution. Carol Howell seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, LaRue Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the LaRue Village Council that LaRue Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the LaRue Village Council of LaRue Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows:

David L. Stallsmith
Council President

Milton Lightfoot
Mayor

Mary Price
Clerk

Resolution 2014-1

IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO

Darla Hicks moved the adoption of the following resolution. Rosemary Craig seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, Morral Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the Morral Village Council that Morral Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the Morral Village Council of Morral Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows: *passed by all council members on 4-14-14.*

Mayor Greg Stolue

Clerk - Phyllis Burns

*President of Council
Dell Thomas*

IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO

Melinda moved the adoption of the following resolution. Virgie seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, New Bloomington Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the New Bloomington Village Council that New Bloomington Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the New Bloomington Village Council of New Bloomington Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows:

Melinda Mosley aye Ricard Mowbray aye
Virgie Kusler aye
Kati Kennedy aye
Candace Gear aye

IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO

Ronnie Hobbs moved the adoption of the following resolution. *Ted Hood* seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, Prospect Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the Prospect Village Council that Prospect Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the Prospect Village Council of Prospect Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows:

Ronnie Hobbs - yes
Ben O'Dell - yes
Torothy Roswell - yes
Deb Hood - yes
Jeff Truitt - yes
Harold Stiffler - opposed

2014 - 040714-1

**IN THE MATTER OF THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS,
MARION COUNTY, OHIO**

Hull moved the adoption of the following resolution. Emigh seconded the motion.

WHEREAS, the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive federal mitigation grant funds; and

WHEREAS, in accordance with FMA of 2000, the Marion County Commissioners by Resolution #2012-0316 granted permission to the Marion City / County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS, the Marion County Regional Planning Commission agreed to work with the Marion City / County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS, Waldo Village was notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of its residents, agrees to adopt the Plan as their own in its final version;

BE IT RESOLVED, by the Waldo Village Council that Waldo Village shall go on record they will adopt the final version of the Marion County Mitigation Plan for Natural Disasters, as submitted by the Marion County Mitigation Planning Committee, as their own; and further

BE IT RESOLVED, that the foregoing resolution was adopted and all actions and deliberations of the Waldo Village Council of Waldo Village, Ohio, relating thereto were conducted in meetings open to the public, in compliance with all applicable legal requirements.

The roll being called upon its adoption, the vote resulted as follows:

Emigh yes
Hull yes
Henry yes
Mitchell yes

Belser absent
Parks absent

Anna Baker - Mayor
4/7/14

BOARD OF MARION COUNTY COMMISSIONERS

RESOLUTION #2014- 0205

Date: April 1, 2014

IN THE MATTER OF ADOPTING THE 2014 MITIGATION PLAN FOR NATURAL DISASTERS, MARION COUNTY, OHIO

It was moved by Mr. Stiverson, seconded by Mr. Appelfeller to adopt the 2014 Mitigation Plan for Natural Disasters, as follows:

WHEREAS; the Federal Mitigation Act (FMA) of 2000 requires that every jurisdiction have an approved Federal Emergency Management Agency (FEMA) Natural Hazard Mitigation Plan in place, or become ineligible to receive certain emergency grant funds; and

WHEREAS; in accordance with FMA of 2000, the Marion County Commissioners, by Resolution #2012-0316 dated June 7, 2012, granted permission to the Marion City/County Emergency Management Agency to apply for and enter into an agreement with the State of Ohio Emergency Management Agency for Mitigation Plan grant funds; and

WHEREAS; the Marion County Regional Planning Commission agreed to work with the Marion City/County Emergency Management Agency and with the assistance of the Marion County Mitigation Planning Committee, performed a hazard identification, risk assessment and vulnerability analysis of potential natural disasters within the County, and prepared the required Plan; and

WHEREAS; the Marion County Commissioners were notified and invited to participate in the progress of developing the Mitigation Plan for natural disasters and on behalf of Marion County residents, agreed to adopt the Plan as their own in its final version.

THEREFORE, BE IT RESOLVED; that the Board of Commissioners of Marion County, Ohio hereby adopts the final version of the Marion County Mitigation Plan for Natural Disasters, effective as of January 14, 2014, as submitted by the Marion County Mitigation Planning Committee for Marion County, Ohio.

BE IT FURTHER RESOLVED; that the foregoing resolution was adopted and all actions and deliberations of the County Commissioners of Marion County, Ohio, relating thereto were conducted in meetings open to the public in compliance with all legal requirements.

Vote on motion: Russell: Aye Stiverson: Aye Appelfeller: Aye

Whereupon the resolution was declared adopted this 1st day of April 2014.

ATTEST Sylvia C. Mandingco Clerk

AK/RP/FILE

Appendix B

Political Subdivision Natural Hazard Mitigation Survey

**Letter to Surrounding County EMA Directors on Formation of Marion Mitigation Plan
for Natural Disasters**

Public Meeting News Releases

Natural Hazard Mitigation Survey

The Marion County Natural Hazard Mitigation Committee is currently preparing a report on natural hazards that occur in Marion County. One component of the report will be to prepare a natural hazard mitigation strategy for the County.

The Committee would like to ask all political subdivisions in Marion County to list possible mitigation activities they think should be developed when dealing with the various natural hazards that can occur in Marion County. Examples of possible mitigation activities are:

1. Tornado - possible need for more tornado sirens especially in the rural areas of the County.
2. Flood - possible need for stricter regulations with regard to allowing new structures in flood hazard areas.
3. Severe Winter Storm - need for requiring local power companies to trim tree limbs near power lines to limit power outages during severe winter storm.

If you have any questions feel free to contact Dan Stewart (740-223-4140).

Please return this survey to the RPC office in the self addressed stamped envelope by October 11, 2013.

Natural Hazards:

Class II Dam Failure (Larue & NB wastewater plants & dam for Big Island nature area)

Drought / Extreme Heat

Earthquake

Flood*

Hailstorm

Severe Winter Storm*

Tornado*

Windstorm

* Identified by the Committee as having a high mitigation potential.

Marion City/County
REGIONAL PLANNING COMMISSION

222 W. CENTER ST., MARION, OHIO 43302-3646

PHONE (740) 223-4140
FAX (740) 223-4140
EMAIL regionalplanning@co.marion.oh.us

March 25, 2014

Tim Flock, Director
Crawford County EMA
112 East Mansfield Street
Bucyrus, Ohio 44820

Dear Mr. Flock:

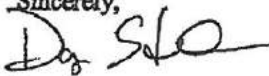
This correspondence is written to inform you that I have been contacted by the Marion County Commissioners and the Marion County EMA Director to develop Marion County's Natural Hazard Mitigation Plan. A draft copy of the Plan has been submitted for review to the Ohio EMA.

As the Director of the Emergency Management Agency of an adjacent county, you understand that a natural disaster event can affect neighboring counties. Accordingly, mitigation projects that may be of benefit to both counties should be considered, particularly if the areas in question are of high priority for mitigation.

I would be more than happy to discuss these issues with you if you wish. Please also know that I will lend assistance whenever I can to work with you on any mitigation activities that may lessen the adverse impacts of natural disasters on both communities. I will also keep you informed of any mitigation projects that are submitted to the Marion County Mitigation Planning Committee that might impact your county.

Thank you for your consideration.

Sincerely,



Dan Stewart

This letter was sent to the following EMA Directors of counties surrounding Marion County:

Tim Flock, Director
Crawford County EMA
112 East Mansfield Street
Bucyrus, Ohio 44820

Brian Galligher, Director
Delaware County EMA
10 Court Street
Delaware, Ohio 43015

Max Trachsel, Director
Hardin County EMA
1025 South Main Street, RM 111
Kenton, Ohio 43326

Joseph Edwards, Director
Morrow County EMA
140 South Main Street
Mt. Gilead, Ohio 43338

Brad Gilbert, Director
Union County EMA
233 West 6th Street
Marysville, Ohio 43040

Rodger Brodman, Director
Wyandot County EMA
125 East Wyandot Avenue
Upper Sandusky, Ohio 43351

NEWS RELEASE

MARION COUNTY NATURAL HAZARD MITIGATION PLAN

The Marion City / County Emergency Management Office is in the process of updating Marion County's 2006 Natural Hazard Mitigation Plan. The purpose of the plan is to find ways to mitigate the impact of natural hazards such as wind, snowstorm, flooding, and tornado on county residents and property. The plan can be viewed at the Marion County Regional Planning Commission's web site (www.marionohioplanning.org - under the Marion County Natural Hazard Mitigation Plan link). Public comments, recommendations, or questions are welcome and can be sent to Dan Stewart at:

Marion County Regional Planning Commission
222 West Center Street
Marion, Ohio 43302
740-223-4140
regionalplanning@co.marion.oh.us

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Regional Planning seeks plan input

9:02 PM, Nov 15, 2012 | Comments

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Recommend 0

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Local News

MARION — The Marion City/County Emergency Management Office is in the process of updating Marion County's 2006 Natural Hazard Mitigation Plan.

The purpose of the plan is to find ways to mitigate the impact of natural hazards such as wind, snowstorm, flooding and tornadoes on county residents and property. The plan can be viewed at the Marion County Regional Planning Commission's website — www.marionohioplanning.org — under the Marion County Natural Hazard Mitigation Plan link.

Public comments, recommendations, or questions are welcome and can be sent to Dan Stewart at: 222 W. Center St., Marion, OH 43302; by phone at 740-223-4140 or by email at regionalplanning@co.marion.oh.us



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The honor goes to Marion General.

You are here: [Home](#) / [News](#) / Updates Being Made to Marion County Natural Hazard Mitigation Plan

Updates Being Made to Marion County Natural Hazard Mitigation Plan

November 16, 2012 By [Marion Online News](#)

The Marion City / County Emergency Management Office is in the process of updating Marion County's 2006 Natural Hazard Mitigation Plan. The purpose of the plan is to find ways to mitigate the impact of natural hazards such as wind, snowstorm, flooding, and tornado on county residents and property.

The plan can be viewed at the Marion County Regional Planning Commission's web site (www.marionohioplanning.org – under the Marion County Natural Hazard Mitigation Plan link).

Public comments, recommendations, or questions are welcome and can be sent to Dan Stewart at:

Marion County Regional Planning Commission
 222 West Center Street
 Marion, Ohio 43302
 740-223-4140
regionalplanning@co.marion.oh.us

Story filed under: [Marion Regional Planning](#), [Weather](#)



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**MARION COUNTY
NATURAL HAZARD MITIGATION PLAN UPDATE
COMMITTEE**

MEETING

WEDNESDAY, FEBRUARY 20, 2013

7:00 P.M.

IN

PROSPECT CONFERENCE ROOM

AT THE

**MARION COUNTY BUILDING
(222 West Center Street)**

AGENDA

1. Review of updates for first 27 pages of plan.
2. Any other items of business.

The public is welcome.

The facility is accessible to the physically impaired.

NEWS RELEASE

MARION COUNTY NATURAL HAZARD MITIGATION PLAN

The draft 2014 Mitigation and Action Plan for Natural Hazard Mitigation for all of Marion County will be available for public review and inspection on Wednesday, January 22, from 5 to 7 p.m., in the Prospect Conference Room at the Marion County Building.

Written comments and recommendations will be accepted.

Appendix C

Final Quarterly Report

**STATE OF OHIO
HMA QUARTERLY REPORT (Plans)**

Sub-grantee: Marion County Emergency Management Agency	County: Marion	Project Number: FEMA-DR-4002.3-P-OH
Project Approval Date: May2, 2012	Project Completion Date:	Date Of Report: July 28, 2014
Reporting Period: <u>3rd Quarter</u> 1 st Qtr (Oct 1-Dec 31) 3 rd Qtr (Apr 1-June 30) 2 nd Qtr (Jan 1-Mar 30) 4 th Qtr (Jul 1-Sept 30)	Funding Source: <u>HMPG</u> HMGP (Hazard Mitigation Grant Program) FMA (Flood Mitigation Assis Program) RFC (Repetitive Flood Claims Program) SRL (Severe Repetitive Loss Program) PDM (Pre Disaster Mitigation Program)	Total Project Cost: \$13,861.00
Percent Completion: <u>100%</u> Is completion of work on schedule: <u>Yes</u>	Status of Costs: <u>Unchanged</u> (insert appropriate status) 1. Unchanged 2. Overrun 3. Underrun	

FEDERAL Funds Awarded: \$10,396.00	FEDERAL Funds Expended Qtr: \$2599.00	Total FEDERAL Funds Expended: \$7,797.00
STATE Funds Awarded: \$0.00	STATE Funds Expended Qtr: \$0.00	Total STATE Funds Expended: \$0.00
LOCAL Share Committed: \$3,465.00 *	LOCAL Share Expended Qtr: \$866.00	Total LOCAL Share Expended: \$2599.00

*Attach Local Share Commitment Document


Significant activities & developments that have occurred or shown progress during the quarter including a comparison of actual accomplishments to the work schedule objectives established in the application:

1. Asked Federal EMA for a grant time period extension.
2. Plan is complete and approved by State and Federal EMA.
3. Presently working to enter plan data into SHARPP.

**STATE OF OHIO
HMA QUARTERLY REPORT (Plans)**

Please explain how the total amount of funds was spent this quarter (Federal plus Local). Also provide documentation that verifies your expenses and attach the documents to this form.

1. After review of plan by State EMA and inclusion of comments we drew down Draw Request 3 for labor associated finishing plan and incorporating State EMA comments.

Report Submitted by: (Print Name) Harry Burdick	
Title: Marion City / County EMA Director	
Signature: 	Date: 07 Aug 14

Appendix D

Mitigation Proposal Status Sheet

Mitigation Proposal Status Sheet

Proposal Description	Political Subdivision	Project Status	Completion Date
Move Marion City Hall generator to sewage treatment plant	Marion City	Ongoing	
Purchase two trailer mounted emergency generators for Marion County Sewer Department	Marion County	Ongoing	
Purchase emergency generator for Battle Run Fire Department	Battle Run Fire District	Completed	1/1/10
Purchase electrical equipment to allow mobile generators to power traffic lights	Marion City	Completed	1/1/10
Purchase generator and disconnect for Marion County Garage	Marion County	New	
Purchase tornado siren w/ battery backup for southern Pleasant Township	Pleasant Township	Completed	2/15/09
Purchase tornado siren w/ battery backup for the unincorporated village of Martel	Tully Township	Completed	7/1/11
Purchase tornado siren w/ battery backup for Richland Township	Richland Township	Ongoing	
Purchase tornado siren w/ battery backup for unincorporated village of Kirkpatrick	Scott Township	Completed	10/5/08
Purchase tornado siren w/ battery backup for southern Marion Township	Marion Township	Completed	5/15/09
Purchase tornado siren w/ battery backup for rural areas of Marion County	Various Subdivisions	Ongoing	
Purchase and demolish repetitive loss structures in Green Camp Village	Green Camp Village	Ongoing	
Purchase and demolish repetitive loss structures in LaRue Village	LaRue Village	Ongoing	
Purchase and demolish repetitive loss structures in Prospect Village	Prospect Village	Ongoing	
Purchase and demolish repetitive loss structures in Marion County	Marion County	Ongoing	
Correct priority access road flooding problems	ODOT Mrn. Cnty. Engineer Green Camp Village LaRue Village New Bloom. Village Bowling Green Twp. Green Camp Twp. Montgomery Twp. Prospect Twp. Waldo Twp.	Ongoing	
Correct flooding issues in LaRue Village	LaRue Village Montgomery Township	New	

Appendix E

Mitigation Project Status Sheet

Mitigation Project Status Sheet

Proposal Description	Political Subdivision	Projected Cost	Project Status	Completion Date
Move Marion City Hall generator to sewage treatment plant	Marion City	\$150,000	Ongoing	
Purchase two trailer mounted emergency generators for Marion County Sewer Department	Marion County	\$50,000	Ongoing	
Purchase emergency generator for Battle Run Fire Department	Battle Run Fire District	-	Completed	1/1/10
Purchase electrical equipment to allow mobile generators to power traffic lights	Marion City	-	Completed	1/1/10
Purchase generator and disconnect for Marion County Garage	Marion County	\$150,000	New	
Purchase tornado siren w/ battery backup for southern Pleasant Township	Pleasant Township	-	Completed	2/15/09
Purchase tornado siren w/ battery backup for the unincorporated village of Martel	Tully Township	-	Completed	7/1/11
Purchase tornado siren w/ battery backup for Richland Township	Richland Township	\$25,000	Ongoing	
Purchase tornado siren w/ battery backup for unincorporated village of Kirkpatrick	Scott Township	-	Completed	10/5/08
Purchase tornado siren w/ battery backup for southern Marion Township	Marion Township	-	Completed	5/15/09
Purchase tornado siren w/ battery backup for rural areas of Marion County	Various Subdivisions	\$200,000	Ongoing	
Purchase and demolish repetitive loss structures in Green Camp Village	Green Camp Village	\$247,223	Ongoing	
Purchase and demolish repetitive loss structures in LaRue Village	LaRue Village	\$808,723	Ongoing	
Purchase and demolish repetitive loss structures in Prospect Village	Prospect Village	\$310,240	Ongoing	
Purchase and demolish repetitive loss structures in Marion County	Marion County	\$535,049	Ongoing	
Correct priority access road flooding problems	ODOT Mrn. Cnty. Engineer Green Camp Village LaRue Village New Bloom. Village Bowling Green Twp. Green Camp Twp. Montgomery Twp. Prospect Twp. Waldo Twp.	Unknown	Ongoing	
Correct flooding issues in LaRue Village	LaRue Village Montgomery Township	Unknown	New	
Disseminate educational information to the residents of Marion County	Marion County	N/A	Ongoing	

Appendix F

Ohio EMA Approval Letter
FEMA Plan Approval Letter



**OHIO DEPARTMENT
OF PUBLIC SAFETY**
EDUCATION • SERVICE • PROTECTION

- Administration
- Bureau of Motor Vehicles
- Emergency Management Agency
- Emergency Medical Services
- Office of Criminal Justice Services
- Ohio Homeland Security
- Ohio Investigative Unit
- Ohio State Highway Patrol



John R. Kasich, Governor
John Born, Director
Nancy J. Draganl
Executive Director

Emergency Management Agency
2855 West Dublin-Granville Road
Columbus, Ohio 43235-2206
(614) 888-7150
www.ema.ohio.gov

Mr. Harry Burdick, Director
Marion Emergency Management Agency
Marion County Courthouse
Marion, Ohio 43302

July 17, 2014
FEMA DR-4002.3-P

RE: 2014 Mitigation Plan for Natural Disasters, Marion County, Ohio

Dear Director Burdick,

Congratulations on the final Federal approval for selected jurisdictions as participants in the updated county Hazard Mitigation Plan. These jurisdictions are:

Marion County
City of Marion
Village of Caledonia
Village of Green Camp
Village of LaRue

Village of Morral
Village of New Bloomington
Village of Prospect
Village of Waldo

In accordance with 44 CFR 201.6(d)(3), the expiration date of the plan is **July 16, 2019**.

Should you have any questions please contact Dean Ervin at 614/799-3681, by fax at 614/799-3526 or dervin@dps.state.oh.us email.

Sincerely,

Steven A. Ferryman, CFM
State Hazard Mitigation Officer
Ohio EMA / Mitigation Branch

Attachment: FEMA Region V letter dated June 16, 2014

Cc: Leslie Bricker, Field Liaison, EMA District 4
Mr. Dan Stewart, Marion County Regional Planning, Asst. Director of Land Development and Information
File

SAF/de

Mission Statement

"to save lives, reduce injuries and economic loss, to administer Ohio's motor vehicle laws and to preserve the safety and well being of all citizens with the most cost-effective and service-oriented methods available."

U.S. Department of Homeland Security
Region V
536 S. Clark St., 6th Floor
Chicago, IL 60605-1509



FEMA

JUL 16 2014

Mr. Steve Ferryman
Mitigation and Recovery Branch Chief
Ohio Emergency Management Agency
2855 W. Dublin-Granville Road
Columbus, Ohio 43235-2206

Dear Mr. ^{Steve}Ferryman:

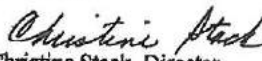
Thank you for submitting the adoption documentation for the Marion County Hazard Mitigation Plan. The plan was reviewed based on the local plan criteria contained in 44 CFR Part 201, as authorized by the Disaster Mitigation Act of 2000. Marion County met the required criteria for a multi-jurisdiction hazard mitigation plan and the plan is now approved for Marion County; the City of Marion; and the villages of Caledonia, Green Camp, LaRue, Morral, New Bloomington, Prospect, and Waldo.

The approval of this plan ensures continued availability of the full complement of Hazard Mitigation Assistance (HMA) Grants. All requests for funding, however, will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted.

We encourage Marion County to follow the plan's schedule for monitoring and updating the plan, and continue their efforts to implement the mitigation measures. The expiration date of the Marion County Plan is five years from the date of this letter. In order to continue project grant eligibility, the plan must be reviewed, revised as appropriate, resubmitted, and approved no later than the plan expiration date.

Please pass on our congratulations to the communities for this significant action. If you or the communities have any questions, please contact Rebecca Leitschuh at (312) 408-4421.

Sincerely,


Christine Stack, Director
Mitigation Division

www.fema.gov

Appendix G

HAZUS-MH: Earthquake Event Report

HAZUS-MH: Earthquake Event Report

Region Name: Marion Co OH Quake Scenario

Earthquake Scenario: Marion (City) OH Epicenter

Print Date: March 27, 2014

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.

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Appendix B: Regional Population and Building Value Data	

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):

Ohio

Note:

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

The geographical size of the region is 403.55 square miles and contains 18 census tracts. There are over 24 thousand households in the region and has a total population of 66,217 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 28 thousand buildings in the region with a total building replacement value (excluding contents) of 4,782 (millions of dollars). Approximately 91.00 % of the buildings (and 70.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,082 and 769 (millions of dollars), respectively.

Building Inventory

HAZUS estimates that there are 28 thousand buildings in the region which have an aggregate total replacement value of 4,782 (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 68% 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 (HPL) facilities. 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 276 beds. There are 33 schools, 10 fire stations, 3 police stations and 1 emergency operation facilities. With respect to HPL facilities, there are 1 dams identified within the region. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 41 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 1,851.00 (millions of dollars). This inventory includes over 149 kilometers of highways, 219 bridges, 3,434 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	219	109.90
	Segments	41	741.90
	Tunnels	0	0.00
	Subtotal		851.50
Railways	Bridges	1	0.00
	Facilities	3	8.00
	Segments	97	136.80
	Tunnels	0	0.00
	Subtotal		144.80
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	0	0.00
	Subtotal		0.00
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	1	10.70
	Runways	2	75.90
	Subtotal		86.60
	Total		1,082.70

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	34.30
	Facilities	0	0.00
	Pipelines	0	0.00
	Subtotal		34.30
Waste Water	Distribution Lines	NA	20.80
	Facilities	11	789.20
	Pipelines	0	0.00
	Subtotal		789.80
Natural Gas	Distribution Lines	NA	13.70
	Facilities	0	0.00
	Pipelines	0	0.00
	Subtotal		13.70
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
	Subtotal		0.00
Electrical Power	Facilities	0	0.00
	Subtotal		0.00
Communication	Facilities	4	0.40
	Subtotal		0.40
	Total		836.30

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

Scenario Name	Marion (City) OH Epicenter
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-83.13
Latitude of Epicenter	40.59
Earthquake Magnitude	5.40
Depth (Km)	0.00
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	CEUS Event

Building Damage

HAZUS estimates that about 5,426 buildings will be at least moderately damaged. This is over 19.00 % of the total number of buildings in the region. There are an estimated 243 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 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	127	0.82	42	0.56	36	0.88	13	1.17	2	0.74
Commercial	724	4.63	327	4.40	280	6.81	102	9.47	20	8.17
Education	26	0.17	11	0.14	10	0.24	3	0.32	1	0.38
Government	38	0.24	14	0.19	12	0.30	4	0.35	1	0.39
Industrial	259	1.66	105	1.42	94	2.30	34	3.21	6	2.39
Other Residential	2,756	17.63	1,332	17.92	858	20.88	199	18.51	36	14.79
Religion	80	0.51	39	0.52	32	0.77	12	1.14	3	1.18
Single Family	11,816	74.34	5,563	74.85	2,787	67.82	707	65.83	175	71.95
Total	15,625		7,432		4,110		1,074		243	

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

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	11,638	74.48	5,315	71.51	2,013	48.98	254	23.64	16	6.49
Steel	387	2.48	136	1.82	159	3.86	59	5.52	6	2.39
Concrete	110	0.70	39	0.52	34	0.82	9	0.86	1	0.27
Precast	96	0.61	31	0.42	43	1.05	23	2.11	2	0.78
RM	69	0.44	18	0.24	25	0.62	12	1.11	1	0.24
URM	2,670	17.09	1,558	20.97	1,488	35.21	651	60.61	214	87.87
MH	655	4.19	335	4.51	348	8.46	66	6.15	5	1.97
Total	15,625		7,432		4,110		1,074		243	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 276 hospital beds available for use. On the day of the earthquake, the model estimates that only 97 hospital beds (35.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 51.00% of the beds will be back in service. By 30 days, 79.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	At Least Moderate Damage > 50%	# Facilities	
			Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	2	0	0	0
Schools	33	0	0	2
EDCs	1	0	0	1
PoliceStations	3	0	0	1
FireStations	10	0	0	5

Transportation and Utility Lifeline Damage

Table 6 provides damage estimates for the transportation system.

Table 6: Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	With at Least Mod. Damage	Number of Locations		
				With Complete Damage	With Functionality > 50 %	
				After Day 1:	After Day 7	
Highway	Segments	41	0	0	41	41
	Bridges	219	0	0	219	219
	Tunnels	0	0	0	0	0
Railways	Segments	97	0	0	97	97
	Bridges	1	0	0	1	1
	Tunnels	0	0	0	0	0
	Facilities	3	2	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	0	0	0	0	0
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	1	0	1	1
	Runways	2	0	0	2	2

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	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 80 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	11	10	0	0	11
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	4	4	0	2	4

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

System	Total Pipeline Length (kms):	Number of Leaks	Number of Breaks
Potable Water	1,717	58	15
Waste Water	1,030	46	12
Natural Gas	687	49	12
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	24,578	0	0	0	0	0
Electric Power		19,744	12,296	4,714	791	25

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 4 ignitions that will burn about 0.25 sq. mi (0.06 % of the region's total area.) The model also estimates that the fires will displace about 432 people and burn about 30 (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 0.160 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 59.00% 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 6,240 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

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 360 households to be displaced due to the earthquake. Of these, 236 people (out of a total population of 66,217) 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	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	1	0	0	0
	Industrial	1	0	0	0
	Other-Residential	32	7	1	2
	Single Family	109	23	3	6
	Total	144	30	4	8
2 PM	Commercial	60	13	2	3
	Commuting	0	0	0	0
	Educational	23	5	1	1
	Hotels	0	0	0	0
	Industrial	6	1	0	0
	Other-Residential	10	2	0	1
	Single Family	27	6	1	2
	Total	128	28	4	7
5 PM	Commercial	46	10	1	3
	Commuting	0	0	0	0
	Educational	1	0	0	0
	Hotels	0	0	0	0
	Industrial	4	1	0	0
	Other-Residential	13	3	0	1
	Single Family	44	10	1	2
	Total	108	24	3	6

The total economic loss estimated for the earthquake is 709.18 (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 507.85 (millions of dollars); 17 % 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 58 % 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	1.43	14.35	0.66	1.22	17.65
	Capital-Related	0.00	0.69	11.24	0.44	0.27	12.55
	Rental	6.09	3.76	6.63	0.29	0.58	16.36
	Relocation	18.83	2.87	11.20	1.48	4.31	38.70
	Subtotal	23.93	8.66	43.43	2.87	6.38	85.26
Capital Stock Losses							
	Structural	28.00	5.45	12.29	3.71	4.46	53.91
	Non_Structural	123.71	36.17	44.30	18.34	15.03	237.54
	Content	55.84	12.79	32.30	15.08	10.77	126.87
	Inventory	0.00	0.00	0.95	3.10	0.21	4.27
	Subtotal	207.65	54.40	89.83	40.23	30.47	422.59
	Total	231.66	63.06	133.26	43.11	36.85	507.85

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	741.56	\$0.00	0.00
	Bridges	109.89	\$0.57	0.52
	Tunnels	0.00	\$0.00	0.00
	Subtotal	851.50	0.60	
Railways	Segments	136.62	\$0.00	0.00
	Bridges	0.04	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	7.99	\$3.04	38.08
	Subtotal	144.60	3.00	
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	0.00	\$0.00	0.00
	Subtotal	0.00	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	\$4.26	39.99
	Runways	75.93	\$0.00	0.00
	Subtotal	86.60	4.30	
Total		1082.70	7.90	

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	0.00	\$0.00	0.00
	Distribution Lines	34.30	\$0.26	0.77
	Subtotal	34.34	\$0.26	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	769.20	\$192.65	25.04
	Distribution Lines	20.60	\$0.21	1.01
	Subtotal	789.84	\$192.86	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	13.70	\$0.22	1.62
	Subtotal	13.74	\$0.22	
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	0.40	\$0.12	27.43
	Subtotal	0.42	\$0.12	
Total		838.34	\$193.46	

Table 14. Indirect Economic Impact with outside aid
 (Employment as # of people and Income in millions of \$)

	LOSS	Total	%
First Year	Employment Impact	0	0.00
	Income Impact	(3)	-0.56
Second Year	Employment Impact	0	0.00
	Income Impact	(11)	-1.71
Third Year	Employment Impact	0	0.00
	Income Impact	(14)	-2.20
Fourth Year	Employment Impact	0	0.00
	Income Impact	(14)	-2.20
Fifth Year	Employment Impact	0	0.00
	Income Impact	(14)	-2.20
Years 6 to 15	Employment Impact	0	0.00
	Income Impact	(14)	-2.20

Appendix A: County Listing for the Region

Marion, OH

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Ohio	Marion	66,217	3,368	1,413	4,782
Total State		66,217	3,368	1,413	4,782
Total Region		66,217	3,368	1,413	4,782