All Hazard & Flood Mitigation Plan 2019

Medina County, Ohio

Developed and Coordinated by:
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MEDINA COUNTY
ALL HAZARDS & FLOOD MITIGATION PLAN

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Chapter 1: Introduction

Natural hazard planning as it relates to Medina County, Ohio

Hazard mitigation is actions that can help reduce or eliminate risks to life and property caused by natural or human-made disasters. With increased development, it is critical that hazard mitigation is included in our land-use decisions. Likewise, as we restore our existing buildings and infrastructure from damage, we must not replicate pre-disaster conditions in a repetitive cycle of loss and reconstruction. Hazard mitigation is needed to break this repetitive cycle by increasing sustainability through mitigation goals and actions. The implementation of such hazard mitigation strategies in Medina County means building stronger, safer, and smarter communities.

1.1 Purpose and Scope

Medina County experiences a variety of natural hazards that cause public and private property damage and threaten life safety. As required by federal law, under 44 CFR part 201, local jurisdictions must develop and maintain a mitigation plan to obtain federal emergency management grants, such as the Hazard Mitigation Grant Program and the Flood Mitigation Assistance Grant Program. The Medina County Office of Emergency Management & Homeland Security (Medina County EMA) has prepared this plan, which provides information about hazards that affect Medina County and establishes strategies to decrease vulnerability.

The plan provides a framework on which to base comprehensive mitigation throughout all jurisdictions in Medina County. This plan focuses on natural hazards as well as some human-caused hazards for which practical mitigation measures exist. It profiles hazards by a description of historical occurrences, probability, location, and extent. Then it establishes vulnerability with consideration of these hazard profiles. By assessing the vulnerability of the county, we can identify areas at risk, and we can determine the degree to which they may be affected.

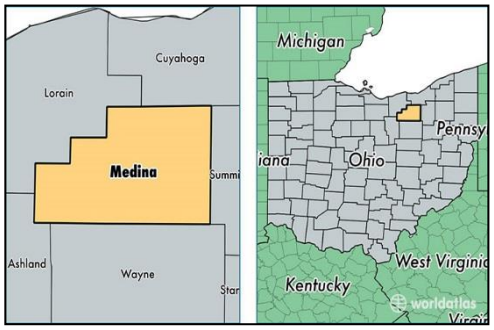
The essential purposes of this plan are as follows:

- Identify the possible hazards and risks that may affect Medina County through systematic hazard identification and risk assessment process.
- Determine areas within Medina County that are vulnerable to various types of hazards;
- Establish and mitigation strategies including goals and actions.

- Prioritize and coordinate mitigation goals and actions.
- Involve members of the county administration, public, and other agencies to draft and adopt a plan that can serve as guidance for future development and hazard mitigation activities in the county.

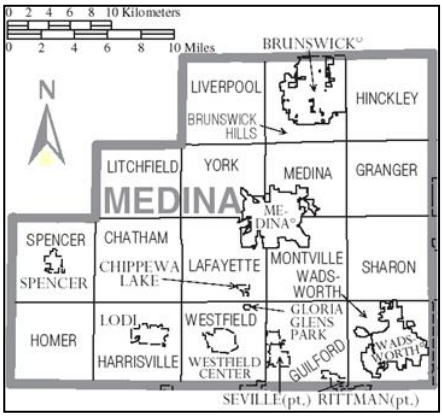
1.2 Overview of Medina County

1.2.1 Location



Medina County is in northeast Ohio. Its neighboring counties include Cuyahoga, Lorain, Summit, Wayne, and Ashland. Towards the northeastern border is Cuyahoga County, east is Summit County, south is Wayne County, southwest is Ashland County, and northwest is Lorain County.

Medina County is home to three cities: Brunswick, Medina, and Wadsworth. The City of Medina is the county seat. There are six villages: Chippewa Lake, Gloria Glens Park, Lodi, Seville, Spencer, and Westfield Center. Additionally, there are seventeen townships: Brunswick Hills, Chatham, Granger, Guilford, Harrisville, Hinckley, Homer, Lafayette, Litchfield, Liverpool, Medina Twp., Montville, Sharon, Spencer, Wadsworth Twp., Westfield, and York. Parts of the Village of Creston and the City of Rittman are in Medina County, but both municipalities are primarily in Wayne County. Wanye County provides emergency management for them.



1.2.2 Geography

Medina County has an area of approximately 421.6 square miles. Its topography varies with location. For instance, the eastern part of the County is rolling to hilly, while the western part is nearly flat. Hinckley Ridge in Hinckley Township is the highest elevation in Medina County, which is approximately 1320 feet above sea level. The lowest elevation is in Liverpool Township, at the West Branch of the Rocky River at the Medina-Lorain County line. This point is approximately 770 feet above sea level. Extending across the County is a drainage divide between two drainage basins, the Lake Erie Basin and the Ohio River Valley. The East Branch Black River flows north draining, most of western Medina County, and the Rocky River with its tributaries, Plum and Mallet Creek, drain

northeast Medina County. The Wolf, Chippewa, and River Styx Creeks flow southward into the Tuscarawas River. Camel Creek and Killbuck Creek empty into the Mohican River, eventually finding an outlet in the Muskingum River.

1.2.3 Climate

Cold air masses from central and northwest Canada frequently travel through the region. Tropical Gulf masses often reach the area during the summer and to a much lesser extent during the fall and winter. U.S. Climate Data found that 48.75°F is the average temperature in Medina, with an average annual high of 58.3°F and low of 39.2°F. In Medina, the warmest month is typically July, with an average high of 82°F and a low of 60°F. The coldest month is January, with an average high of 32°F and a low of 17°F. The county tends to experience 39.27 inches of rainfall and 38 inches of snowfall per year.

1.2.4 Soils

A soil association is a landscape that has a distinctive proportion and pattern of specific soil types. Although the soils are related geographically, they usually differ in one or more characteristics: slope, depth, drainage, etc. that influence land use and soil management. Each soil type is a unique combination of the features that affect the nature of the soil, its reaction to stress, and its potential to sustain certain land uses. Development without regard for the limitations of the soil can result in wet basements, unstable foundations, increased erosion, flood hazards, and other problems.

There are nine general soil associations in Medina County, which include: Ellsworth-Mahoning (clay loam), Mahoning-Ellsworth, Canfield-Wooster-Ravenna, Rittman-Wadsworth (clay & sand), Bennington-Cardington (clay loam), Cardington-Bennington, Haskins-Caneada-Lobdell, Fitchville-Chili-Bogart, and Carlisle-Luray-Lorain. Glaciation is the primary influence of the different kinds of soils in Medina County. Soil types include steep sandstone ridges to the east, alluvial from stream deposits in the floodplains, and clay loam in the uplands.

1.2.5 Agriculture

According to the USDA Census for Agriculture, in 2012, there are 920 farms in Medina County. Farmland occupies 94,987 acres of land in the county, which is about 35% of the total land cover, and the average farm size is 103 acres. The aggregate market value of products sold was $60,533,000.00 (70% crops and 30% livestock items). Medina County's top crops in descending order are soybeans for bean, corn for grain, forage-land used for all hay and haylage, grass silage, and

greenchop, corn for silage, and wheat for grain. The top livestock items in descending order are cattle and calves, layers, horses and ponies, sheep and lambs, broilers and other meat-type chickens.

1.2.6 Demographics

Medina County is the sixteenth most populous county in the State of Ohio. According to the US Census Bureau's 2016 population estimates, 177,221 people live in Medina County. The 2010 Census estimated the population per square mile as 409.0 people.

After seeing an 8.1% increase in population from 1980 to 1990, Medina County doubled its rate of growth to 17.7% in the 1990s. The Census Bureau estimates that there was an 18.1% increase in the County's population from 2000 to 2017 and it is one of the top ten fastest growing counties in the State.

Medina County's Population 1960-2020							
	1960	**1970**	**1980**	**1990**	**2000**	**2010**	**2020 Estimated Population**
Total	65,315	82,717	113,150	122,354	151,095	172,332	184,670
Change	0	17,402	30,433	9,204	28,741	21,237	12,338
Percent Change	0	26.6%	36.8%	8.1%	23.5%	14.1%	7.16%

2020 Population Estimate provided by Ohio Development Service Agency

Approximately, 16.7% of residents are 65 years old or over the age of 65 and 22.9 % of residents are under the age of 18. As of July 1, 2016, there were approximately 66,465 housing units with an average of 2.62 persons per household. The median value of owner-occupied housing was $182,100, and 79.7% of homes are owner-occupied. In Medina County, the average household income was $69,319, and the per capita income was $32,911.

1.2.7 Land Use Changes

The amount of land in residential-use was less than 4% in 1956. By 1996, 18% of the land was residential. Residential-use was 85% of all the developed land in 1996. The 2018 "Ohio County Profiles" prepared by the Ohio Development Services Agency shows that the existing developed land is 22.27%,

and 73.64% of the land is forest, shrub, pasture or crops. The amount of undeveloped land presents a possibility for more development.

The 2018 "Ohio County Profiles" indicates that there was an average of 647.8 residential units constructed between 2013 and 2017. Also, it shows the county has an annual average of 7.4 major construction projects for new or expanding facilities in the sectors of manufacturing, distribution, office, hotel, or research and development.

New construction in the county could entail clearing vegetation and the replacement of permeable soil with impermeable surfaces, changing the area's flooding risk. Vegetation, especially riparian vegetation, can help prevent surface runoff into bodies of water by absorbing some of the water before it travels into streams, lakes, and rivers. Lack of vegetation can also cause soil erosion, which can reduce the height of the stream or river bank, decrease the channel's overall capacity, and increase stage height. The U.S. Geological Survey (USGS) emphasizes the importance of vegetation in the mitigation of flooding and warns that urbanization often leads to an increase in flood frequency and peak discharge.

1.2.8 Utility Infrastructure

The county primarily receives electric service from First Energy-Ohio Edison and Lorain-Medina Rural Electric. Wadsworth City, Seville Village, and Lodi Village provide combined municipal utility services to residents including electric, water, and sewer.

Spencer Village and Westfield Village have their water and sanitary sewer services. The City of Medina provides its water distribution and is the City of Avon Lake Water Treatment Plant supplies the water. Brunswick utilizes Cleveland City Water service. Medina County Sanitary Engineers maintains approximately 456 miles of water lines in the County, which is provided by the Avon Lake Water Treatment Plant. The Medina County Sanitary Engineers also manages about 534 miles of sanitary sewers throughout the County, which includes the City of Medina, the City of Brunswick and several townships.

Natural gas providers include Columbia Gas Co., Dominion East Ohio Gas Co., and Northeast Ohio Natural Gas. Additionally, multiple natural gas transmission pipelines run through the county, and the county has one liquid petroleum transmission pipeline.

The Medina County Fiber Network provides high-bandwidth service for government, business, and industry in the metropolitan areas. Multiple other residential and business telecommunications service providers exist.

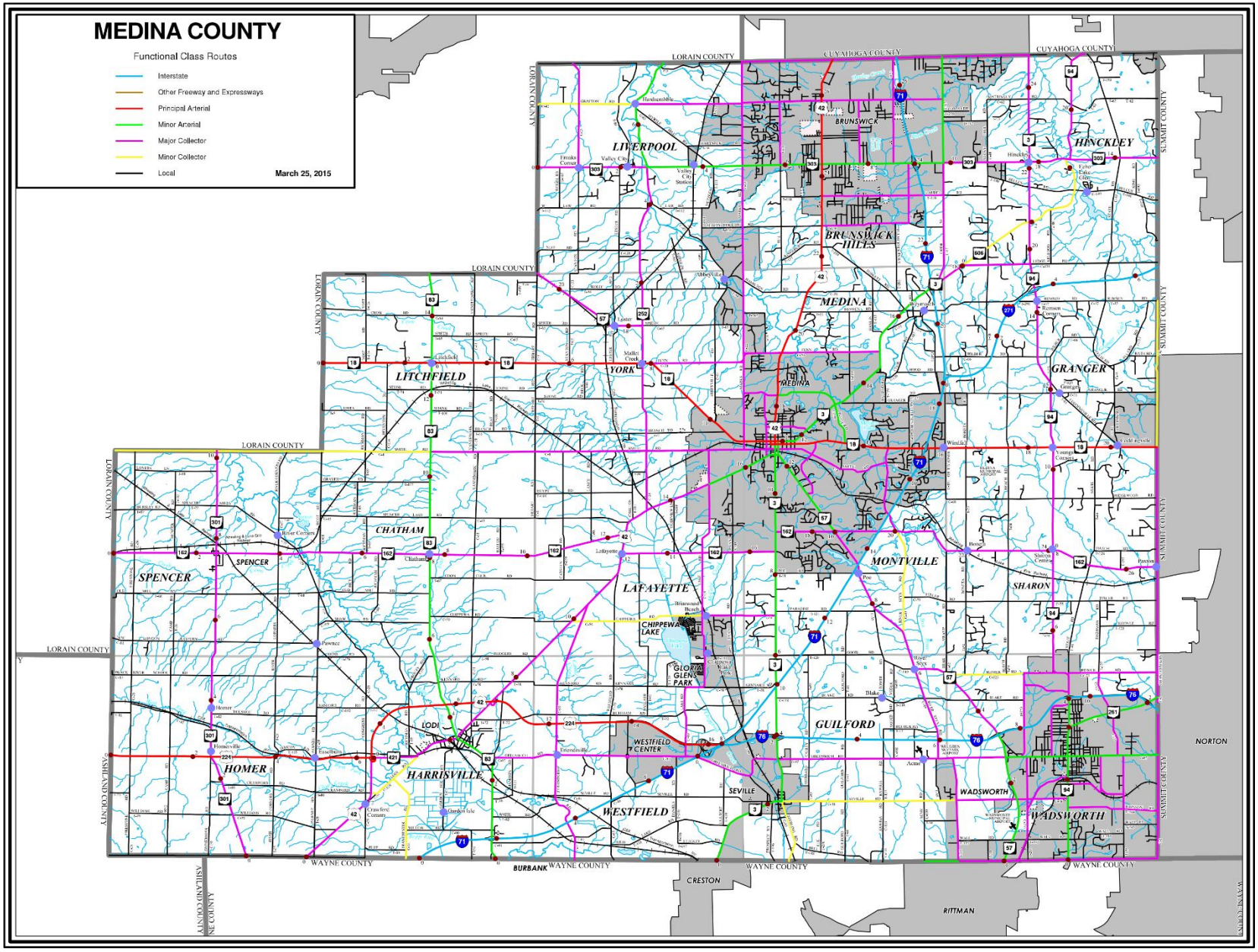
1.2.9 Transportation

The county is served by township, county, state, interstate, and federal highways exceeding 1,105.54 miles. There are three interstate highways, twelve private and public airports, two municipal airports (1G5-Medina Municipal Airport and 3G3-Wadsworth Municipal Airport), and two rail systems (Wheeling & Lake Erie Railway Co. and CSX Transportation, Inc.) operating in the county.

Interstates in Medina County			
71	Interstate 71	271	Interstate 271
76	Interstate 76, intersects with U.S. Route 224		

State Routes and U.S. Routes in Medina County			
SR 3	Weymouth Rd., Wooster Pike, and Ridge Rd.	SR 18	Norwalk Rd. and Medina Rd.
US 42	Pearl Rd. and Lafayette Rd.	SR 57	Elyria Rd., Norwalk Rd., and Wadsworth Rd.
SR 83	Avon Lake Rd.	SR 94	Center Rd., Ridge Rd., and Mt. Eaton Rd.
SR 162	Wedgewood Rd. and Sharon Copley Rd.	US 224	Greenwich Rd.
SR 252	Columbia Rd.	SR 261	Akron Rd.
SR 301	Spencer Rd.	SR 303	Center Rd.
SR 421	Greenwich Rd. and Lafayette Rd.	SR 606	Weymouth Rd. and Hinkley Hills Rd.

Principal County Routes			
4	Smith Rd.	15	Westfield Rd.
17	W130th St.	19	Lake Rd.
21	Granger Rd.	22	Marks Rd.
26	Firestone Rd	29	Congress Rd.
31	Vandemark Rd.	35	Friendsville Rd
37	Remsen Rd	38	Substation Rd
40	Ryan Rd.	41	Guilford Rd.
42	Grafton Rd	44	State Rd.
50	Chippewa Rd	70	Fenn Rd.
76	Hamilton Rd.	83	Black River School Rd.
97	Greenwich Rd.	136	Sleepy Hollow Rd.



Map: Routes in Medina County

1.4 Planning Process

The planning process of this current plan began with the development of a Planning Team consisting of Medina County EMA staff members with the overall responsibility of project management, information gathering, and drafting of the plan. The Planning Team is as follows:

Planning Team	
Christina Fozio	Director, Medina County EMA
Ben Nau	Emergency Management Specialist, Medina County EMA
Matt Sturgeon	Emergency Management Specialist, Medina County EMA
Claudia Judele	University of Akron

The Planning Team reviewed the hazards identified in the Medina County All-Hazards and Flood Mitigation Plan 2011 update. The gathered current information on hazard descriptions, locations, extent, historical occurrences, vulnerability, and probability. The hazards profiles and risk assessment information of the 2011 Update was reviewed and revised. Concurrently, members of the Planning Team presented the hazard information in citizens' group meetings including a Medina County CERT Volunteer meeting on July 11, 2018, and a Medina Community Police Academy Alumni Association meeting on September 27, 2018, to gather public input to draft the plan.

The planning team created the current Hazard Vulnerability Analysis (HVA) utilizing information discovered in the hazards profiles and risk assessment. The information was developed to be presented for evaluation by a Core Committee.

A Core Committee of people with pertinent local knowledge of hazards was assembled. The purpose of the Core Committee was to review and validate the hazards profiles and risk assessment information and the HVA developed by the Planning Team. The Core Committee consisted of the following people:

Core Committee	
Jim Dieter	Medina County Soil and Water Conservancy District
Dave Kopchak	Muskingum Watershed Conservancy District
David Brown	Medina County Sanitary Engineer
Chuck Stiver	Private Citizen
Dan Willhoite	Medina County Highway Engineer
Claudia Judele	University of Akron
Christina Fozio	Medina County EMA
Matt Sturgeon	Medina County EMA
Beth Biggins-Ramer	Medina County Solid Waste District

The Core Committee met on August 7, 2018. They concurred to revise the identified hazards as follows:

Identified Hazards	
2011 Plan	**2019 Plan**
Flooding	Flooding
Riverine, Flash, Urban	Riverine and Localized
Drought	Drought
Winter Storms	Severe Winter Weather
Tornados	Tornados
Severe Storms	Severe Storms
Subsidence & Landslides	Landslides
Earthquakes	Land Subsidence
Wildfires	Earthquakes
Dam Failures	Wildfires
Hazmat	Dam Failure
~~Radiological Incidents~~	Hazmat
~~Solid Waste Disposal Problems~~	Terrorism
~~Civil Disturbances, Riots,~~ Terrorism	

Radiological Incidents, Solid Waste Disposal Problems, Civil Disturbances, and Riots were omitted from the 2019 Update since the plan had no m

itigation strategies for these hazards and the committee agreed the hazards were not well-suited for this plan. The titles of some hazards were revised to align them with available data. Landslides and Land Subsidence were separated. The committee reviewed and adjusted a draft of the HVA to its current form.

Following the Core Committee meeting, the Planning Team created a final draft of Hazard Profiles and Risk Assessment section and the Hazards Vulnerability Analysis.

Once the planning team completed the hazard information, they began updating the mitigation strategies. Open source information was utilized to identify the information in the Policies section of this plan. A meeting with Medina County Planning Service was held on November 6, 2018, to discuss hazards mitigation policies and strategies. A meeting with the Medina County Floodplain Administrator at the Medina County Highway Engineer's Office on November 9, 2018, was held to discuss hazards mitigation policies and strategies.

Officials from every local jurisdiction were requested to meet at Medina County EMA to updated and prioritize their jurisdiction's goal and actions. Meetings were held on November 28, 2018 and November 29, 2018. Both meetings were publicly advertised and open for public input. The Planning Team updated the mitigation strategies with the information collected in these meetings.

Upon the final draft of the plan, it was advertised for public review and comments. The plan was publicly available at the main library and on the agency website. The final draft was provided to the Core Committee, local jurisdictions, and neighboring jurisdictions for comments.

Chapter 2: Natural and Manmade Hazards

Environmental processes have always been part of the world around us. Floods, tornadoes, earthquakes, and other natural phenomena have occurred for millions of years. These events, which help maintain balance in the county's ecosystems, only become hazards when they intersect with the human environment and endanger people's lives and property. Due to its unique geographic and geologic setting, Medina County is vulnerable to a variety of natural hazards such as atmospheric, hydrologic, geologic, and biologic processes, as well as human-made hazards, such as infrastructure failures and terrorism. Disasters occur when natural or technological threats affect buildings, infrastructure, agriculture, and people's health and safety to such an extent that the response capabilities of local jurisdictions are exceeded.

2.1 Hazards Identification

The hazards identified in the first version of this plan were derived from hazards listed in statewide emergency management plans and *NFPA 1600: Standard on Disaster/ Emergency Management and Business Continuity.* Historical occurrences (or lack of) and the presence of hazards in Medina Country were considered in the identification of applicable hazards to Medina County. On subsequent reviews of this plan, the identified hazards were reviewed, and the list can be revised with reason. The currently identified hazards are **flooding, severe storms, severe winter weather, tornados, drought, land subsidence, earthquakes, landslides, wildfires, dam failures, hazmat spills, and terrorism.**

Chapter 3: Hazard Profiles & Risk Assessment

3.1 Flooding

3.1.1 Description

Flooding is a temporary overflowing of water onto land that is usually dry. It can occur anywhere within Medina County. There are many possible causes of floods including heavy rain, snowmelt, or waterway overflow caused by debris or ice blockages. Additionally, flooding can be caused by failures in technological systems, such as the overflow of levees, dams, or wastewater systems. As we convert land from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization increases the risk of runoff by two to six times over the amount that would occur on natural terrain, and it can alter watersheds in unpredictable locations.

Floods are among the most frequently occurring and costly natural disasters in terms of economic loss. Additionally, many residents in the affected areas may experience stress, anxiety, fear, anger, and uncertainty about financial aid and the rebuilding of their homes. Excluding droughts, approximately 90% of damages that are directly related to natural disasters are caused by flooding.

Medina County experiences flooding in the forms of riverine flooding and localized flooding, which can both result from flash or areal flooding. Riverine flooding occurs when surface water runoff, introduced into streams and rivers, exceeds the capacity of the natural or constructed channels to accommodate the flow. Localized flooding, also known as urban or nuisance flooding, can occur when stormwater drainage systems become overloaded due to a high quantity of rain over a short period time or when these systems are obstructed or blocked by debris, preventing the efficient flow of water. These systems failures may cause sewer backups, standing water in residents' yards, basement flooding, first-floor flooding, and overland flow in areas of lower elevation, roads, streets, and communities. Most instances of localized flooding are caused by flash flooding.

The National Weather Service (NWS) categorizes flooding as flash flooding and areal flooding. Flash flooding is an intense, high-velocity torrent of water that occurs when rivers and streams experience excessive precipitation over a short time. The probability of a flash flooding event is increased for 3 to 6 hours following periods of excessive precipitation, due to the ground's inability to absorb the water rapidly enough, which can cause rivers, lakes, and other bodies of water to overflow. Unlike

flash flooding, areal flooding tends to occur more than six hours after the start of heavy rainfall in an area. Areal flooding develops gradually, usually from prolonged and persistent moderate to heavy rainfall, resulting in gradual ponding or buildup of water in low-lying, flood-prone areas, as well as small creeks and streams.

3.1.2 Location

Within Medina County, the most flood-prone areas are the Chippewa Lake Watershed, and river basins of the Chippewa River, Styx River, Rocky River, Black River, and areas located inside the 100-year floodplain. The following are municipal corporations that have 100-year floodplains within their boundaries: Cities of Brunswick, Medina, and Wadsworth along with the Villages of Chippewa Lake, Gloria Glens, Lodi, and Seville. Flooding in the 100-year floodplain would have a direct impact on 9 townships (Lafayette Township, Westfield Township, Guilford Township, Wadsworth Township, Liverpool Township, Medina Township, Spencer Township, Granger Township, and Harrisville township), all 3 cities (City of Brunswick, City of Medina, and City of Wadsworth), and 4 villages (Chippewa Lake Village, Gloria Glens Village, Seville Village, and Lodi Village).

The City of Wadsworth has identified that flooding has occurred in the vicinity of Orchard Creek. Creek flooding has affected residents on Simcox, Tolbert, Euclid, and Franks. Wadsworth City officials have also identified that flooding has occurred in the area near the airport in the vicinity of River Styx and Holmes Creek as

3.1.3 Extent – How it's Measured

Floods are measured based on the flood level or exceedance probability. Exceedance probability or flood level is a recurrence interval measurement that classifies floods based on height/stage above sea level. This measurement, expressed in x-year flood, is also the statistical probability of a flood of that magnitude occurring in an area based on recorded historical occurrences. For instance, a 100-year flood or base flood is a level that is expected to occur every 100 years and has a 1% chance of happening annually. However, 100-year floods can occur multiple times a year, every few years, etc., not just once every 100 years. Based on the expected 100-year flood flowrate in a given creek, river or surface water system, the flood water level can be mapped as an area of inundation. The resulting floodplain map is referred to as the 100-year floodplain, which significantly influences the issuance of building permits, environmental regulations, and flood insurance policies nationwide.

3.1.4 Historical Narratives

According to the National Centers for Environmental Information, there have been 39 recorded flood events that have occurred in Medina County between January 1, 1996, and December 31, 2018, including nine flood & 30 flash flood events (as categorized by the national weather service).

The following are several excerpts from the Medina County Gazette sourced from FEMA Flood Insurance Study, Medina County, Ohio and Incorporated Areas August 19, 2013, describing various historical floods on West Branch Rocky River and other streams in Medina County, Ohio.

March 23 - 26, 1913 Flood
"The great downpour of rain from Sunday noon (Easter Sunday) to Tuesday noon, last, brought flood and loss and distress to Medina and vicinity as it did to most of the rest of Medina County and northern Ohio.

Medina and vicinity ordinarily measure high water by the showing at the covered bridge at Rocky River on the Granger Road. Measured by the height of water there, the flood of last Tuesday was the greatest within the memory of living man. The water rose until it pounded the sides of the covered bridge and flowed into the east end of it, while the floor of the iron auxiliary bridge was completely submerged. The Medina waterworks plant never before experienced such high water. The whole river bottom was flooded, the flood extending west to E.W. Nettleton's barns and dwelling.

Of all the sufferers and losers by the flood in Medina County, the people of Seville and vicinity and those living in the Chippewa Valley met with the greatest loss and discomfort. Seville business streets were turned into canals.
The water at Chippewa Lake on Tuesday was the highest ever known. In fact, at the Medina-Lafayette Road, and from that point, a boat could have been rowed across lots 12 southward to Sterling and farther. The water completely surrounded the entire lower grounds, flowing over both the electric and B&O tracks east of the elevated ground on which the park is located. South of the lake, Chippewa Creek widened to the extent of a half-mile or more and presented the appearance of a continuous lake extending to Seville and beyond."

The following image depicts flooding associated with the March 1913 flood

March 25, 1913 - Covered Bridge over Rocky River on Granger Road (Looking east)

March 25, 1913 - Seville, Ohio from the Square (Looking east)

December 16, 1927, Flood

"The high water caused traffic congestion near West Salem, went above the bridge floors in several Medina County communities, washed out four culverts along Medina County roads and washed out the stone of the secondary road just east of Fenns Corners. The 13 water was above the flooring of the covered bridge east of Medina and was standing in Smith Road, west of South Court Street in Medina."

August 9, 1935, Flood

"Rocky River, which approaches Medina from the east and crosses both the main roads leading into town, Routes 3 and 42, was out of its banks as early as midnight.

When they (fire department) returned to Medina, they learned that Rocky River was out of its banks where it crosses Route 42 north of Medina and that cars were stranded in the flood.

Farther north, at Valley City, the river was over the road leading between Brunswick and the town. One car was swept off the road by the force of the current which came across the roadway just west of the Valley City bridge, but luckily no one was injured.

The bridge which carries Route 252 across Rocky River just north of Valley City was endangered by the high water and the road leading to the bridge was undermined and partly washed away.

Undoubtedly some of the high water in Rocky River was aggravated to flood stage by the failure of two dams on streams which feed the river. The two dams were the Sleepy Hollow Lake Dam on Plum Creek south of Brunswick and the Lester Dam at Lester. The Sleepy Hollow Dam gave way shortly after midnight and the Lester Dam about 2 a.m.
The territory around Chippewa Lake and to the south through Seville and on into Sterling and Orrville was hard hit. Chippewa Lake rose over its banks to flood the cottages which line its shores and to sweep back in some cases almost to the road by the entrance. Cottagers in Briarwood and Gloria Glens were forced to use rowboats to get in and out of their places. The cottages in the upper ground which line the lake all had water around them and those which have basements had them filled.

The water rose at the park itself until it covered the cement pier and swept over the floor of the pier restaurant.

The territory south of Chippewa toward Seville, which is low land, was one of the hardest hit sections in the county as far as crop damage is concerned. The water from the lake, which poured over the road that crosses the outlet of the lake, swept down through the many acres of muck land to the south and carried away field after field of shocked grain.

The Black River, Medina County's stream on the west that corresponds to Rocky River on the east, went out of its banks early and flooded most of Lodi and the surrounding low land."

January 17, 1950, Flood

"Mother nature threw a one-two punch at Medina County Saturday and Sunday, winds of exceptionally high-velocity early Saturday morning having been followed by an all-day rain Sunday which brought flooded conditions to every section of the county.

County highway officials stated that the floods were the worst experienced here in many years, many roads having been blocked for several hours by swirling waters. Rocky 14 River went on such a rampage that two families had to be evacuated by boat from their homes at Riverby, two miles north of Medina.

The first punch was thrown at the County about 4 a.m. Saturday when high winds toppled trees and utility poles and damaged buildings. The winds roared over this entire section of the state, the Cleveland weather bureau having reported gusts of between 70 and 80 miles per hour.

The floods, which reached their heights at about 3 a.m. Monday, were brought on by a steady downpour all day Sunday. Weather Observer C.W. Carlton of Chippewa Lake reported a fall of 2.4 inches between early morning and late evening.

The Sunday downpour was the finishing touch to rains of the past two weeks which had already swollen all streams. Carlton said 3.8 inches of rain had fallen from the first of the month through Sunday evening.

Although streams went out of their banks in all sections of the county, worst conditions existed in the northern part of the county in the Abbeyville-Valley City area, where many roads were still under water Monday mid-morning.

Route 42 at Riverby was closed to traffic for nearly two hours as Rocky River spilled over the highway. Completely inundated were the state picnic grounds there, while the floodwaters lapped at the entrance of Riverby Inn before receding.

The heavy downpour raised the level of Chippewa Lake an estimated three feet, water having poured over the retaining wall at the upper grounds. The entire inlet area at the north end of the lake was still flooded late Monday morning.

End of the rain late Sunday evening and lowering of the temperatures to below the freezing point started streams to recede at about 4 a.m. Monday."

January 30 - February 1, 1968, Flood

"Eight to ten inches of water covering about 500 feet of Rt. 252 between Rt. 303 and the Lorain County line north-east of Valley City have made the road impassable and, according to State Highway Department Supervisor Don Wagar, 'things may get worse before they get better'.

The water is backing up because of an ice jam further north on the Cuyahoga River and, unless the ice is dynamited, Wagar said he could make no predictions about when the water level would start to drop. 'When it goes, it'll all go at once,' he said.

The water was four to six inches deep at about 6 last night, and cars traveling slowly could still get through. The water reached eight to ten inches by 2 a.m. today, and Wagar said that, although the road is not officially closed, he would not advise anyone to try driving through that section.

Water surges into Mallet Creek from the spillway of the dam at the old Baltimore and Ohio Railroad reservoir in Lester. Rains filled the reservoir to overflowing Tuesday, but the water level is starting down again now. Originally, there were two reservoirs built by the railroad in York Township, but the other dam has been washed away. The remaining dam is bridged by the tracks near Lester Road."

15 July 5, 1969, Flood

"Worst hit areas are Granger, Hinckley, Sharon Center, and Chippewa Village. Medina City was the least hit.

Shawnee Lake east of Spencer, the villages' main recreation area, is flooded, with trailers floating. Homes on North Main Street were being evacuated this morning. Spencer Manufacturing and Enterprise Machine is flooded, and it was still raining at 8 a.m.

The three ways out of town are flooded; 162 East, 301 north and south are blocked.

Rt. 57 at the edge of Rittman was closed yet this morning. Rt. 97 from Lodi and LeRoy also was closed. Phones were reported out since 10 o'clock last night in Lodi; Rt. 76 in Lodi has remained passable.

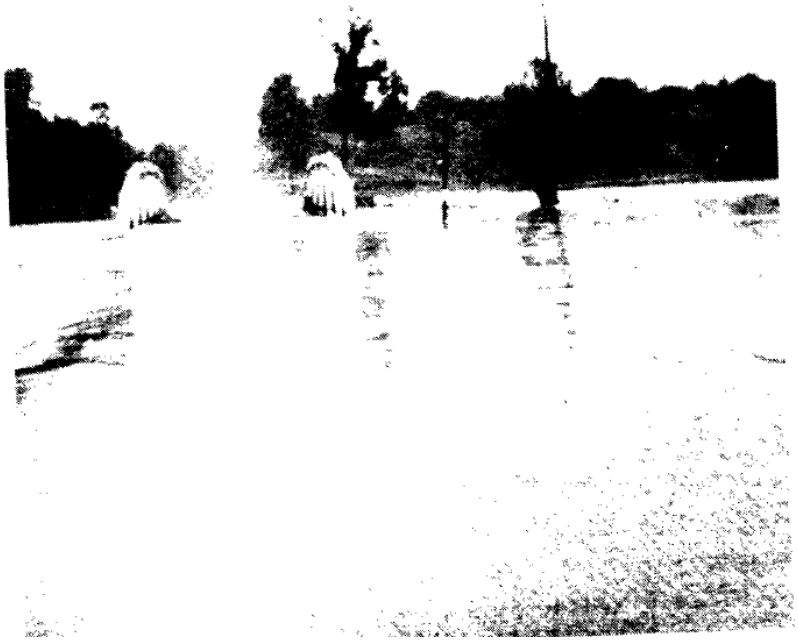
Rt. 604 between Rt. 57 and Rt. 3; Rt. 71 at Rt. 224 was blocked at press time.
LODI – John Keim's rain gauge showed over 10 inches of rainfall in his backyard for a 10-hour period starting at 8:30 Friday evening.

The 224-42 by-pass was under water from Township Road 69 west to 421, and there was no through traffic. Both the Bank and S. Broadway crossings were underwater, and motorists had a difficult time getting out.

SPENCER – The north dam of the 70-acre Spencer Lake at the Spencer Wildlife Area broke during the flooding stages of the weekend storm.

Leonard Porter, area manager, yesterday said water flowed over the dam at the southern end of the huge lake, but when it struck the northern section of the lake, broke the wall and poured through a gaping 50-foot hole. It flooded nearby farm field as it followed the course of a small stream, but Porter indicated this flooding would have occurred even without the break."

Flooding in July 1969



July 4, 1969 – Bridge on River Corners Road 16

Intersection of Rt. 162 and Congress Road

July 4, 1969 - East Branch Black River at Rt. 162 and Congress Road.

Since 1964, 47 major emergency events in Ohio have received a Presidential Declaration of Disaster, 33 of which specifically mentioned flooding. According to the National Centers for Environmental Information (NCEI)'s Storm Events Database, since 1996, Medina County experienced about 30 flash flood events, 16 of which caused property and crop damage. Flooding is responsible for an estimated $18,755,000 in

property damages and $3,040,000 in crop losses. Presidential declarations were issued for Medina County in the years: 1964, 1969, 1992, 2003, 2004, and 2005.

The flash flood on July 21, 2003, caused the largest amount of flood-related damages in the County, with approximately $8,000,000 in property damages and no crop damages. Slow moving thunderstorms caused up to four inches to accumulate in Medina County. Flash flooding occurred in portions of the county during the evening hours and over 2 inches of rain accumulated between 6 and 7 p.m. Chippewa Lake experienced 3.19 inches of rain, and the City of Medina experienced 3.5 inches of rain. The flooding was most severe in Medina, Montville, Lafayette, and Westfield Townships. In Montville Township, the west branch of the Rocky River left its bank and flooded several homes along River Styx Road. The river rose nine feet above normal, causing a basement wall in one of the houses to collapse, and several homes near the river had to be evacuated. Extensive lowland and street flooding occurred in the City of Medina affecting infrastructure, homes, and a significant number of businesses. Floodwaters damaged several roads and multiple homes in the city, mainly homes along Smith Road. A total of 37 homes and 110 apartment units sustained major flood damage in the county. An additional 73 homes and two apartments sustained minor damage. At least seven motorists were rescued from stranded cars during the storm. Two hundred eighty-one individuals registered to receive funding, with 161 approved for a total of $399,818.57, with 16 SBA property loans also accepted at a total of $274,400.00. There was also one business that applied for assistance and was approved for $2,700.00. Public assistance totaled $286,021.51.

Images: 2003 Flooding in Gloria Glens - Source: Medina County EMA

In 2011, Medina County experienced two flooding and two flash flooding events. The most expensive of these floods, which caused $100,000 in property damages, occurred due to heavy rain and snow melt. A strong area of low pressure moved northeast across Ohio on February 28, resulting in one to three inches of rain. Around 10 inches of snow was on the ground on February 27, which melted on the 28th since the temperature increased to over 50 F. This resulted in rapid snowmelt that released up to another inch of liquid equivalent rainfall. The snowmelt and the rain combined to create widespread flooding causing many rivers and streams to overflow. Multiple homes were damaged, and many people who lived near the river had to evacuate. Responders had to rescue dozens of people who were trapped in their vehicles by the flood waters. This flood impacted all 88 counties in Ohio, causing over $30 million in damages and one fatality in nearby Huron County.

On May 12, 2014, a flash flood occurred due to heavy precipitation from convective supercell thunderstorms, which produced two tornadoes in Medina County and approximately 2 to 4.5 inches of rain between 9 p.m. and 11 p.m. The rainfall intensity caused rapid runoff and widespread flash flooding in the western and central parts of the county. Rocky River's East Branch, along with its other tributaries, were primarily responsible for most of the damage in Medina and Cuyahoga Counties. On Granger Road, the first floor of a dozen homes was seriously damaged by flooding. Flowing water removed pavement from main and side streets in North Royalton, Strongsville, Medina, and Brunswick Hills. State Route 162, between the Interstate 71 overpass, and River Styx Road in Montville Township, sustained significant damage when a large culvert under the roadway was damaged. In Brunswick Hills 4.5 in of rain was measured during the storms, and almost 3 ft. of water flooded the Police Station. Overall, a dozen water rescues were conducted in western and central Medina County, and an estimated 100-200 homes sustained water damage. This flash flood, which could be classified as both riverine and localized, caused $2,500,000 in property damages.

An additional notable flooding event occurred on June 15, 2015, and it was also caused by heavy rain. Soils throughout northern Ohio were already saturated because 2 to 4 inches of rain fell between June 12th through June 14th. Several areas experienced flooding during the late afternoon and evening on June 15th, with flooding continuing into the 16th. The flood cost Medina County $40,000 in property damages.

3.1.5 NFIP Compliance, Repetitive Loss Structures, and Flood Mitigation

The National Flood Insurance Program (NFIP) was established by the 1968 National Flood Insurance Act, 82 Stat. 572, 42 U.S.C. 4001, to provide affordable flood insurance for communities that adopt floodplain management laws and implement mitigative measures for any new structures that are constructed in Special Flood Areas. In accordance with Chapter 1521, Sections 1521.14 and 1521.18 of the Ohio Revised Code (ORC), all municipalities in Medina County that have a 100-year floodplain in their jurisdictional boundaries adopted and comply with the flood mitigation standards set forth by the National Flood Insurance Act in order to be eligible for flood insurance and federal disaster aid after a flood. Unincorporated areas are covered by the County's 2008 Flood Damage Reduction Regulations and comply with the NFIP's flood mitigation standards for any new developments that are in flood hazard areas. FEMA's Community Status Book Report Ohio provides information about all the communities that participate in the NFIP. It indicates that the Cities of Brunswick, Medina, and Wadsworth, participate in the NFIP. Furthermore, the Villages of Seville, Lodi, Gloria Glens Park, and Chippewa Lake participate in the NFIP. However, the Village of Westfield Center does not participate in the NFIP, but it is compliant with the State of Ohio's floodplain regulations.

Not all properties that are in the floodplains are repetitive loss (RL) or severe repetitive loss (SRL) properties. Properties that are outside of the floodplains can be classified as RL or SRL properties if they meet the NFIP's criteria. These buildings, which are located on FEMA Flood Insurance Rate Maps in Zones B, C, or X, are often impacted by localized flooding due to a lack of or inadequate drainage systems. A property is a Repetitive Loss (RL) property if it has had two or more insurance claims of over $1,000 that were paid by the NFIP within any rolling ten-year period, since 1978. The two or more claims must be made within ten years of each other, but they must be filed ten days apart from each other. Multiple claims that are filed within ten days of each other are part of the same claim and counted as one claim. At least two of the claims must be more than 10-days apart but within ten years of each other. According to the Flood

Insurance Reform Act of 2004 (FIRA 2004) criteria, SRL properties are any NFIP-insured residential properties that have met at least 1 of the following paid flood loss criteria:

- 4 or more separate claim payments of more than $5,000 each (including building and contents payments) with at least two of those payments occurring in 10 years, and with the total claims paid exceeding $20,000; or

- Two or more separate claim payments (building payments only) where the total amount of both payments exceeds the current value of the property.

At the time of this plan, there are 18 unmitigated

Repetitive loss properties in Medina County, which are listed in the table titled "Medina County's Repetitive Loss and Severe Repetitive Loss Properties." Of these properties, two are SRL properties that have a combined total of $379, 278.17 worth of flood-related damages. All communities within Medina County are working towards mitigating the effects of floods. Nine properties in the County, four of which were SRL properties, were upgraded to mitigate against flooding effectively. These properties are no longer considered to be repetitive loss properties, but the NFIP maintains a record of their flood damage claims and continuously monitors them to determine if further mitigative measures will be required. Mitigated properties can be reclassified as RL or SRL properties if the monetary value of its flooding damages meets the NIFP criteria for each respective designation.

While flood mitigation measures are often tailored to the individual property or environment in which it's located, some general mitigative measures are often utilized to reduce a property's susceptibility to flooding. These measures include fee simple acquisition, elevating homes and buildings above the area's base flood elevation level, improving drainage systems, and enhancing building code requirements for any new structures that could be built within the floodplains. Of these measures, fee simple acquisition is the most expensive, but it is also the most effective flood mitigation method. Fee simple acquisition involves buying properties or vacant lots in the floodplains, demolishing existing buildings, converting these areas into green spaces that benefit the whole community, and prohibiting the construction of residential or commercial structures on these government-owned properties.

There are multiple flood specific mitigating measures in Medina County. Under the Medina County Flood Damage Reductions Resolutions of 2008, the Floodplain Administrator is responsible for evaluating and approving building permits for any developments in special flood hazard areas and ensuring that they comply with the

construction standards set forth under section 4.0. As per section 6.3 of the Flood Damage Reduction Resolutions, not complying with the flood mitigation standards and not applying and obtaining a Stormwater Management Permit before building or altering a new structure is a misdemeanor offense. These noncompliant individuals could be fined for each day that their property violates the Resolutions. Furthermore, from 2000 to 2009, MCEMA utilized a $2 million FEMA grant to purchase and demolish 25 repeated loss properties in the Village of Gloria Glens that were in the floodplains. These former residential areas have been converted to greenspace. On March 23, 2015, FEMA also approved a $224,670 Grant to Medina County EMA to acquire and demolish a repeated loss structure at 5496 River Styx Rd. in the Rocky River floodplain. Additionally, any new structures that are built in the 100-year floodplain, especially those located within zones A or V, must comply with the building standards outlined in Chapter 4101:8 Board of Building Standards: Residential Code of Ohio, Section 322 Flood-Resistant Construction, of the Ohio Administrative Code.

NFIP Unmitigated RL & SRL Properties
As of August 2018

Community Name	Occupancy	Zone	Total Building Payment	Total Contents Payment	Losses	Total Paid	Average Pay
Severe Repetitive Loss Properties							
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	X	107678.22	0	4	107678.22	26919.56
UNINCORPORATED MEDINA COUNTY	OTHR-NONRES	A01**	271599.95	0	4	271599.95	67899.99
Repetitive Loss Properties							
BRIARWOOD BEACH, VILLAGE OF (NOW CHIPPEWA LAKE)	SINGLE FMLY	A02**	8865.61	0	2	8865.61	4432.81
BRUNSWICK, CITY OF	SINGLE FMLY	X	12334.57	0	2	12334.57	6167.29
BRUNSWICK, CITY OF	SINGLE FMLY	A	14885.85	2878.17	2	17764.02	8882.01
CHIPPEWA-ON-THE-LAKE, VILLAGE OF	SINGLE FMLY	A	13620.03	0	2	13620.03	6810.02
GLORIA GLENS PARK, VILLAGE OF	SINGLE FMLY	C	13502.64	349.31	2	13851.95	6925.98
GLORIA GLENS PARK, VILLAGE OF	SINGLE FMLY	AE	19049.48	0	3	19049.48	6349.83
GLORIA GLENS PARK, VILLAGE OF	SINGLE FMLY	X	3686.42	999.85	2	4686.27	2343.14
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	A	46277.39	13065	2	59342.39	29671.2
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	A	107444.93	31873.19	3	139318.12	46439.37
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	A	10257.46	0	3	10257.46	3419.15

UNINCORPORATED MEDINA COUNTY	OTHR-NONRES	X	88054.87	15732	2	103786.87	51893.44
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	X	205787.67	79285.99	3	285073.66	95024.55
UNINCORPORATED MEDINA COUNTY	OTHR-NONRES	X	84871.77	5002.6	3	89874.37	29958.12
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	A03**	44154.98	0	3	44154.98	14718.33
MEDINA, CITY OF	SINGLE FMLY	A	4704.07	0	2	4704.07	2352.04
MEDINA, CITY OF	OTHR-NONRES	C	8546.82	0	2	8546.82	4273.41
RITTMAN, CITY OF (Covered by Wayne Co. EMA)	SINGLE FMLY	A02**	3982.51	4370.04	2	8352.55	4176.28
UNINCORPORATED MEDINA COUNTY	SINGLE FMLY	X	107678.22	0	4	107678.22	26919.56

**Zones A01, A02, A03 became zone AE after 2008.

3.1.6 Vulnerability

Localized flooding can occur anywhere in developed areas, but riverine flooding has a higher probability of occurring in the floodplains. Chippewa Lake's watershed is in the southeastern part of Lafayette Township and northeastern part of Westfield Township. This watershed covers the Village of Chippewa Lake and the Village of Gloria Glens. The river basin of the Chippewa Creek is in the northeast part of Westfield Township and southwest part of Guilford Township; it covers the Village of Seville. The Styx River basin is in the west part of Wadsworth Township and covers the west part of the City of Wadsworth. Chippewa Lake covers over 340 acres in Medina County. The Killbuck Creek tributary begins in Wayne County and southern Medina County. It flows southward through Wooster, Millersburg, and Killbuck and ultimately connects to the Walhonding River at Warsaw in Coshocton County. The river basin of the Rocky River is located within Liverpool Township, Medina Township, Granger Township, and it also partially covers the northeast part of the City of Medina. The Black River basin covers the northeast part of Spencer Township, the southwest part of Chatham Township, the south-central part of Harrisville Township, and the north and east parts of the Village of Lodi.

The table below is a loss estimate for a 100-year flood event. The estimates are computer generated, and the method of analysis is included in the appendices of this plan. An important distinction is that this not the same as the total quantity or the total value of the building stock located in the 100-yr flood plain. Also, as some historical

flood events in Medina County have happened, localized flooding can occur in developed areas outside of the floodplain.

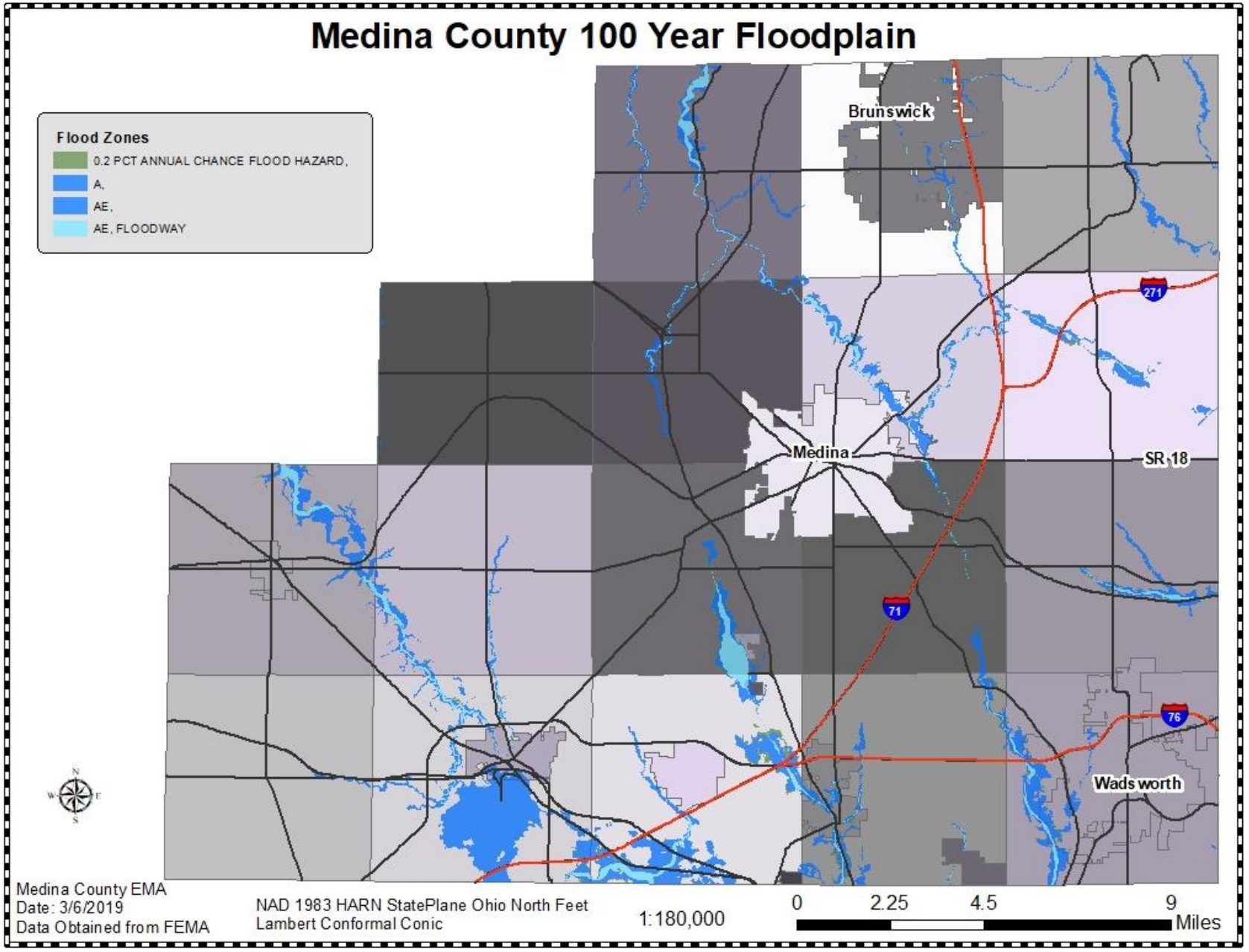
100 Year Flood Event Loss Estimate		
Type of Structure	**Number of Structures**	**Estimated Potential Loss**
Unincorporated Medina County		
Residential	495	$42,877,840.66
Non-Residential	115	$15,469,541.79
Brunswick City		
Residential	12	$234,620.35
Non-Residential	1	$320,060.20
Medina City		
Residential	1	$66,671.04
Non-Residential	3	$3,495,888.40
Wadsworth City		
Residential	1	$112,090.78
Non-Residential	-	-
Chippewa Lake Village		
Residential	-	-
Non-Residential	-	-
Gloria Glens Village		
Residential	2	$3342.01
Non-Residential	23	$122,493.85
Lodi Village		
Residential	17	$578465.58
Non-Residential	-	-
Seville Village		
Residential	14	$279,764.33
Non-Residential	11	$111,881.32
Spencer Village		
Residential	-	-
Non-Residential	-	-
Westfield Center Village		
Residential	1	$48,003.44
Non-Residential	-	-

The Wadsworth, Hinckley, Liverpool, Chippewa Lake, and Seville, wastewater treatment plants, the Wadsworth Municipal Airport, and the Medina County Solid Waste District Facility have been identified as critical facilities. These facilities have an essential function to the general public are necessary to preserve the welfare and quality of life in the County or fulfill essential public safety or emergency response functions that are vulnerable to flooding.

3.1.7 Probability

According to the flooding data from NCEI Storms Event Data Base, in the 22-year window from January 1, 1996, to December 31, 2018, there have been 39 events. Based on these figures, the probability of a future occurrence is 1.77, or 177% chance of happening in Medina County in any given year with an average of 1 to 2 events per year.

The probability of flooding in the floodplain is indicated on FEMA's Flood Insurance Rate Maps (FIRM) by assigned flood insurance risk zones. Section 2.0 of the Medina County Flood Damage Reductions Resolutions defines the FIRM zones. In short, an area inundated by a 100-year flood has a 1% chance of occurring annually. Areas located within the 500-year floodplains have a 0.2% of happening annually.



Map: Medina County Floodplains

3.2 Drought

3.2.1 Description

Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period, usually a season or more in length. It is a period of abnormally dry weather, which persists long enough to produce a serious hydrologic imbalance. The severity of the drought depends upon the degree of moisture deficiency, the duration, and the size of the affected area. There are four different ways a drought can be defined: meteorological, hydrologic, agricultural, and socio-economic.

Meteorological drought is defined by the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. Hydrological drought occurs when there is a persistently low discharge and volume of water in streams and reservoirs, which can last anywhere from one month to years. Agricultural drought is mainly measured by its impacts on crops. When the amount of moisture in the soil no longer meets the needs of one or multiple types of crops, their development is hindered. Socioeconomic drought associates the supply and demand for economic goods and services with elements of meteorological, hydrologic, and agricultural drought.

The impacts of droughts can be far-reaching. Droughts can impact one region or multiple regions or states in the U.S., resulting in widespread water and food shortages. Drought conditions impact both rural and urban areas, resulting in significant economic and social consequences. Drought conditions are affected by increased population demands upon water supplies, both individual and municipal, demands from agriculture crops, needs of livestock and human consumption, industrial needs, and leisure demands.

3.2.2 Location

Due to the widespread magnitude of this atmospheric hazard, an occurrence would impact the entire county.

3.2.3 Extent- How it's Measured

Droughts are measured using the Palmer Drought Severity Index (PDSI). It analyzes temperature and precipitation to estimate relative dryness over a period,

typically 12 months for monthly PDSI estimates, with values of -10 being dry and +10 being wet. Values under -3 represent severe to extreme drought.

3.2.4 Historical Narratives

Nine notable droughts have occurred during the 20th century in the United States. Damage estimates are not available for most; however, estimates indicate that the 1976-1977 droughts in the Great Plains, upper Midwest, and the far Western States caused direct losses of $10 to $15 billion. Droughts in Ohio usually occur during the summer, but they could occur in the winter if frozen ground prohibits recharge of groundwater, the absence of water for plant survival, or water supplies are depleted. Extreme temperatures or heat waves often accompany droughts in the summer. Widespread droughts are infrequent; however, brief, local droughts are more common. Since 1930, droughts in Ohio have occurred about every ten years, with a random variation in duration and severity.

According to the United States Geological Survey's National Water Summary 1988-1989, a short but severe drought occurred throughout the State in 1988. The average precipitation for the State from March-July of 1988 was the least on record; 0.85 inches of rain fell, which was 21 percent of the June average for the 105 years of record.

According to the NCEI Storm Events Database, Medina County had had five drought occurrences that resulted in crop loss since 1996 when information about droughts began to be recorded. During the August 1, 1996, drought, crops that typically mature during the month were seriously impacted and between 10% to 30% of crop yields were lost. The actual dollar amount of crop loss was unknown. The drought recorded on September 1, 1999, caused approximately $5 million in crop damages and losses. Overall, the amount of loss from the four droughts that occurred in 1999 totaled $200 million. Additionally, a USDA Secretarial disaster designation was issued on September 5, 2012, for all of Ohio's 88 counties due to agricultural losses resulting from drought during the 2012 crop year.

3.2.5 Vulnerability

Medina County in its entirety will continue to be threatened by drought. Areas not served by public water service could lose their well water supply. Significant impact may also occur to the municipalities and villages that utilize wells due to their lack of recharge. Possible areas of concern are City of Wadsworth, Seville Village, Westfield

Center, and Lodi Village. Medina County's overall vulnerability to this hazard is heightened due to its large agricultural industry, which is susceptible to drought. During severe droughts, agricultural crops do not mature, wildlife and livestock are undernourished, land values decrease, and unemployment tends to increase. Within Medina County, a drought can have serious impacts on the safety and economic wealth of the communities.

3.2.6 Probability

According to the drought data from NCEI Storms Event Data Base, in the 22-year window from January 1, 1996, to December 31, 2018, there have been five events. Based on these figures, the probability of a future occurrence is 0.22, or a 22% chance of occurring in Medina County in any given year with an average of less than one event every four years

3.3 Severe Winter Weather

3.3.1 Description

Severe winter weather is a term that is used to describe various forms of atmospheric phenomena, including ice storms, snow squalls, lake effect storms, and blizzards. Ice storms are defined by the National Severe Storms Laboratory (NSSL) as storms that produce an accumulation of .25" of ice or more on surfaces. Snow squalls are "brief, intense snow showers accompanied by strong, gusty winds." Lake effect storms occur when cold air travels over the warmer Great Lakes, causing warm moist air to rise and cool. Water vapor is released on the leeward side of the lake as rain or snow depending on the air temperature. Blizzards and winter storms originate as mid-latitude depressions or cyclonic weather systems. A blizzard occurs when sustained wind speeds are at or above 35 mph, when there is falling or blowing snow, and when visibility is less than ¼ mile. All three of these conditions must be present for at least 3 hours for a winter storm to be considered a blizzard. Winter storms may be accompanied by strong winds and reduced visibility creating blizzard-like conditions with blowing snow, low visibility, and dangerous wind chill. These storms typically produce precipitation in the form of snow, freezing rain, or sleet.

Strong winds, produced by winter storms or blizzards, can knock down trees, utility poles, and power lines. Also, heavy snow accumulation can do the same. Winter storms can adversely affect roadways, traffic conditions, utilities, and business activities. According to the NSSL, approximately 70% of ice or snow-related injuries occur in automobiles. Poor road conditions, limited visibility, and inexperience with driving through snow or ice are just some of the factors that contribute to vehicular accidents during severe winter weather. Many severe winter weather fatalities are caused by vehicular accidents, hypothermia, and individuals experiencing a heart attack while shoveling snow due to the rapid increase in blood pressure coupled with cold-induced vasoconstriction. Rapidly thawing snow can also cause or increase the risk of flooding.

3.3.2 Location

All municipalities in Medina County have an equal probability of experiencing a severe winter weather hazard.

3.3.3 Historical Narratives

According to NCEI's Storm Events Database, from January 1, 1996, to December 31, 2018, Medina County experienced 59 severe winter weather events, including: 7 extreme cold/wind chill, 11 heavy snow, 2 ice storms, 4 lake effect snow, 34 winter storms, and one winter weather event. The database reveals that these events have caused about $17,349,000 in property damages and multiple vehicular accidents.

During the 1977-78 winter season, the county experienced unprecedented levels of snowfall, which resulted in the cessation of most business and school activities. Schools were closed for days, and the National Guard was called in. This storm resulted in the deaths of 50 individuals in Ohio and over $100 million in structural damages. Other prominent winter storms include the Winter Freeze of '94, Blizzard of '93, Blizzard of '96, which received a Gubernatorial Declaration. Total losses from these storms were $40, $120, and $46.2 million respectively.

On December 7. 2006, lake effect snow produced up to 6.2 inches of snow in Brunswick. Numerous minor car accidents were reported that day, along with one fatal crash near Brunswick on Interstate 71.

Recently, on January 12, 2018, the county experienced a winter storm that caused up to $150,000 in property damages. Snowfall totals of 4 to 6 inches were common north of Interstate 76 with 3 to 5 inches further south. In Medina County, a peak snow total of 5.8 inches was measured in Lodi, and many accidents were reported.

The County's most expensive severe winter weather events occurred on December 22, 2004, and January 5, 2005, and each produced up to $4,200,000 in estimated property damages. In 2004, a record-setting winter storm that caused nearly as much damage as the Blizzard of January 1978 affected northern Ohio on December 22 and 23. Low pressure developed over eastern Texas early on the 22nd and then moved quickly northeast. The low eventually tracked across east Ohio during the morning hours of the 23 after dumping nearly two feet of snow on portions of Ohio. The snow began around daybreak on the 22nd and then intensified around midday. Heavy snow with visibilities of a quarter mile or less then persisted into the early morning hours of the 23 and snowfall rates ranged from one to two inches per hour. Gusts to 30 mph caused significant blowing and drifting and near blizzard conditions from Marion County northeastward into Erie and Huron Counties. Temperatures slightly increased during the early morning hours of the 23 as the low moved into southeast Ohio. This caused the snow to mix with and evolve into freezing rain.

The heaviest freezing rain fell along and west of Interstate 71 between Mansfield and Cleveland with over one-half inch of ice accumulation over much of this corridor. Snowfall totals ranged from 12 to 18 inches from Marion and Morrow Counties northeast to Erie, Lorain and Cuyahoga Counties. Within that area, there was a narrow band of even heavier snow with greater than 18 inches of accumulation from northern Morrow County across Richland County and into Ashland County. Officially, 23.0 inches of snow was measured at Mansfield Lahm Airport in Richland County establishing an unprecedented record snowfall. At Cleveland Hopkins International Airport in Cuyahoga County, a total of 15.5 inches of snow fell along with 0.58 inches of freezing rain. Hundreds of accidents were reported throughout northern Ohio due to the poor road conditions. Numerous power outages occurred due to the freezing rain, most of which occurred in southern portions of Ashland and Richland Counties where some areas were without power for several days. The weight of the snow damaged the roofs of dozens of homes and buildings, several of which had complete roof failures. Damage and cleanup costs for this storm were historic with only the Blizzard of 1978 having a more significant financial impact.

Soon after the 2004 winter storm, an ice storm occurred in the county on January 5, 2005, resulting in many reported power outages in the county. Significant ice accumulations occurred over most of the area downing thousands of trees, causing widespread power outages and making travel nearly impossible. Low pressure over Missouri rushed northeast on January 5th. This low ran across eastern Ohio early on January 6th and was responsible for producing a prolonged period of freezing rain. The hardest hit locations were west of Interstate 71 along the U.S. Route 30 corridor. Ice accumulations of greater than three-quarters of an inch were reported from Hancock County eastward across Wyandot, Crawford, Richland and Ashland Counties. Northern sections of Wyandot and Marion Counties along with the southern halves of Seneca and Huron County were also hard hit. Up to 80 percent of electric customers in these nine counties lost service during the storm, some for as much as ten days. In cities like Mansfield, Bucyrus, and Findlay, nearly every property in some neighborhoods sustained tree damage. To the north and south of these areas, ice accumulations ranged from one quarter to three-quarters of an inch. Ice accumulation at the Davis-Besse Nuclear Power Plant in Ottawa County damaged the facility enough to force it to be temporarily shut down. In addition to damage caused by fallen trees and limbs, basement flooding occurred in many homes since sump pumps could not work during the power outages. Clean up, and repair costs for this storm were among the highest ever recorded for a natural disaster in Ohio. Damage in many counties topped $1 million with a couple of counties exceeding $10 million in losses. In Richland County alone, cleanup cost accrued by local governments totaled nearly $6 million.

Estimates indicate that as many as one million people lost power during this storm. Several power companies reported the largest number of outages in their histories.

3.3.4 Vulnerability

As illustrated in the historical narratives, road transportation is significantly impacted by severe winter weather. The county's 1,105.54 miles of township, county, state, interstate, and federal highways are exposed to this hazard. This hazard can affect the entire county and vulnerability among residents is proportional to population density. Increasing residential and commercial development in Medina County subsequently increases countywide dependence on transportation and utility infrastructure. Therefore, with rising development, the county becomes more vulnerability to severe winter weather events.

According to NCEI's Storm Events Database, from January 1, 1996, to December 31, 2018, there has been $17,349,000 property damages reported to the National Weather Service. Based on this, the average reported property damage is $294,050.84 per event. Also, the average reported property damage is $788,590.90 per year.

3.3.5 Probability

According to the severe winter weather data from NCEI Storms Event Data Base, in the 22-year window from January 1, 1996, to December 31, 2018, there have been 59 events. Based on these figures, the probability of a future occurrence is 2.68, or a 268% chance of occurrence in Medina County in any given year with an average of 2 to 3 events per year.

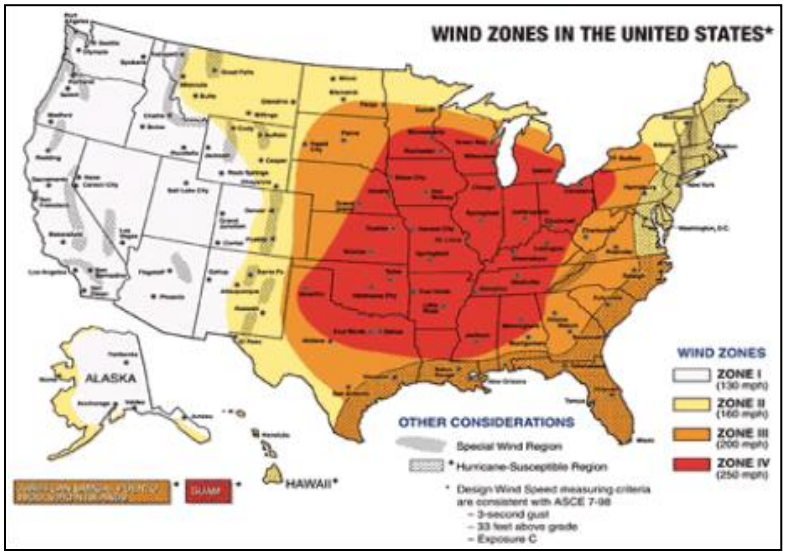
From January 1, 1996, to December 31, 2018, severe winter weather in Medina County occurs most frequently during December (12 events), January (18 events), February (13 events), March (14 events), and April (2 events). Overall, Medina County has the highest probability of experiencing a severe winter weather event during January. The severity and frequency of severe winter weather are expected to remain constant.

3.4 Tornadoes

3.4.1 Description

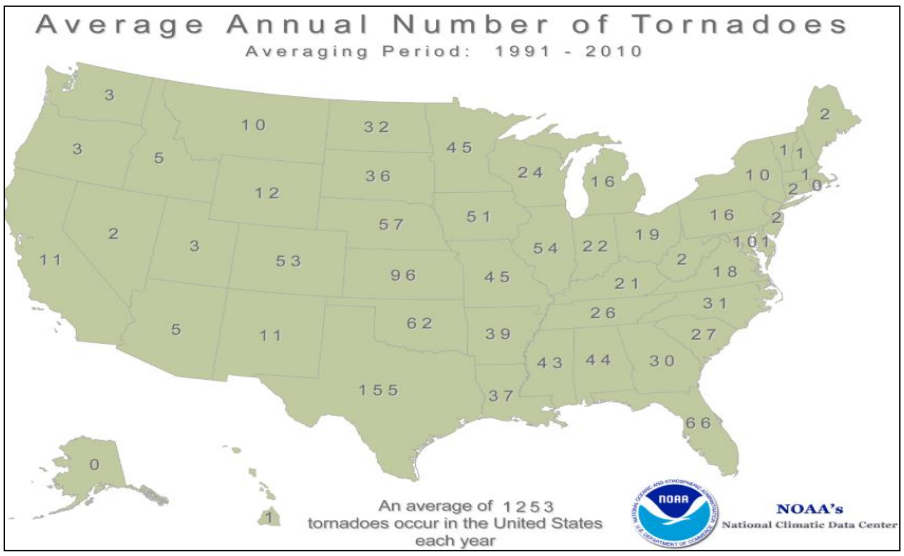
A tornado is a rapidly rotating column of air extending groundward from a cumulonimbus cloud. A tornado typically moves at speeds between 30 and 125 mph and can generate winds over 200 mph. The strong damaging winds generated from tornadoes can destroy homes, powerlines, and structures, uproot trees, and cause debris, as well as vehicles, to become airborne. The greatest safety risks for Medina County residents during a tornado are structural collapse and being struck by airborne debris. Tornadoes can occur anywhere under the right conditions, and they are most likely to occur during summer and spring months, but they can develop at any time during the year. Often, tornadoes develop from single-cell, multicell cluster, squall line, and supercell thunderstorms when warm, moist, unstable air interacts with a cold front. Tornadoes generally occur during spring and summer usually during the late afternoon and early evening. Their lifespan is usually no longer than 30 minutes. However, violent EF 4 or EF5 tornadoes can stay on the ground for over an hour. They have been known to occur in every state in the United States and every continent on the Earth, any day of the year, and at any hour. The potential for losses in life and property damage is high, coupled with an ability to overwhelm most response capabilities.

According to the following map provided by FEMA, all of Ohio falls within Wind Zone Area IV, with speeds of up to 250 mph.



Map: Wind Zones in the US – Source FEMA

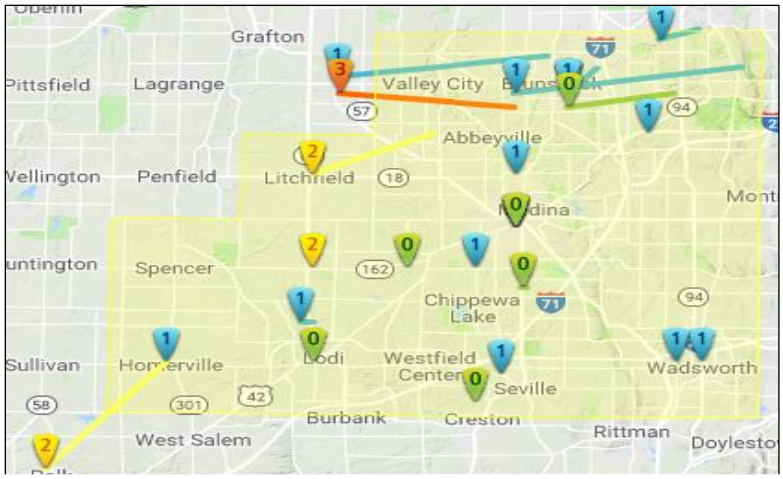
There are ten times more tornadoes in the United States than any other nation in the world. Ohio has 1-5 tornadoes per 1,000 square miles and approximately 19 tornadoes per year according to NOAA. Ohio is positioned geographically on the eastern edge of what has come to be known as "tornado alley."



Map: Average Annual Number of Tornadoes – Source NOAA

3.4.2 Location

Tornadoes can occur anywhere in Medina County, and all communities in the County have an equal risk of experiencing a tornado. Ohio experiences an average of 19 tornadoes each year. The following map from Tornado History Project shows some of the locations of touchdowns of tornadoes in Medina County from 1950 to 2016.



Map: Tornado Touchdown Locations in Medina County - Source: Tornado History Project

3.4.3 Extent- How it's Measured

On February 1, 2007, the Fujita scale was replaced by the Enhanced Fujita scale to improve tornado intensity measurements and damage estimations. Tornadoes are measured based on the amount of damage that they cause to infrastructure property, and the environment. The EF scale consists of wind speed estimates, based on 3-second gusts, and the amount of damage that is expected to occur.

EF Rating	Wind Speeds	Expected Damage	
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.	
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.	
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.	
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.	
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.	
EF-5	> 200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.	

Image: Enhanced Fujita Scale

3.4.4 Historical Narratives

According to the National Centers for Environmental Information's Storm Events Database, Medina County has experienced 25 tornadoes from January 1, 1950, to December 31, 2018, ranging in intensity from EF0 to EF3 on the Enhanced Fujita Scale. These tornadoes caused approximately $7,488,000 in property damages (unadjusted for inflation). The frequency of tornado occurrence makes Medina County the 3rd most likely county to experience a tornado in Ohio. There have been two reported fatalities that can be attributed to tornadoes. Three presidential declarations have been issued for Medina County due to tornadoes in 1965, 1992, and 2002. The 1992 declaration was a dual, for flood & tornado.

An F3 tornado that developed on July 12, 1992, injured four individuals and resulted in $2,500,000 in property damages. On November 10, 2002, an F2 tornado caused approximately $750,000 in property damages in Medina County. This tornado traveled through Ashland County to Medina County and dissipated about half a mile from the town of Homerville, causing minor damage to many homes and an auto repair shop. One two-story home along Williams Road lost its roof and most of the second floor. Several other homes and buildings in this area sustained minor damage. Many cars were damaged, and dozens of trees downed. The tornado was on the ground in Medina County for approximately four miles and had a damage path no more than 50 yards in width. The National Weather Service confirmed that 16 tornadoes occurred in Ohio that evening and 22 counties reported tornado-related damages.

An F2 tornado originated along New London Eastern Road near Pawnee in southwestern Chatham Township on May 21, 2001. The tornado traveled northeast for approximately 7.5 miles before dissipating along State Route 83, about three miles north of Chatham. It had an intermittent damage path that was approximately 250 feet in width. A new home was destroyed near the location of the initial touchdown. A truck nearby was thrown 500 feet by the tornado. A church and parsonage were damaged along Old Mill Road. The tornado then struck an alpaca farm along State Route 83 north of Chatham and destroyed three barns and damaged several other outbuildings. Several garages and a home were damaged elsewhere along the damage path. Over three hundred trees were knocked down and two cars destroyed.

3.4.5 Vulnerability

Tornadoes can cause widespread property damage, destroy infrastructure, and threaten life safety in Medina County. All municipalities and areas within the County are equally susceptible to the hazard's occurrence. However, a tornado could have a stronger impact on the more developed and populated areas in Medina County versus the undeveloped areas. Technological advances in mass notification systems and forecasting increase safety officials' ability to warn residents to seek shelter. Additionally, public safety education and promoting tornado mitigative construction techniques can significantly reduce injuries, deaths, and property damages.

The 25 tornadoes recorded in the NCEI Storms Event Data Base from January 1, 1950, to December 31, 2018, indicate $7,488,000 in reported property damages (unadjusted for inflation). Based on this, the average cost per event is $299,250.00, and $109,529.41 per year.

3.4.6 Probability

According to the tornado data from NCEI Storms Event Data Base, in the 68-year window from January 1, 1950, to December 31, 2018, there have been 25 tornado events. Based on these figures, the probability of a future occurrence is 0.36, or a 36% chance of occurrence in Medina County in any given year with an average slightly over one event every three years.

The tornado occurrence frequency in the county remains constant. So far, the majority of the county's tornadoes have occurred during July and August.

Medina County's Tornado History from 1950 to 2018												
Month of Occurrence												
Number of Events	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	0	0	1	1	5	3	6	6	2	0	1	0

Ohio's peak tornado season runs from April through July, with most tornadoes occurring between 2 to 10 p.m. during June. Ohio Committee for Severe Weather Awareness's chart shows that tornadoes can develop at any time throughout the year.

Ohio Tornado Statistics 1940 - 2017

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1940-49	2	0	5	5	10	6	2	5	3	0	0	0	**38**
1950-59	1	4	7	8	12	12	12	5	1	2	1	0	**65**
1960-69	0	1	5	37	26	20	16	12	4	1	8	0	**130**
1970-79	2	4	3	26	28	50	25	18	14	7	1	2	**180**
1980-89	1	0	17	19	32	50	16	7	1	2	2	0	**147**
1990-99	1	5	1	16	21	48	77	17	5	3	3	1	**198**
2000-10	0	0	3	10	45	32	19	22	15	20	20	0	**187**
2011-15	0	3	9	20	20	19	14	5	6	3	7	2	**108**
2016	0	0	5	0	0	3	1	15	0	0	0	0	**24**
2017	0	0	8	2	7	0	3	1	1	0	17	0	**39**
Totals	**8**	**17**	**63**	**143**	**201**	**240**	**185**	**107**	**50**	**38**	**59**	**5**	**1,116**

Ohio Tornado Statistics – Source Ohio Committee for Severe Weather Awareness

3.5 Severe Storms

3.5.1 Description

The National Weather Service estimates that over 100,000 thunderstorms occur each year on the U.S. mainland; approximately 10 percent of these are classified as "severe." According to the National Weather Service (NWS), to be classified as severe, a thunderstorm must possess at least one of the flowing characteristics: sustained winds of 58 mph or more, production of a tornado, and hail with a diameter of at least 1in. in diameter. When thunderstorms have sustained winds of at least 40 mph and hail with a diameter of at least half an inch, then they are "approaching severe." The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Despite their small size, all thunderstorms are dangerous. Every thunderstorm produces lightning, which kills more people each year than tornadoes. Heavy rain from thunderstorms can lead to flash flooding. Strong winds, hail, and tornadoes are also dangers associated with some thunderstorms.

3.5.2 Location

Like most atmospheric hazards, severe thunderstorms have an equal probability of occurring anywhere within Medina County.

3.5.3 Extent- How it's Measured

The National Weather Service classifies a thunderstorm as "severe" if it produces hail that is at least three-quarters of an inch in diameter, has winds of 58 miles per hour or higher, or produces a tornado. Thunderstorm and lightning events are generated by atmospheric imbalance and turbulence due to a combination of unstable warm air rising rapidly into the atmosphere and enough moisture to form clouds and rain.

3.5.4 Historical Narratives

From Jan 1, 1985, to December 31, 2018, there have been 383 thunderstorm, hail, strong wind, and high wind events in Medina County. This data from NCEI Storm Events Database also shows severe storms resulted in the deaths of three residents and caused seven residents to sustain injuries. Additionally, severe storms cost the county up to $18,480 ,000.00 in property damages and $663,000.00 in crop damages. While most of these events caused little to no damage, some severe thunderstorms caused over a million dollars' worth of damage.

A series of macrobursts began on the west side of Chippewa Lake and moved east to Wadsworth resulting in a nearly continuous line of damage on July 9, 1999. Two homes were destroyed, 16 others suffered major damage, and 40 homes suffered minor damage. Of the two homes that were destroyed, one was cut in half by a falling tree, and the other was blown off its foundation. Additionally, the storm broke windows and damaged rain gutters in nearly 200 homes. Some baseball and softball dugouts were destroyed, and hundreds of trees were downed or uprooted. Falling trees also caused moderate to severe damage to 10 vehicles, a boat, and 30 homes in the County. Dozens of trees were downed in Wadsworth, with 20 down at one house alone, from the 60 to 80 mph winds. Furthermore, a semi-truck was blown over on Interstate 76, approximately 5 miles west of Wadsworth. A homes siding was town off Lafayette Township. Overall, this storm caused about $1,100,000 in property damages.

High winds associated with the remnants of Hurricane Ike began during the early evening hours of September 14, 2008. Peak wind gusts were estimated to be around 60 mph with the strongest winds occurring between 6 and 8 pm. In Medina County, thousands of trees were downed, many homes and structures experienced varying levels of damages, and falling trees and tree limbs damaged vehicles. Furthermore, many residents experienced power outages due to damaged utility poles. Many roads had to be closed due to the downed trees and power lines. Some of the schools in the county were forced to close on Monday the 15th because of the power outages. Ultimately, this high wind event produced $10 million in property damages and $400,000 in crop damages.

On November 5, 2017, a thunderstorm downburst with winds speeds of up to 85 mph caused extensive damage across the northern end of Medina County. It began west of Valley City along the county line and continued east across the Brunswick and Hinckley areas. The damage was mostly concentrated in Liverpool township, where significant tree and utility pole damage occurred. Hundreds of trees were also downed in Brunswick and Hinckley. In Brunswick alone, there were 300 reports of damage with four homes sustaining structural damage and a fifth destroyed from a complete roof collapse caused by a fallen tree. Many roads, including county and state routes, were blocked by fallen trees and power lines. Several school districts in the county were closed on November 6 because of the power outages. At the peak of the storm over 10,000 people were without power in Medina County. This storm caused $1,100,000 in property damages.

3.5.5 Vulnerability

Every area in the county is potentially at risk during a severe storm, due to the possibility that the storm may produce lightning, flooding, or tornadoes. Since 1981, severe storms were involved in 23 Major Disaster Declarations for the State of Ohio. These storms may produce other natural hazards previously covered in this analysis.

If the 383 events from Jan 1, 1985, to December 31, 2018 show damages reported to the National Weather Service totaling $ 18,480, 000 in property damages and $663,000 in crop damages, then the annual cost is $580,060.60, and the cost per incident is $49,981.72.

3.5.6 Probability

According to the severe storm data from NCEI Storms Event Data Base, in the 33-year window from January 1, 1985, to December 31, 2018, there have been 383 events. Based on these figures, the probability of a future occurrence is 11.60, or 1160% chance of occurrence in Medina County in any given year with an average of more than 11 events per year.

The frequency of severe storms is expected to remain constant. However, due to the continual increase in population and the use of public utilities for light, heat, and power, the disruption by these storms is more significant today than in the past. Severe storms can occur throughout the year, but they are most likely to occur during June in Medina County.

Medina County's Severe Storms History from March 28, 1985, to January 12, 2018												
Month of Occurrence												
Number of Events	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	5	8	13	23	60	82	78	61	20	11	11	10

3.6 Landslides

3.6.1 Description

Landslides can destroy homes, businesses, and highways resulting in millions of dollars in damage to a community. While there have been many incidences of this phenomenon in the southern portion of the state, Medina County has remained relatively untouched. Landslides occur when soils, rocks, debris, etc. are dislodged and travel downslope. There are three major types of landslides: rotational slump, earth flow, and rock fall. A rotational slump occurs when a mass of weak rock or sediment moves as a block unit along a curved slip plane. These slumps are the largest type of landslide in Ohio, while earth flows are the most common. An earthflow occurs when sediment begins to flow downslope due to oversaturation, which increases pore-water pressure and dislodges protons sediment. Although earthflows typically move slowly, they can rapidly accelerate downslope if there are higher saturation levels. A rockfall is an extremely rapid downslope of earth materials that result along stress fractures caused by weathering and erosion. Rocks, vegetation, and other sediments can be dislodged from a cliff or steep hillside, often from water entering the fractures, freezing, and then thawing in the spring, and travel downslope in free fall and a rolling, bounding, or sliding manner. These rockfalls contain massive beds of sandstone or limestone.

Landslides do not occur at random; they require certain geologic conditions. Any of these conditions alone or in combination with another can serve as an alert to potential landslide problems:

- Steep slopes, cliffs, or bluffs
- Jointed rocks (fractures)
- Fine-grained, permeable rock or sediment
- Clay or shale units subject to lubrication
- Large amounts of water

While many of these conditions occur in Medina County, it is important to remember that a triggering mechanism is necessary to initiate the downslope movement. Things that can trigger landslides include:

- Vibrations (earthquakes)
- Over-steepened Slopes
- Increased Weight on a Slope (heavy rain)

- Removal of Vegetation (fire)

3.6.2 Location

No landslides have been reported in Medina County so far.

3.6.3 Extent – How it's Measured

Extensometers, inclinometers, and global positioning systems can be utilized to measure landslides, determine their area of impact, and measure the distance that the landmass traveled.

3.6.4 Historical Narrative

According to the ODNR geology department, no incidents of landslides have been reported in Medina County. They are rare in our area due to the lack of steep slopes and lack of geologic units prone to failure.

3.6.5 Vulnerability

Although landslides have not been a previous concern in Medina County, there is a potential for additional development in steep riparian corridors. These developments need to avoid certain practices, such as excavating the base of the slope, disrupting natural drainage patterns, and allowing water or other types of drainage to discharge onto a slope.

3.6.6 Probability

With a lack of occurrences, there is no available data to calculate a probability. The probability of a landslide occurring in Medina County in the near future is likely to be extremely low.

3.7 Land Subsidence

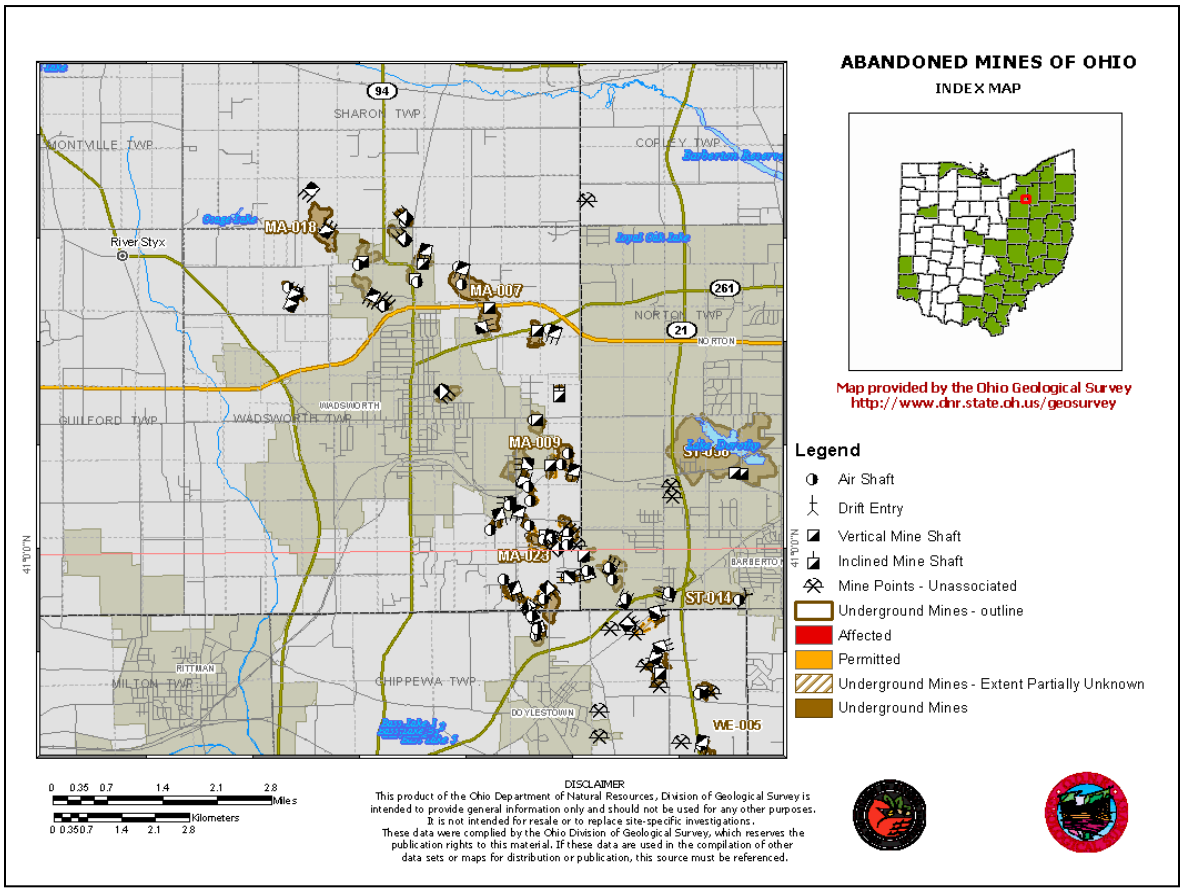
3.7.1 Description

Land subsidence is the loss of surface elevation due to the removal or erosion of subsurface support. The primary cause of most subsidence is human activity: underground mining of coal, groundwater or petroleum removal, and drainage of

underground soils. According to the National Research Council, land subsidence affects parts of at least 45 states, and more than 17,000 square miles of land has been lowered. The occurrence of land subsidence can be slow and continuous over time or abrupt and quick. There is no specific procedure for determining the probability or frequency of land subsidence. However, knowledge of existing underground activity will aid in awareness of potential trouble spots.

3.7.2 Location

In Ohio, the leading causes of land subsidence are abandoned underground mines and karst, which occurs when rocks such as limestone are eroded or dissolved by water. The eastern portion of Ohio is rich in oil, gas, and coal deposits. In the past, oil and gas drilling occurred throughout the county and coal mining operations occurred in the southeast portion of the county and the State of Ohio. The extent and location of these areas are relatively unknown as the mining occurred in the late 1800s however, a general location map of known underground mines from the ODNR is as follows.



Map: Known Abandoned Underground Mines – Source: ODNR

3.7.3 Extent- How it's Measured

Land subsidence is measured through the uses of interferometric synthetic aperture radar (InSAR), continuous GPS (CGPS) measurements, campaign global positioning system (GPS) surveying, and spirit-leveling surveying.

3.7.4 Historical Narrative

Due to the lack of steep slopes and geological units prone to failure, land subsidence is extremely uncommon in Medina County. However, the City of Wadsworth, Wadsworth Township, and Guilford Township have had significant areas of coal mining, which increases the possibility of a mine subsidence hazard to occur. Recently, in July 2017, homeowners had to evacuate after land subsidence occurred in Wadsworth, which caused four condos at Cornerstone Condominiums in Salwa Lane and a home on Reimer Road to experience severe foundation damage. This subsidence is believed to be caused by the collapse of a 120-year-old coal mine.

3.7.5 Vulnerability

Land subsidence could affect many residents and damage multiple structures in the previously mentioned high-risk locations in the county. However, land subsidence events are more likely to occur in southeast Ohio and along the Lake Erie shoreline, than anywhere in Medina County.

3.7.6 Probability

Lack of data affects the reliability of a mine subsidence probability calculations. Further, the extents of some mine records are unknown. If the ODNR Ohio Mine Locator Interactive Map shows the average time since abandonment of an underground mine on record in Medina County is about 110 years, and there has been one occurrence of mine subsidence, then there is a .009 probability of future occurrence, or a 0.9% chance of occurrence in the affected areas of Medina County in any given year.

Although a mine subsidence event occurred in Wadsworth, the overall probability of all types of land subsidence in Medina County is low. However, the probability of mine subsidence could increase as development over abandoned underground mines increases.

3.8 Earthquakes

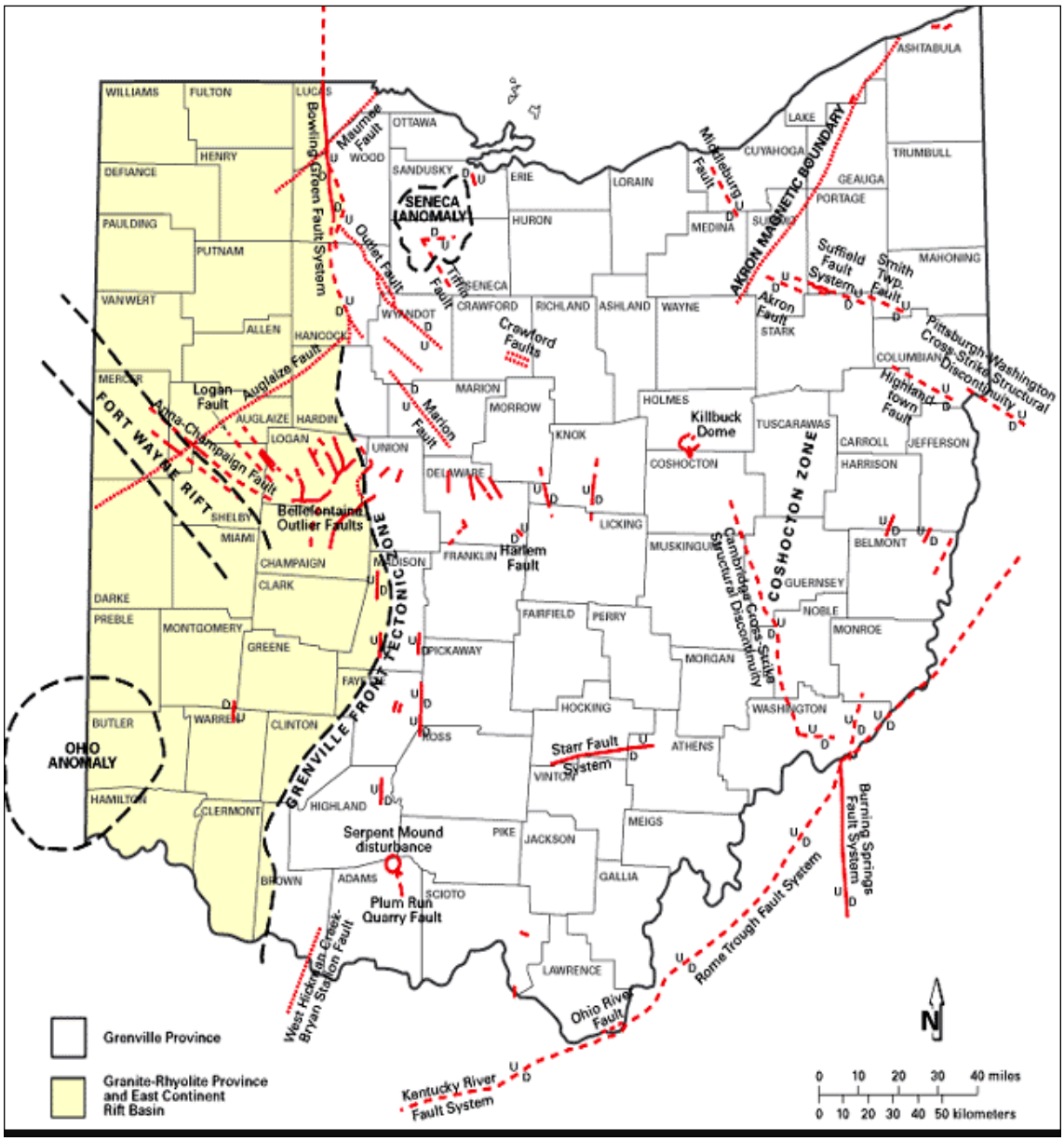
3.8.1 Description

More than 100,000 earthquakes with magnitudes of 3 or greater occur worldwide, and 98% of these are at plate boundaries. Earthquakes occur along faults, areas of rock displacement in the Earth's crust. Earthquakes can regularly occur in communities that are located along faults. When the Earth's plates slip due to a buildup of stress, this causes a release of energy in the form of destructive seismic waves. These body and surface waves travel through the crust from the earthquake's epicenter, resulting in shaking, fracturing, ground failure, landslides, and permanent deformations of the crust.

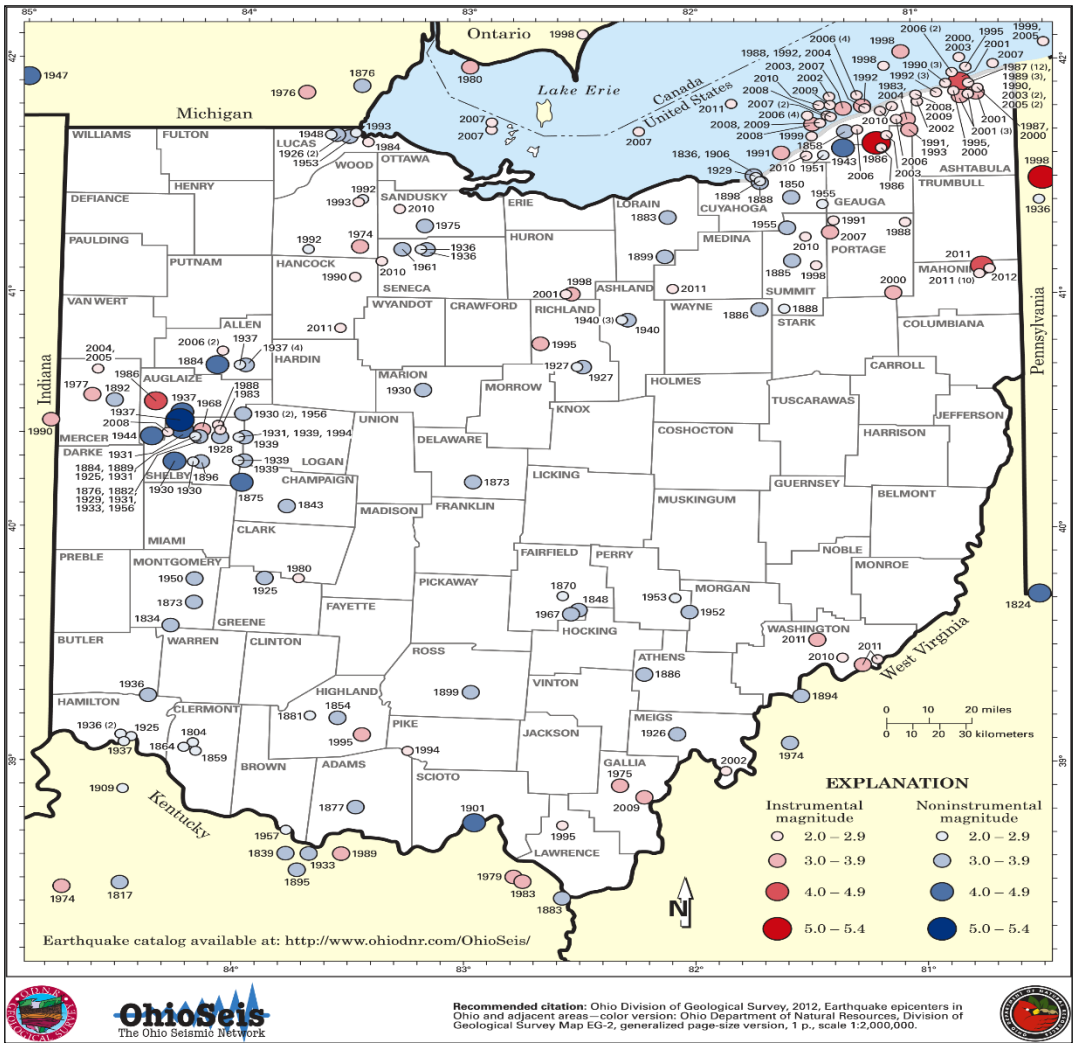
3.8.2 Location

Seismic activity has been felt in Medina County, but no damages or injuries were reported. The following Ohio Department of Natural Resources maps indicate the ridges and basins where earthquakes are most likely to occur, and where seismic activity has been recorded in the upper northeast region of Ohio.

Map : Deep Structures in Ohio – Source ODNR



Map: Earthquake Epicenters in Ohio and Adjacent Areas - Source: Ohio Division of Geological Survey



OhioSeis
The Ohio Seismic Network

Recommended citation: Ohio Division of Geological Survey, 2012, Earthquake epicenters in Ohio and adjacent areas—color version: Ohio Department of Natural Resources, Division of Geological Survey Map EG-2, generalized page-size version, 1 p., scale 1:2,000,000.

3.8.3 Extent – How it's Measured

Earthquakes are measured by the Richter Magnitude Scale, which is a logarithmic scale that measures the amplitude of seismic waves, and the Modified Mercalli Scale, which measured intensity or how much shaking is perceived by individuals. Additionally, the horizontal and vertical acceleration of seismic waves is measured by the "g force" which is the acceleration of gravity 9.8 (m/s2) or the strength of the gravitational field (N/kg). The Moment Magnitude Scale, which is more accurate than the Richter scale for earthquakes with a magnitude over 5.0, can also be used to measure amplitude.

3.8.4 Historical Narratives

ODNR's Division of Geological Survey online Catalog of Past Ohio Quakes shows over about 200 earthquakes with a magnitude over 2.0 have been recorded in Ohio since 1776, but only 15 of these earthquakes resulted in any measurable damages and minor injuries. Research for this plan indicates that there have been no recorded fatalities. Earthquakes have also been recorded in the Lake County area, and there have also been some occurrences in Southeast Ohio.

In Ohio, the most active area with at least 40 earthquakes since 1875 is the Anna seismogenic zone centered in Shelby County, which is in western Ohio. The state experienced a 5.4 magnitude earthquake on the Richter scale in the Village of Anna, on March 9, 1937. This earthquake, the strongest earthquake the state has ever experienced, was felt in some areas in Canada and eight other states. It mainly resulted in structural damages to wells, chimneys, and building foundations. The Anna High School building had to be condemned.

Ohio is on the periphery of the New Madrid Seismic Zone, an area in Missouri and adjacent states that were the site of the largest earthquake sequence to occur in historical time in the United States. Three major earthquakes occurred at the New Madrid fault in 1811 and 1812. Their large magnitudes, estimated to be around 7.0 to 8.0 at their epicenters, allowed seismic waves to travel as far as Cincinnati, Ohio and cause minor structural damage, especially to chimneys.

To date, Medina County has experienced one 3.0 magnitude earthquake, with its epicenter in the county, in Homer Township on June 5, 2011. Its epicenter was located

between Simcox Rd. and Pawnee Road at 41.030°N 82.080°W. This earthquake did not cause any structural damage or fatalities, but mild shaking was felt.

3.8.5 Vulnerability

Medina County does fall within the area predicted to be affected by disturbances along the New Madrid Fault, which runs from Arkansas to Indiana. Additionally, most of Ohio's active faults are blind faults that do not create any geological indications that a fault is present in the Earth's crust and they are located beneath the surface. These factors make them difficult to identify, map, and study without the use of expensive equipment. Collateral damage from earthquakes could be extensive and could cascade to hazardous material spills, landslides, subsidence, dam failures, fire, groundwater contamination, pipeline breaks, infrastructure disruptions, epidemics, and floods.
To calculate Medina County's earthquake vulnerability, a scenario was modeled using the Federal Emergency Management Agency's Hazus program. The scenario was a 5.0 magnitude earthquake with the epicenter in the approximate the center of the county. Among the results, an estimate of 11,541 buildings would moderately damage, the majority of which would be residential. An estimated 686 buildings would be damaged beyond repair. Building-related losses were estimated to cost $1,994,000,000, 15% of which would be related to business interruption, and 59% of which would be from loss sustained by residential occupancies. The entire report is included in Appendix B: Hazus-HM: Earthquake Global Risk Report – Medina.

3.8.6 Probability

The Catalog of Past Ohio Quakes shows historical records of Ohio earthquakes of a 2.0 or greater magnitude as early as 1776. If the County was established in 1818, and there is one earthquake on record, then the probability of occurrence is 0.005, or 0.5% chance of occurrence in Medina County in any given year with an average of 1 occurring every 200 years.

3.9 Dam Failure

3.9.1 Description

A dam is defined as a barrier constructed across a watercourse for storage, control, or diversion of water. They are typically constructed of earth, rock, and concrete of mine tailings. A dam failure is a collapse, breach, or another failure due to

downstream flooding. Two factors that influence the severity of full or partial dam failure are the amount of water impounded; and the density, type, and value of development and infrastructure located downstream.

Dam failures can result from many things including:

- Prolonged periods of rainfall and flooding, which cause most failures;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross-section of the dam and abutments, or maintain gates, valves, and other operational components.

3.9.2 Extent – How it's Measured

In Ohio, dams have been divided into four classes (I, II, III, and IV) defined by the Ohio Administrative Code, Section 1501:21-13-01. The classification system was modeled after the Federal Guidelines for Dam Safety established in 1979. The following parameters are the governing criteria for the classification:

1. Dam height - defined as the vertical dimension as measured from the natural streambed at the downstream toe of a dam to the low point along the top of the dam.
2. Storage volume - defined as the total volume impounded when the pool level is at the top of the dam immediately before it is overtopped.
3. Potential downstream hazard - defined as the resultant downstream damage should the dam fail, including probable future development.

Height of Dam

Class I - greater than 60 feet
Class II- greater than 40 feet
Class III - greater than 25 feet
Class IV - less than or equal to 25 feet

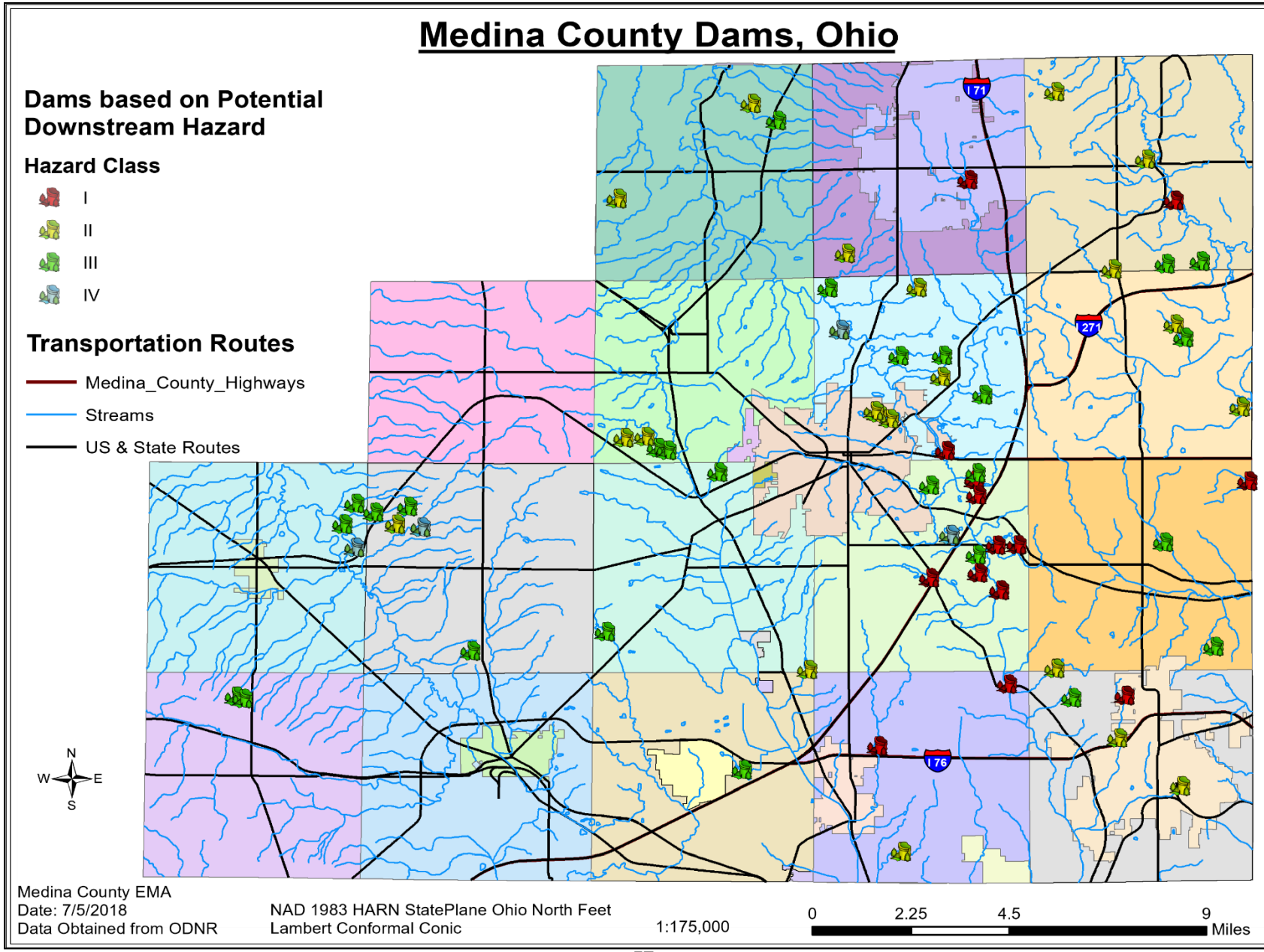
Storage Volume

Class I - greater than 5000 acre-feet
Class II - greater than 500 acre-feet
Class III - greater than 50 acre-feet
Class IV - less than or equal to 50 acre-feet
(1acre-foot = about 326,000 gallons)

Hazard Classes based on Potential Downstream Hazard

Class I - Probable loss of life, a serious hazard to health, structural damage to high-value property (i.e., homes, industries, major public utilities).
Class II - Flood water damage to homes, businesses, industrial structures (no loss of life envisioned), damage to state and interstate highways, railroads, only access to residential areas.
Class III - Damage to low-value non-residential structures, local roads, agricultural crops, and livestock.
Class IV - Losses restricted mainly to the dam.

Medina County Dams, Ohio



3.9.3 Location

According to the Ohio Department of Natural Resources, Medina County has a total of 129 dams. There are 14 Class I dams in Medina County. The following locations have one Class I dam in their area: City of Brunswick, City of Wadsworth, Guilford Township, Hinckley Township, Medina Township, and Sharon Township. Montville Township has 7 Class I dams. Additionally, there are 21 class II dams, 30 class III, and 64 Class IV dams in Medina County.

Medina County has many dams that are exempt and unclassified for ODNR reporting. To be exempt, the dam must be 6 feet or less in height regardless of total storage, less than 10 feet in height with not more than 50acre-feet of storage, and not have more than 15acre-feet of total storage regardless of height (ODNR Division of Water Fact Sheet). ODNR Division of Water may change the classification of any dam by ORC Section 1521.062 and OAC Rule 1501:21-13-01 (C).

3.9.4 Historical Narratives

Open source information and Medina County EMA records show in 1999, a near dam failure occurred in Hinkley at Pischieri Pond Dam, a Class II dam, after it experienced a breach due to a void in the dam. No property loss, injuries, or fatalities resulted from this incident. The Class I dam, Rustic Hills Lake Dam in Montville failed in 2003 after it's emergency spillway failed, resulting in overtopping, which eroded a significant portion of the downstream slope. A dam failure also occurred in 2011 at the Class 3 Osage Lake Dam in Sharon Township after an overflow pipe rusted, causing erosion along the spillway.

3.9.5 Vulnerability

The areas that would be the most affected are those downstream for approximately ½ mile from the Class I and Class II dams. Class III & Class IV dams may produce minor damage, but do not pose a severe threat to the safety of residents.

The following table lists the location of Class I dams in Medina County and their emergency action plan status. Some dams listed as “No Plan” may have no plan or a plan that does not meet current planning requirements. ICODS means Interagency Committee on Dam Safety, indicating the plan meets those guidelines.

Medina County Class I Dams and Plan Status						
NAME	**Class**	**Jurisdiction**	**Longitude**	**Latitude**	**Stream**	**Dam Plan Status**
BLUE HERON LAKE NO. 1 DAM	I	MONTVILLE	47.43333333	81.79055556	TRIBUTARY TO WEST BRANCH ROCKY RIVER	ICODS
BLUE HERON LAKE NO. 5 DAM	I	MONTVILLE	47.98333333	81.79972222	TRIBUTARY TO WEST BRANCH ROCKY RIVER	ICODS
BRYE LAKE DAM	I	WADSWORTH	44.63333333	81.74388889	Unnamed tributary to Holmes Brook	No Plan
CHIPPEWA CREEK STRUCTURE III-A	I	GUILFORD	51.13333333	81.85222222	HUBBARD CREEK	ICODS
CHIPPEWA CREEK STRUCTURE VIII-C	I	GUILFORD	47.71666667	81.79527778	RIVER STYX	ICODS
HINCKLEY LAKE DAM	I	HINCKLEY	43.21666667	81.72027778	EAST BRANCH ROCKY RIVER	ICODS
LAKE BRUNSWICK DAM	I	CITY OF BRUNSWICK	48.65	81.81083333	PLUM CREEK	ICODS
LAKE MEDINA DAM	I	MEDINA	49.3	81.82166667	WEST BRANCH ROCKY RIVER - OFFSTREAM	No Plan
RAVENS WOOD LAKE DAM	I	MONTVILLE	49.73333333	81.82888889	TRIBUTARY TO WEST BRANCH ROCKY RIVER	ICODS
RIDGEWOOD LAKE DAM	I	SHARON	41.35	81.68916667	YELLOW CREEK	No Plan
RUSTIC HILLS LAKE DAM	I	MONTVILLE	48.53333333	81.80888889	TRIBUTARY TO WEST BRANCH ROCKY RIVER	ICODS
SALERNO LAKE DAM	I	MONTVILLE	47.9	81.79833333	TRIBUTARY TO WEST BRANCH ROCKY RIVER	No Plan
SEVEN SPRINGS LAKE DAM	I	MONTVILLE	48.48333333	81.80805556	TRIBUTARY TO WEST BRANCH ROCKY RIVER	ICODS
SIEDEL LAKE DAM	I	MONTVILLE	48.46666667	81.80777778	TRIBUTARY TO WEST BRANCH ROCKY RIVER	ICODS

3.9.6 Probability

If there are three recorded dam failures between 1999-2018, 1999 being the year of the first on record, then there is the probability of a future occurrence is 0.15, or 15% chance of occurrence in Medina County in any given year. To the extent of that statement, dams have existed much longer than 1999 without known incident. Additionally, dams are regulated and inspected. Probability is lessened with continued maintenance and inspection programs.

MUNICIPALITY	**CLASS I**	**CLASS II**	**CLASS III**	**CLASS IV**	**TOTAL**
Brunswick City	1	1	0	1	**3**
Medina City	0	3	0	4	**7**
Wadsworth City	1	1	0	2	**4**
Brunswick Hills Twp.	0	1	0	2	**3**
Chatham Twp.	0	1	4	3	**8**
Granger Twp.	0	1	1	2	**4**
Guilford Twp.	2	2	0	2	**6**
Harrisville Twp.	0	0	0	4	**4**
Hinckley Twp.	1	3	2	6	**12**
Homer Twp.	0	0	2	2	**4**
Lafayette Twp.	0	1	2	4	**7**
Litchfield Twp.	0	0	0	6	**6**
Liverpool Twp.	0	2	1	2	**5**
Medina Twp.	1	2	5	5	**13**
Montville Twp.	7	0	4	3	**14**
Sharon Twp.	1	1	2	1	**5**
Spencer Twp.	0	0	3	4	**7**
Wadsworth Twp.	0	1	1	1	**3**
Westfield Twp.	0	0	1	7	**8**
York Twp.	0	2	2	3	**7**
TOTAL	**14**	**21**	**30**	**64**	**129**

Table: Number of Dams by Class

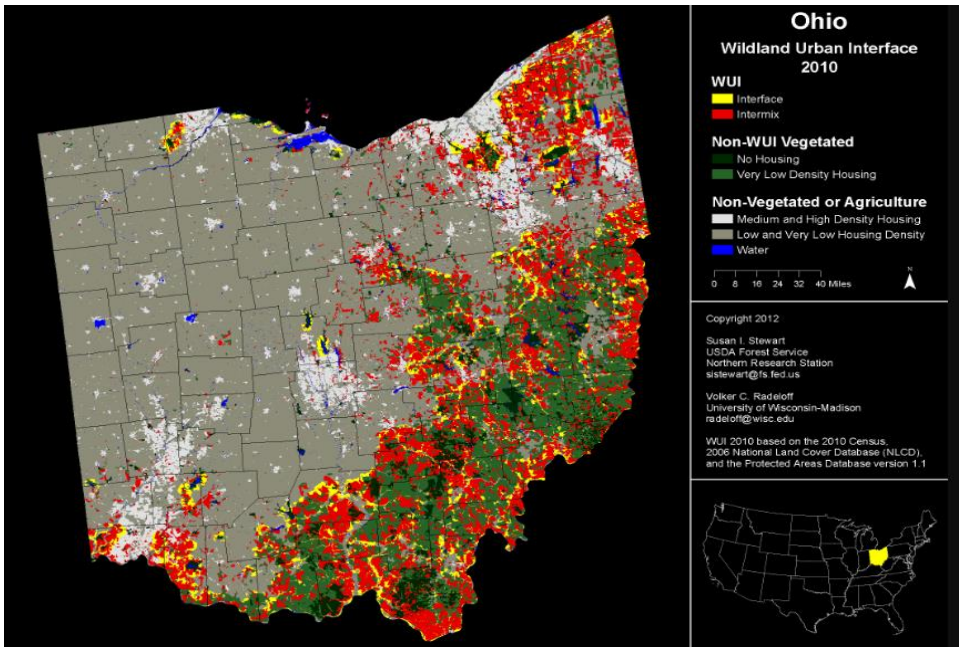
3.10 Wildfires

3.10.1 Description

A wildfire is an uncontrolled burning of forests, farmlands, grasslands, prairies, and wastelands. Grass and woodland fires usually occur in spring or autumn as a result of careless burning or arson. They can originate from natural causes, such as lightning strikes, as well as manmade causes, such as firefighters not being able to control a prescribed fire, campers leaving campfires unattended, people deliberately setting fires (arson), etc. Experts indicate that the average rural fire can burn for 20 minutes before discovery.

3.10.2 Location

Wildfires can occur anywhere in Medina County. According to the USDA Forest Service, the statistical probability of a wildfire occurring is greater within the Wildland Urban Interface (WUI), a transition zone between human development and unoccupied natural lands, but these fires can impact areas that are outside of the WUI.



Map: WUI Ohio – Source USDA Forest Service

3.10.3 Extent – How it's Measured

Wildfires are primarily measured based on the number of acres burned. Depending on the type of vegetation that is affected, wildfires can be called grass, peat, brush, or forest fires.

3.10.4 Historical Narratives

US Fire Administration National Fire Incident Reporting System (NFIRS) data shown in the 2019 State of Ohio Enhances Hazards Mitigation Plan shows there were 39 wildfire occurrences in Medina County between January 1, 2007, and December 31, 2017, burning 381 acres in sum.

An urban conflagration could have a strong economic impact on the county and local government. This occurred in the City of Medina on April 11, 1848, when the square burnt down after a fire in a shoe shop spread to nearby buildings. There are five areas in the county that are susceptible to this potential occurrence. These communities are the Cities of Medina and Wadsworth, and the Villages of Seville, Spencer, and Lodi.

3.10.5 Vulnerability

Medina County has had wildfires annually that have not resulted in a significant loss. The areas of greatest vulnerability are those where development interfaces with wildland identified as the Wildland Urban Interface.

If the 39 reported wildfires burned 381 acres, then there is an average of 9.77 acres burnt per event. The NFIRS data also show that among the 39 wildfires 89.75% (35 fires) burned between 1 to 9.99 acres, 7.69% (3 fires) burned 10 to 99.99 acres, and 2.56% (1 fire) burned more than 100 acres.

3.10.6 Probability

The probability of a wildfire cascading to an urban conflagration is small, but the impact that would occur to the county government and the economy if either occurred would be devastating.

If NFIRS data shows 39 wildfires between 2007 to 2017, then there is a 3.9 probability of future occurrence, or a 390% chance of occurrence in the affected areas of Medina County in any given year, or less than four wildfires per year.

3.11 Hazardous Materials Incidents (Spills & Releases)

3.11.1 Description

A hazardous material or hazmat event is a spill of toxic or noxious material at a fixed site or during a transportation accident. There are an increasingly large number of chemicals, oils, radioactive materials, and other hazardous substances spilled as the result of highway, rail, and waterway accidents, storage tank leakage, pipeline break, or other "unscheduled events." On occasion, these events can become disasters as local response capabilities are overwhelmed.

Until the 1970s, spills of materials now classified as "hazardous" received little attention. After serious incidents at Bhopal, India and in West Virginia in the mid-1980s, Congress passed the Superfund Amendments and Reauthorization Act (SARA Title III) legislation, which included the Emergency Planning and Community Right-to-Know Act (EPCRA), in 1986. Under EPCRA, each emergency planning district must have a Local Emergency Planning Committee (LEPC), whose members are appointed by the State Emergency Response Commission (SERC). LEPCs are required to develop and update hazardous materials plans to inform residents about the hazardous materials that are stored, manufactured, and transported within their communities. Additionally, information about the location, types, quantities, etc. of hazardous materials can be used to develop contingency and response plans if a hazmat spill or release occurs. In the late 1980s according to Ohio EPA, Ohio ranked second in air pollution, third in total toxin release, and third in the release of carcinogens.

3.11.2 History

According to data maintained by Ohio Environmental Protection Agency, there were 58 reported hazardous material spills between November 2017 and February 2019. The following table describes those spills:

Spills Reported to Ohio EPA November 2017 – February 2019		
Product	**Amount**	**Quantity of Spills**
Fuel diesel / diesel fuel (vehicle on or off road)	Small: 500 gal/4000 lbs Unknown amount	24 3
Fuel gasoline (25% ethanol not e85)	Less than 500 gal Unknown amount	3 1
Fuel oil/ home heating/heating oil	Small: 500 gal/4000 lbs	2

Oil crude	Small: 500 gal/4000 lbs	1
Oil cutting /cutting oil / coolant / lubricant	Small: 500 gal/4000 lbs	1
Oil hydraulic fluid(s)	Unknown amount	1
Oil motor/lube oil/vehicle	Small: 500 gal/4000 lbs	1
Oil petroleum not otherwise specified (nos)	Unknown amount	2
Oil transformer non pcb	Small: 500 gal/4000 lbs	8
Sheen rainbow/hydrocarbon	Small: 500 gal/4000 lbs	4
Bentonite/drilling mud	Small: 500 gal/4000 lbs	1
Other / all other / trade name / mixture / solution etc	Small: 500 gal/4000 lbs Unknown amount	1 1
Runoff nos (not specified)	Small: 500 gal/4000 lbs	1
Sediment / sedimentation	Unknown amount	1
Material green	Unknown amount	1
Material undetermined/other	Unknown amount	1

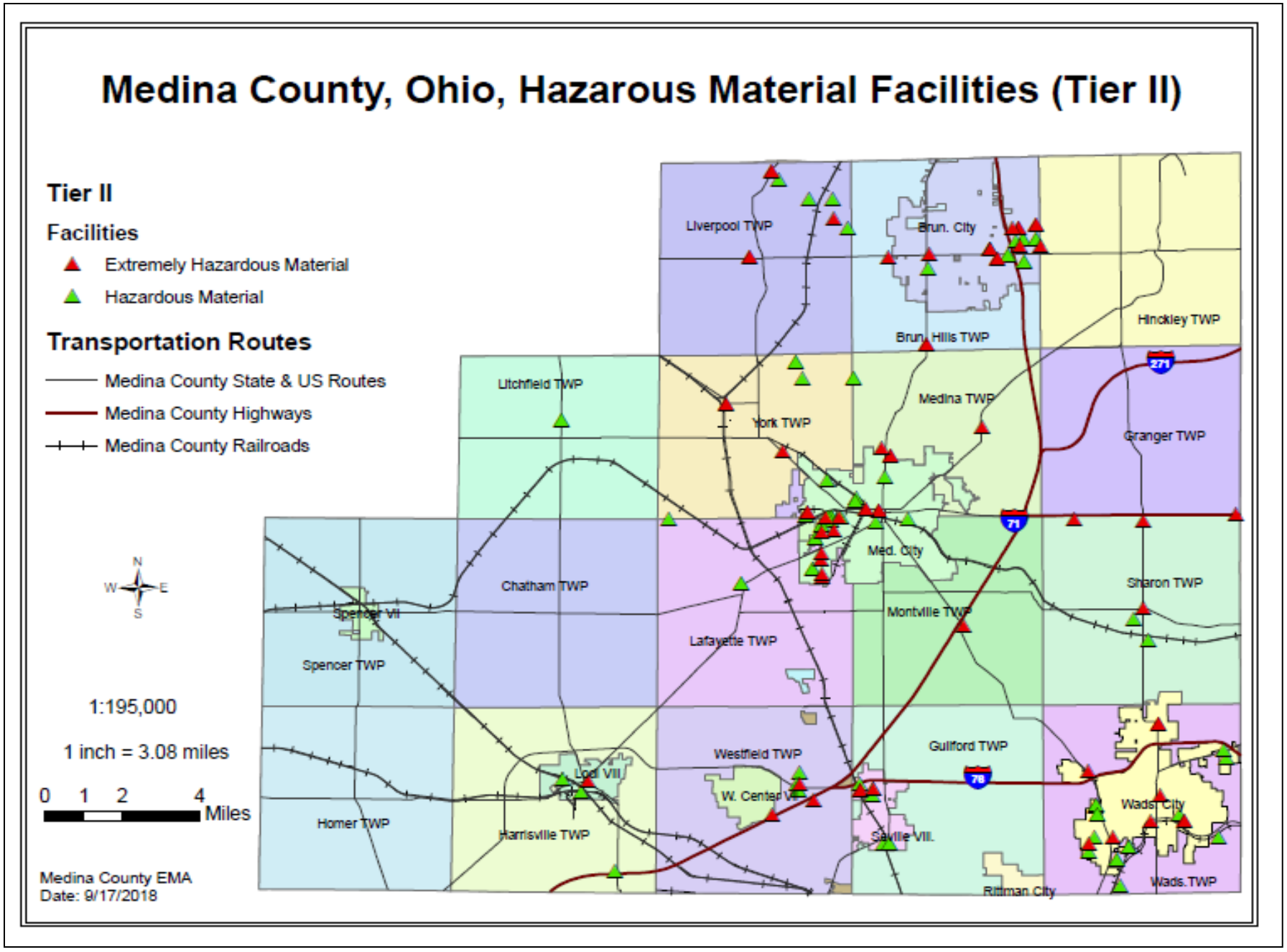
3.11.3 Location

There are 48 companies within the county that have extremely hazardous substances (EHS) on site and 58 companies that have hazardous chemicals. Each of these companies must comply with SARA Title III by filing paperwork with their local fire department and the Medina County Office of Emergency Management & Homeland Security.

Hazardous materials may also be transported through the county by rail or on one of the 16 major roadways that travel through the county. An initial transportation corridor study was conducted in 1998 and updated in 2010 for Medina County. The new study states that there are approximately 14.2 million trucks traveling through the county each year. Of this total, 760,000 trucks are carrying hazardous materials, 5% of commercial truck traffic. On average, only 5% of all trucks traveling through the county each day had placards stating that they were transporting hazardous materials. However, many more are carrying less than the 1,000 pounds required for

placarding. Experience has shown that approximately 40% of all trucks transport some type of hazardous material. Each year, over 65,000 carloads of hazardous materials travel through the county. Most of the hazardous cargo carried by commercial trucks and railways is placarded as flammable liquids and gases (50-60%), the second is “Hot” (asphalt, 20%), and the other 20% is comprised of a combination of the other classes.

Map : Hazardous Material Facilities



3.11.4 Vulnerability

Populations that are both large and densely crowded such as special events and places of assembly have an increased life safety vulnerability. The County Fair is the largest annual special event in Medina County. It is located on the southwestern edge of Medina City with a number of extremely hazardous substance facilities in the immediate area, therefore planning has been done by the Fair Board and public safety agencies. Hospitals and schools also maintain plans for hazardous material incidents.

Section 3745.13 of the Ohio Revised Code authorizes cost recovery for emergency actions taken at the scene of a hazardous materials incident. Between 1991 to 2011, emergency response agencies in Medina County recovered about $149,000.00 in costs from 120 hazardous materials incidents. Over that 20 year window, $7,400.00 in local government emergency response costs were recovered from spillers annually. The average local government emergency response costs recovered per incident was $1,241.00. This does not include the costs of state agencies such as Ohio EPA or the cost remediating the contaminated area, which is significantly more.

3.11.5 Probability

As long as hazardous materials are produced and transported through the county, there will continue to be the possibility for a hazardous material incident to occur.

If there have been 58 hazmat spills over the 16 months between November 1, 2017, and February 28, 2019, then there is a 3.625 monthly probability of occurrence, or a 362% chance that there will be a hazmat spill monthly.

3.12 Terrorism

3.12.1 Definition

Determining whether an attack can be classified as an act of terrorism is often difficult since there is no uniform definition for terrorism globally or even within the United States of America. Definitions of terrorism utilized by agencies in the US often reflect their missions and goals. For instance, the Department of Defense defines terrorism as “the unlawful use of violence or threat of violence, often motivated by religious, political, or other ideological beliefs, to instill fear and coerce governments or societies in pursuit of goals that are usually political.” In accordance with Title 22 of the USC, Section 2656f(d), the CIA defines terrorism as “premeditated, politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents.” According

to the FBI's definition, terrorism is "the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." Title 18 section 2331 of the USC provides a definition and distinction for international and domestic terrorism. Although there is no universal definition in the US, many acts of terrorism often share four common elements: a politically motivated, violent act, aimed at civilians, and carried out by sub-national groups. Unlike other types of organized crime, acts of terrorism are not conducted with the sole purpose of obtaining financial gain. On the contrary, they are primarily intended to elicit an emotional reaction (fear, anger, sadness, support, understanding, etc.) from residents of the targeted area, coerce officials, and spread the message of the group.

Terrorist organizations tend to perpetrate violent acts against soft targets, unarmed non-military individuals or areas that are not heavily guarded or protected by extensive security measures, rather than hard targets such as armed military personnel, fortified government buildings or nuclear power plants. Terrorism can be classified in many ways, including state-sponsored, domestic, and international. The State Department classifies countries that have "repeatedly provided support for acts of international terrorism" as state sponsors of terrorism. Support can come in the form of financial aid, supplies, weapons, training, safe havens, etc. Currently, the U.S. Department of State designates the countries of Syria, Sudan, Iran, and the Democratic People's Republic of Korea as state sponsors of terrorism. Domestic terrorism refers to acts of terrorism carried against civilians or infrastructure in a nation by individuals who reside in the respective nation. These types of terrorists have often been referred to as "homegrown" terrorists, and their goals are often to influence national policy through intimidation or coercion. International terrorism is defined under Title 18 § 2331 (1) of the *U.S. Code* as activities that:

(A) involve violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or of any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State;

(B) appear to be intended—

(i) to intimidate or coerce a civilian population;

(ii) to influence the policy of a government by intimidation or coercion; or

(iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and

(C) occur primarily outside the territorial jurisdiction of the United States, or transcend national boundaries in terms of the means by which they are accomplished, the persons they

appear intended to intimidate or coerce, or the locale in which their perpetrators operate or seek asylum

Recently, terrorist groups began utilizing the Internet and social media sites to promote their message, attract supporters from all over the world, encourage members and supporters to commit violent acts against the targeted group or country, and obtain donations. Due to government monitoring of the Internet, many terrorist groups stated transferring and posting their content on the deep web, an unindexed portion of the Internet that can only be accessed using specialized web browsers such as TOR or 12P. This allows members of these organizations and their supporters to remain virtually anonymous and make it substantially more difficult for law enforcement agencies to discover their plans and prevent them from carrying out acts of terrorism. Additionally, terrorist groups can use the Internet to commit cyber attacks against their intended targets. The United Nations Office on Drugs and Crime defined cyberattacks as deliberate exploitations of computer networks to perpetrate an attack. The goal of these attacks is to disrupt and inhibit the functions of computer systems, servers, or underlying infrastructure. This can be accomplished through several methods, such as hacking, using Distributed Denial of Service, and embedding malware such as viruses, Trojans, and worms in emails, website links, images, etc.

3.12.2 History

In the past, some cities within the State of Ohio, such as Toledo and Columbus, have been targeted by individuals who belonged to terrorist groups. A terrorist attack was recently carried out on November 28, 2016, at the Ohio State University, resulting in 13 people being injured and the death of the attacker. So far, no acts of terrorism have been committed in Medina County. However, these events are unpredictable. The County could be targeted by members of terrorist organizations or individuals who ascribe to the ideology of these organizations.

3.12.3 Location

A terrorist attack can occur anywhere in Medina County, but some areas are more vulnerable than others due to the publicity generated and the ease at which the attack could be carried out. Dams, transportation systems, government offices, large sporting or community events, hospitals, and facilities containing hazardous materials in Medina County have the highest risk of being targeted by lone wolfs and affiliated members of terrorist organizations. Additionally, supermarkets, malls, and schools are at risk of being targeted due to their relatively minimal security, ease of access in and out of the buildings, and a large number of individuals that are present in these areas.

3.12.4 Vulnerability

The USA has a peacefulness ranking of 121 out of 163, with one being the most peaceful and 163 being the least, according to the Institute of Economics and Peace's 2018 Global Peace Index. According to the Institute of Economics and Peace's 2017 Global Terrorism Index, the U.S.A is ranked 32 out of the top 50 countries in the world that are impacted by terrorism. Large cities with high population densities have a higher risk of being targeted by terrorist groups and lone wolves due to the potentially large amount of fatalities and property damage that they could cause, which would subsequently increase media coverage of the event, themselves, and their message. Therefore, the five largest cities in Ohio: Columbus, Cleveland, Cincinnati, Toledo, and Akron, are most susceptible to a terrorist attack. Medina County's proximity to the Cities of Cleveland and Akron increases its probability of being targeted and having to provide resources and shelter to residents of Cuyahoga or Summit County if these cities are attacked.

3.12.5 Probability

There is no data to make a probability calculation for this in Medina County. With lack of occurrences as an indicator, the probability is low.

Chapter 4: Vulnerability Assessment

4.1 Medina County Hazard Vulnerability Assessment (HVA)

This HVA serves as a tool to consider the identified hazards and to guide in the development and prioritization of mitigation goals, objectives and actions. It provides a methodic way of examining how hazards affect Medina County, as shown by the factor scores for each hazard. It also shows how hazards compare amongst one another, as indicated by comparing the overall sum of the factors or by comparing specific factor scores. For prioritization, this information could be considered concurrently with other available information such as cost/benefit analysis or funding availability.

4.1.1 Method of Analysis

The natural and human-caused hazards affecting Medina County were evaluated using seven factors: probability (frequency), the average duration of the event, the speed of onset, average magnitude, impact on life, impact on business, and impact on the property. Those factors were chosen for compatibly with the State (of Ohio) Hazard Analysis Resource and Planning Portal. Score rankings were defined for each factor and assigned for each hazard.

The original determinants of the assigned scores were based on the Planning Team's interpretation of the information provided in Chapter 3. Subsequently, for further validation, the scores assigned by the Planning Team were presented and adjusted in a meeting with the Core Committee. The final scores represent the consensus opinion of the Planning Team and the Core Committee. The sum of each hazard's score is provided to rank hazards amongst others.

Medina County Mitigation Plan Hazards Vulnerability Analysis								
Hazard	**Probability (Frequency)**	**Average Duration**	**Speed of Onset**	**Average Magnitude**	**Impact on Life**	**Impact on Business**	**Impact on Property**	**Total**
	The likelihood of the hazard impacting the county each year.	The length of time a hazardous event itself will span (not including response and recovery time).	Approximate amount of warning time before the hazard occurs.	The size of the affected area (lot, township, countywide, etc).	Consider potential injuries and loss of life resulting from the event.	Interruption of services in the impacted area.	Potential property and crop damage in the impacted area.	Sum
Rankings	0= N/A 1= Rare:1-24% 2= Low: 25-50% 3=Medium: 51-75% 4=High: 76-100%	0= N/A 1= < half a day 2= < a day 3= < a month 4= < a year	0= N/A 1= Over 24 hr. 2= 12- 24 hr. 3= 6-12 hr. 4= No warning	0= N/A 1= lots within a county jurisdiction 2= >1 county jurisdiction 3= Half of county jurisdictions 4= Whole county	0= N/A 1= Minor Injuries 2= Moderate Injuries 3= Severe Injuries or Deaths 4= Multiple Deaths and Severe Injuries	0= N/A 1= < a day 2= > a day 3= > a week 4= > a month	0= N/A 1= < 10% 2= > 10% 3= > 25% 4= > 50%	
Flooding	4	3	4	3	3	4	4	**25**
HazMat Spills	4	2	4	2	4	2	3	**21**
Severe Storms	4	2	4	3	3	2	3	**21**
Severe Winter Weather	4	3	2	4	3	3	2	**21**
Tornadoes	2	1	4	3	3	3	3	**19**
Dam Failure	1	2	4	2	3	3	4	**19**
Drought	1	4	1	3	1	3	3	**16**
Land Subsidence	1	1	4	1	1	4	4	**16**
Earthquakes	1	1	4	2	2	2	2	**14**
Terrorism	1	1	4	2	4	1	1	**14**
Landslides	1	1	4	1	2	3	2	**14**
Wildfires	1	1	4	1	1	1	2	**11**

Chapter 5: Policies

The following policies are related to hazard mitigation or authorize the conduct of mitigation actions.

In Resolution No. 08-0726 the Medina County Commissioners adopted regulations for flood hazard areas in unincorporated areas, which are necessary for participation in the National Flood Insurance Program. The purpose of floodplain regulations is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas through provisions designed to:

- Protect human life and health;
- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- Help maintain a stable tax base by providing for the proper use and development of areas of special flood hazard to minimize future flood blight areas;
- Ensure that potential buyers are aware that property is in an area of special flood hazards; and
- Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

To accomplish its purposes, flood plain resolutions include methods and provisions for:

- Restricting and prohibiting uses which are dangerous to health, safety, and property due to water hazards, or which result in damaging increases to flood heights or velocities;
- Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Controlling the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

- Controlling filling, grading, dredging, and other development which may increase flood damage; and
- Preventing or regulating the construction of flood barriers, which will unnaturally divert flood, waters or which may increase flood hazards in other areas.

Each township maintains zoning regulations. Sixteen of the seventeen townships have adopted a comprehensive land-use plan, with one remaining in development.

Cities and villages adopt floodplain regulations independent to the County for participation in the NFIP.

The City of Medina Ordinance for Flood Control (# 1311.08) is for flood control and preservation of flood plains in the City of Medina. The City of Medina also adopted the Open Space Conservation District, which is for the conservation of natural hazard areas.

The Parkland and Open Space Dedication (Chapter 1232 of the City of Brunswick Master Plan) of the City of Brunswick provides documentation for preserving space of high vulnerability and prone to flood and natural hazards, having in perspective the necessities and general welfare of the community. The Special Planning District (chapter 1268 of the City of Brunswick Master Plan) is a tool for preservation and development control in areas that contain sensitive and unique environmental features; which require additional protection.

The Comprehensive Plan of the City of Wadsworth provides a section of Natural and Environmental Constraints Areas that have as a primary concern the preservation of the rural character of the community, and protection of natural constraints like flood plants, hydric soils, and wooded areas.

The Village of Seville regulates floodplain development in the Village's zoning regulation. Seville's current Comprehensive Plan was adopted in 2006.

The Village of Lodi has a Comprehensive Plan with an updated version in draft form at the time of this plan. Lodi maintains a zoning regulation.

The Village of Chippewa Lake adopted floodplain regulations in "Flood Damage Reduction Ordinance" No. 596.04. Chippewa Lake maintains a zoning code as Ordinance No. 498.00.

The Village of Spencer maintains a Zoning Ordinance as well as a comprehensive land-use plan.

The Village of Gloria Glens Park maintains their Zoning Ordinance No. 1988-3 and has adopted “Flood Damage Reduction Ordinance” #2004-08.

The Village of Westfield Center maintains a zoning code and has a comprehensive plan; they do not participate in the NFIP.

The following table illustrates the existence of policies related to hazards mitigation among the local jurisdictions

Jurisdiction Policies				
	Comprehensive Land-Use Plan	**Zoning Regulation**	**Building Code**	**Floodplain Regulations**
Medina County	N/A	N/A	For Unincorporated Areas	For Unincorporated Areas
Brunswick City	Yes	Yes	Yes	Yes
Medina City	Yes	Yes	Yes	Yes
Wadsworth City	Yes	Yes	Yes	Yes
Chippewa Lake Village	No	Yes	Yes	Yes
Gloria Glens Park Village	No	Yes	Yes	Yes
Lodi Village	Yes	Yes	Yes	Yes
Seville Village	Yes	Yes	Yes	Yes
Spencer Village	Yes	Yes	Yes	Yes
Westfield Center Village	Yes	Yes	Yes	No
Brunswick Hills Township	Yes	Yes	Yes	Yes
Chatham Township	Yes	Yes	Yes	Yes
Granger Township	No	Yes	Yes	Yes
Guilford Township	Yes	Yes	Yes	Yes
Harrisville Township	Yes	Yes	Yes	Yes
Hinckley Township	Yes	Yes	Yes	Yes
Homer Township	Yes	Yes	Yes	Yes
Lafayette Township	Yes	Yes	Yes	Yes
Litchfield Township	Yes	Yes	Yes	Yes
Liverpool Township	Yes	Yes	Yes	Yes
Medina Township	Yes	Yes	Yes	Yes
Montville Township	Yes	Yes	Yes	Yes
Sharon Township	Yes	Yes	Yes	Yes
Sharon Township	Yes	Yes	Yes	Yes
Spencer Township	Yes	Yes	Yes	Yes
Wadsworth Township	Yes	Yes	Yes	Yes
Westfield Township	Yes	Yes	Yes	Yes
York Township	Yes	Yes	Yes	Yes

Chapter 6: Mitigation Strategy

6.1 Mitigation Measures

Natural hazard mitigation can be accomplished in a variety of ways. Because there are so many ways to reduce the impact of natural hazards on a community they are classified as follows:

- Regulations and preventive measures;
- Property protection and structural projects;
- Natural resource protection measures;
- Emergency services measures; and
- Public information and outreach measures.

Regulations and preventive measures are used to reduce the long-term risks of hazards. These measures are generally incorporated through government planning documents. By using these measures, development can be guided away from potential hazards, while maintaining other community goals. Goals to reduce hazard risks can be incorporated in a community's comprehensive plan, zoning ordinance, land use plan, or capital improvements plan. Regulatory controls (building or construction practices) reduce the risk of natural hazards on new development.

Property protection measures are used to modify buildings subject to hazard risks and police new development. Often these measures are relatively inexpensive as costs are often cost-shared with property owners. Property protection measures include acquisitions, relocation, rebuilding, and flood proofing. These measures are often used in flood hazard mitigation.

Natural resource protection measures are intended to reduce the intensity of hazard effects as well as to improve the quality of the environment and wildlife habitats. These activities are often put into effect by parks or conservation agencies. The prime example of this type of activity is wetlands protection.

Emergency services measures protect the community before and after a hazard event. Medina County Office of Emergency Management & Homeland Security coordinates warning, response, and recovery during a disaster. Emergency services measures include; warning, response, critical facilities protection, and health and safety maintenance.

Public information activities inform and remind people about hazardous areas and measure necessary to avoid potential damage and injury. This can be done through outreach projects, real estate disclosures, hazard information centers, and technical assistance.

6.2 Mitigation Goals and Actions

The table titled "Local Mitigation Strategies" is a list of hazard mitigation strategies shown as goals and actions designed to accomplish those goals. They are separated by jurisdiction. Each local jurisdiction has its own mitigation strategies in this plan. Additionally, Countywide strategies, normally conducted by County agencies, are listed in the table titled "Countywide Mitigation Strategies."

These strategies have been documented by representatives of the jurisdictions with consultation from Medina County EMA. Goal and actions may progress continuously during the planning cycle. For prioritization, each jurisdiction has applied the STAPLEE method of evaluation, which is as follows:

	+ 1	+0	-1	Score
Is the action socially acceptable?	Yes	Neutral	No	
Is the action technically feasible?	Yes	Neutral	No	
Are the required personnel & administrative capabilities available?	Yes	Neutral	No	
Is there political support for the action?	Yes	Neutral	No	
Is there legal authority to execute the action?	Yes	Neutral	No	
Is the action economically feasible?	Yes	Neutral	No	
Is the action environmentally friendly?	Yes	Neutral	No	
			Total	

For further prioritization, jurisdictions may consider information from the Hazard Vulnerability Analysis in this plan. Local jurisdictions may consider other available information such as cost/benefit analysis and economic opportunity.

Local Jurisdiction Mitigation Strategies						
Jurisdiction & Agency	**Hazard**	**Goal**	**Actions**	**Status**	**Time Frame**	**STAPLEE Priority**
Brunswick City, Chief Elected Official	All Hazards	To reduce loss of life and personal injury from natural hazards	Utilize notification and warning systems, which are currently effective, including outdoor warning sirens, mass notification systems, and social media.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Brunswick City, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	Utilize current engineering standards to alleviate existing flooding problems in the city by improvement of drainage capabilities.	Ongoing from previous plan. – The City has successfully applied for a FEMA grant to purchase a repetitive loss structure.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Brunswick City, Chief Elected Official	All Hazards, Flooding	To reduce damages to future development from natural hazards.	Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Brunswick City, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7

Brunswick City, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Brunswick City, Chief Elected Official	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and the public in the hazard mitigation planning process to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E – yes E – yes Score=7
Brunswick City, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques. Phase II stormwater regulations will be utilized to accomplish this goal.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Brunswick City, Chief Elected Official	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Brunswick City, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes

						Score=7
Medina City, Chief Elected Official	All Hazards	To reduce loss of life and personal injury from natural hazards	Maintain existing early warning system, which utilizes sirens, cable television and weather alert radios in public buildings and places of assembly with lightning protection for parks and community education.	Ongoing from previous plan. The status of lightning protection for parks may need further review.	2011-2024	S - yes T - yes A - neutral P - yes L - yes E - neutral E – yes Score=5
Medina City, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	Utilize current engineering standards to alleviate existing flooding problems in the city by improvement of drainage capabilities. Enhance stormwater detention in existing development with basins, rain barrels, and rain gardens.	Ongoing from previous plan. A plan is in place to update culverts and storms drains and dredge Broadway and Champion Creeks to reduce the effects of repetitive flooding in that area. Engineering standards will be ongoing as changes occur and the plan will require additional maintenance on a yearly basis. The plan needs to be updated to include all creeks and ditches	2011-2024	S - yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6
Medina City, Chief Elected Official	All Hazards, Flooding	To reduce damages to future development from natural hazards.	Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards. Utilize GIS to map Medina's stormwater infrastructure.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - no P - neutral L - yes E - neutral E – yes Score=3
Medina City, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6
Medina City, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	1) Development within the flood-prone areas will be discouraged through use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan. Local ordinances are in place. CRS rating is ongoing	2011-2024	S - Neutral T - yes A - yes P - neutral L - yes

			2) Work towards completed the Community Rating System program in order to give residents a discount on their flood insurance rates.			E - neutral E – yes Score=4
Medina City, Chief Elected Official	All Hazards	To protect and advance the long-term economic prosperity	1) Involve the private sector and public in the hazard mitigation planning process to protect short and long-term economic interests. 2) Complete a contingency plan for Medina's downtown square due to state routes, congestion, hazardous material traffic, and large amounts of the public gathering at one time.	Ongoing from previous plan.	2011-2024	S - neutral T - yes A - yes P - neutral L - yes E - neutral E - neutral Score=3
Medina City, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques. Phase II stormwater regulations will be utilized to accomplish this goal.	Ongoing from previous plan. No Riparian ordinance in place yet.	2011-2024	S - neutral T - yes A - yes P - neutral L - yes E - neutral E – yes Score=4
Medina City, Chief Elected Official	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Medina City, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan.	2011-2024	S - neutral T - yes A - yes P - neutral L - yes E - neutral E – yes Score=4

Wadsworth City, Chief Elected Official	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes sirens, cable television and weather alert radios in public buildings and places of assembly by adding additional sirens and community education. 2) Add OMUTCD signage to delineate high water, depth margins, and roadway gauge markings on roadways that pose a danger to the public during flooding 3) Obtain grant funding to enclose deep drainage ditches along high pedestrian travel routes within the next 5 years.	Ongoing from previous plan. 1) Wadsworth now has 9 sirens and will continue to maintain them to ensure the timeliest activation to keep the residents informed of impending weather situations. 2) OMUTCD water depth signs installed on Seville Rd. 3) Broad & Silvercreek ditch work completed.	2011-2024	S - yes T - yes A - yes P - neutral L - yes E - neutral E - neutral Score=4
Wadsworth City, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the city by improvement of drainage capabilities. 2) Create and implement a city backflow preventer devise program within the next 5 years.	Ongoing from previous plan. 1) Currently updating and replacing culverts and storm drains in areas of repetitive flooding. Holmesbrook culvert replaced at College St. 2) Backflow preventer device program/ wet basement program is ongoing.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E-neutral Score=6
Wadsworth City, Chief Elected Official	Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards. 2) Develop a city ordinance regulating right-of-way landscaping/removal within the next 3 years.	Ongoing from previous plan. 1) Zoning Code and Development Plan includes retention basin requirements. 2) Ongoing	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Wadsworth City, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan. 1) Ongoing Site development & plan review discussion subject	2011-2024	S - neutral T - yes A - yes P - neutral L - yes E - neutral E – yes Score=4

Wadsworth City, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	1) Development within the flood-prone areas will be discouraged through use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community. 2) Create and implement a city-sponsored lateral insurance program within the next 5 years. 3) Formally complete and adopt a City Comprehensive Plan to include policies to discourage development in the floodplain within the next 2 years.	Ongoing from previous plan. 1) Ongoing – acknowledgement of flood-prone areas in development process 2) Backflow preventer device program/ wet basement program is ongoing. 3) Ongoing	2011-2024	S - yes T - yes A - yes P - neutral L - yes E - no E – yes Score=4
Wadsworth City, Chief Elected Official	All Hazards/Flooding	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests. Conversely, failure to openly discuss hazard mitigation planning is likely to result in ineffective or unrealistic plans.	Ongoing from previous plan.	2011-2024	S - neutral T - yes A - yes P - neutral L - yes E - yes E – yes Score=5
Wadsworth City, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	1) Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques. Phase II stormwater regulations will be utilized to accomplish this goal. 2) Make improvements to the Holmesbrook and River Styx tributaries and the Seville road crossing to mitigate the effects of the repetitive flooding in those areas within the next 3 years.	1) Ongoing from previous plan. 2) Ongoing from previous plan. Holmesbrook culvert replacement at College St. completed. Additional culvert projects identified.	2011-2024	S - yes T - yes A - yes P - neutral L - yes E - neutral E – yes Score=5
Wadsworth City, Chief Elected Official	Flooding	To reduce vulnerability of existing development	1) Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. 2) The city will partner with the Muskingum Watershed Conservancy to update and	1) Ongoing from previous plan. 2) Completed 3) Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - neutral L - yes E - neutral

			maintain the existing flood control dams in the southwestern section of the city, and to obtain a breach analysis of these dams. 3) Re-line storm water pipes in city areas to prevent cross-contamination between storm water and sanitary systems within the next 5 years.			E – yes Score=5
Wadsworth City, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan. Work is been completed and this is ongoing. County Building Department is responsible for commercial code enforcement. City Code Enforcement Official is responsible for residential code enforcement	2011-2024	S - yes T - yes A - no P - no L - yes E - no E – yes Score=1
Chippewa Lake, Chief Elected Official	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	Update/maintain the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly. Working in a partnership with Lafayette Township to add sirens at various locations. There are 2 sirens in Lafayette Township.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Chippewa Lake, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	Utilize current engineering standards to alleviate existing flooding problems in the village by improvement of drainage capabilities (storm sewers).	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E - yes Score=7
Chippewa Lake, Chief Elected Official	All Hazards	To reduce damages to present development	Public roads and infrastructure will be maintained and repaired as needed.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes

		financed by public funds				L - yes E - yes E – yes Score=7
Chippewa Lake, Chief Elected Official	All Hazards	To reduce public expense for emergency and recovery services following disasters	The Village maintains a list of preidentified infrastructure projects.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Chippewa Lake, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques. Work with Medina County Park District for park expansion in flood-prone areas. To date, the Medina County Park District has acquired approximately 738 acres of parkland, Buckeye Woods/Chippewa Lake area, in the flood zone.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Chippewa Lake, Chief Elected Official	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning. Local zoning will be ongoing and those with flood insurance receive a 5% discount due to the completion and yearly updates of the Community Rating System.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Chippewa Lake, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7

Gloria Glens, Chief Elected Official	Flooding	To reduce loss of life and personal injury from natural hazards	Acquire, through grant funding, early warning systems, and educate and keep residents aware of ongoing mitigation actions.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Gloria Glens, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	Working with the Medina County EMA, OEMA and FEMA on a flood mitigation buyout of repetitive loss structures due to flooding. The village will continue to with Medina County EMA, OEMA and FEMA on flood mitigation.	Ongoing from previous plan. Buyouts were completed in 2010, and the remaining land is considered open space and will not be built on again.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Gloria Glens, Chief Elected Official	All Hazards	To reduce damages to future development from natural hazards.	Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Gloria Glens, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. Will continue to work with existing landowners to vacate dedicated street right of ways currently undeveloped in the 100-year floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Gloria Glens, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	Buy out old and existing development within the flood-prone areas to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes

						Score=7
Gloria Glens, Chief Elected Official	Flooding/ Subsidence	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques to protect lake front from erosion.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes. Score=7
Gloria Glens, Chief Elected Official	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants and additional grants to buy out those high repetitive loss properties. The outlet will be dredged to join with the previously dredged stream by the Muskingum Watershed Conservancy. The Muskingum Watershed Conservancy will maintain the stream as part of their watershed maintenance program.	Ongoing from previous plan. – This has not begun.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Gloria Glens, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan. No new construction in flood areas.	2011-2024	S – yes T - yes A - yes P - yes L - yes E – yes E – yes Score=7
Gloria Glens, Chief Elected Official	Tornado	To build a tornado shelter for the residents as most of the homes in our village only have crawl spaces	Find a grant to finance this plan.	Ongoing from previous plan. Still looking.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Lodi, Chief Elected Official	All Hazards	To reduce loss of life and personal injury from natural hazards	Update/maintain the existing early warning system. Utilize grant funding to add sirens and lightning protection for parks.	Ongoing from previous plan. – Weather radios are in place	2011-2024	S – yes T - yes A - yes P - yes L - yes

						E - yes E – yes Score=7
Lodi, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	Utilize/maintain current engineering standards to alleviate existing flooding problems in the village by improvement of drainage capabilities. Work with Medina County Park District on riparian corridor protection for the southwestern section of the community. Modifications were completed on the storm sewer discharge to alleviate erosion along the riparian corridor.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Lodi, Chief Elected Official	All Hazards	To reduce damages to future development from natural hazards.	Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards.	Ongoing from previous plan. The Village approved and adopted standard construction drawing specifications.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Lodi, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. The Medina County Engineer's standards will be adopted for public roads and infrastructure in areas prone to flooding. FEMA Flood Insurance Rate Maps are consulted when construction of new Village infrastructure is undertaken. New construction will not be done in areas prone to flooding as indicated on these maps.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Lodi, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community. Phase II Storm Water requirements mandated by	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes

			Federal EPA will reduce the potential for development in flood-prone areas.			E – yes Score=7
Lodi, Chief Elected Official	Flooding/ Subsidence	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques. Modifications were completed on the storm sewer discharge to alleviate erosion along the riparian corridor.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Lodi, Chief Elected Official	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Lodi, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official	All Hazards	To reduce loss of life and personal injury from natural hazards	Update the existing early warning system which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. Develop a partnership with Guilford Township for outdoor early warning. The addition of sirens and lightning protection for parks will remain, and the Village will continue to pursue a partnership with Guilford Twp. for outdoor early warning equipment maintenance and use.	Ongoing from previous plan. Additional sirens should be considered due to increased building.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6

Seville, Chief Elected Official	Flooding	To reduce damages to existing development from natural hazards	Utilize current engineering standards to alleviate existing flooding problems in the village by improvement of drainage capabilities. The adoption of the Medina County Engineer's Highway Engineering Standards will occur after the completion of the Local Community Comprehensive Development Plan.	Ongoing from previous plan. The Comprehensive Plan was adopted in 2006, and the village has been actively upgrading it as issues arise. Higher floodplain standards have also been adopted.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official	All Hazards	To reduce damages to future development from natural hazards.	Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards.	Ongoing from previous plan. The Comprehensive Development Plan was completed in March 2006, and local zoning development will be ongoing.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan. The village is aware of these locations. They are monitored when excess rain occurs. The village is looking into mitigation actions.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6
Seville, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community. Phase II Storm Water requirements mandated by Federal EPA will reduce the potential for development in flood-prone areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official	Flooding	To protect and advance the long-term economic prosperity	Involvement of the private sector and public in the hazard mitigation planning process to protect short and long-term economic interests.	Ongoing from previous plan. Involvement of the private sector in our hazard plan is ongoing.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes

						Score=7
Seville, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan. Work has been completed for this.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official		To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties.	Ongoing from previous plan. No longer pursued.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan. This is ongoing through zoning and comprehensive planning	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Seville, Chief Elected Official	All Hazards	Update the village's Disaster Organization Plan	Work with Guilford Township, emergency and safety departments, residents, and elected officials to update plan.	New	2019-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Spencer Village, Chief Elected Official	All Hazards	To reduce loss of life and personal injury from natural hazards	Update and expand the existing early warning system, which utilizes weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. Utilize the new emergency notification system. Purchase and install generators in critical	Ongoing from previous plan. The warning system is in place. Updates are ongoing.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes

			facilities to maintain a viable facility needed for shelter or to maintain vital facilities.			E – yes Score=7
Spencer Village, Chief Elected Official	Flooding, All Hazards	To reduce damages to existing development from natural hazards	Utilize current engineering standards to alleviate existing flooding problems in the village by improvement of drainage capabilities. Replace/improve storm water and drain systems. Replace the failing water tower to ensure acceptable potable water and enough water supply for fire suppression. Replace/improve aging and undersized water mains.	Ongoing from previous plan. The water tower is completed. Water mains and storm drains are replaced and updated on an ongoing basis.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=5
Spencer Village, Chief Elected Official	Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards. 2) Improve sewage treatment plant to ensure EPA release standards are met while planning for growth in the Village.	1) Ongoing from previous plan. Comprehensive Plan and Zoning are in place and updates are ongoing. 2) Ongoing from previous plan. Updates to the sewage treatment plant to meet EPA standards are ongoing.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6
Spencer Village, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6
Spencer Village, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Spencer Village, Chief Elected Official	Flooding	To protect and advance the long-term economic prosperity	Involvement of the private sector and public in the hazard mitigation planning process to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S - neutral T - yes A - yes P - yes

						L - yes E - neutral E – yes Score=5
Spencer Village, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score=6
Spencer Village, Chief Elected Official	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - neutral P - neutral L - neutral E - yes E – yes Score=4
Spencer Village, Chief Elected Official	Flooding	Reduce vulnerability of new development	Regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score=7
Westfield Center, Chief Elected Official	All Hazards	To reduce loss of life and personal injury from natural hazards	Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	Flooding	To reduce damages to existing	Utilize current engineering standards to alleviate existing flooding problems in the	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral

		development from natural hazards	village by improvement of drainage capabilities.			P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	All Hazards	To reduce damages to future development from natural hazards.	Utilization and development of local zoning and engineering standards for new development that would make it less vulnerable to natural hazards.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	Flooding	To reduce damages to present and future development financed by public funds	Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0

Westfield Center, Chief Elected Official	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	All Hazards	To reduce vulnerability of existing development	Enforce local zoning.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Center, Chief Elected Official	Flooding	Reduce vulnerability of new development	Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Brunswick Hill Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - neutral E – yes Score= 5
Brunswick Hill Township, Board	Flooding	To reduce damages to existing	1) Utilize current engineering standards to alleviate existing flooding problems in the	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes

of Township Trustees		development from natural hazards	township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in conjunction with the County drainage maintenance program that is used in subdivisions with public road and storm sewers built since 1980 in order to reduce stormwater flooding.			P - yes L - yes E - yes E – yes Score= 7
Brunswick Hill Township, Board of Township	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for public-owned stormwater detention basins, culverts, and storm drains. in conjunction with the County drainage maintenance program that is used in subdivisions with public road and storm sewers built since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Brunswick Hill Township, Board of Township	Flooding	To reduce damages to present and future development financed by public funds	1) Public township roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Brunswick Hill Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes

						E - yes E – yes Score= 7
Brunswick Hill Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Brunswick Hill Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian through use of land use planning and local zoning interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E - neutral Score= 5
Brunswick Hill Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Brunswick Hill Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Chatham Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan – CTCC is still the township's tornado and weather shelter. The presence of weather radios will be confirmed. A warning siren is located at the fire station. Generators are going to be at the new fire station.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chatham Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in conjunction with the County drainage maintenance program that is used in subdivisions with public road and storm sewers built since 1980 in order to reduce stormwater flooding.	Ongoing from previous plan. Work has been completed for this.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Chatham Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for public-owned stormwater detention basins, culverts, and storm drains. in conjunction with the County drainage maintenance program that is used in subdivisions with public road and storm sewers built since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan – The township works with Planning to ensure the safety of structures placement with our zoning.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chatham Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public township roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan – The township works with Medina County Engineers four our culvert and ditch design. Economic feasibility and environmental impact depend on the size and scope of the project.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chatham Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chatham Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan – the township will continue utilize county resources to our advantage	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes

						E – yes Score= 7
Chatham Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chatham Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chatham Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios. Update local website with information, and utilize Medina County Emergency Alerts 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical	Ongoing from previous plan – the township needs to another generators system and add to the outdoor warning system	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

			facilities to maintain a viable facility needed for shelter or to maintain vital facilities.			
Granger Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in conjunction with the County drainage maintenance program that is used in subdivisions with public road and storm sewers built since 1980 in order to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for public-owned stormwater detention basins, culverts, and storm drains. in conjunction with the County drainage maintenance program that is used in subdivisions with public road and storm sewers built since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public township roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Granger Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1) Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Granger Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes

			3) Educate the public and developers about the dangers of developing in or near the floodplain.			Score= 7
Guilford Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system. Efforts need to be refocused to enroll people in the reserve 911 system. Consider adding additional early warning sirens to increase coverage. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L – yes E - neutral E – yes Score= 6
Guilford Township, Board of Township Trustees	Flooding/ All Hazards	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in order to reduce stormwater flooding.	Ongoing from previous plan – The township has actively been improving storm drains/ basins. The township is currently developing a response and mitigation plan for the Nexus compressor stations	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Guilford Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for stormwater detention basins, culverts, and storm drains, in conjunction with the County drainage maintenance program that is used in subdivision developments with public roads constructed since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan with periodic zoning/ comprehensive plan renewal.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Guilford Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan – The township has identified this infrastructure and is looking into mitigation actions.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score= 6
Guilford Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan – Zoning is in place.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Guilford Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan – The township involves the private sector in disaster planning.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Guilford Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan. Work has been completed for this.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Guilford Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP and those with flood insurance are eligible for a 5% discount on their insurance	No longer pursued – The township reports that it does not apply.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes

			rates due to the completion of the Community Rating System (CRS) program.			Score= 7
Guilford Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan – Zoning and comprehensive plan in place	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Guilford Township, Board of Township Trustees	All Hazards	Update the village's Disaster Organization Plan	Work with Guilford Township, emergency and safety departments, residents, and elected officials to update plan.	New	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Harrisville Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan – Add early warning sirens	2011-2024	S – yes T - yes A - no P - neutral L - neutral E - neutral E – yes Score= 2
Harrisville Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in order to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - neutral P - neutral L - neutral E - yes E – yes Score= 4

Harrisville Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	Clear ditches for water.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - neutral L - neutral E - yes E – yes Score= 5
Harrisville Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Harrisville Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - neutral P - neutral L - neutral E - neutral E – yes Score= 3
Harrisville Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - neutral P - neutral L - yes E - yes E – yes Score= 5
Harrisville Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1) Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E – yes

						Score= 1
Harrisville Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - no E - neutral Score= -1
Harrisville Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Hinckley Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Hinckley Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in order to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - neutral E – yes Score= 5

Hinckley Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for stormwater detention basins, culverts, and storm drains, in conjunction with the County drainage maintenance program that is used in subdivision developments with public roads constructed since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Hinckley Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Hinckley Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Hinckley Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Hinckley Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Hinckley Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Hinckley Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Homer Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan – The township is working on getting grant money to better protect the community. They are working with the Amish through the Safety Committee.	2011-2024	S – yes T - neutral A - neutral P - yes L - yes E - neutral E – yes Score= 4
Homer Township, Board of	Flooding	To reduce damages to existing	1) Utilize current engineering standards to alleviate existing flooding problems in the	Ongoing from previous plan – These will continue to be ongoing projects for the township. The township wants to include	2011-2024	S – yes T - yes A - yes

Township Trustees		development from natural hazards	township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in order to reduce stormwater flooding.	ditch and driveway culvert improvements. They are working to regulate and mandate on all new install culverts to be 18" minimum.		P - yes L - yes E - yes E – yes Score= 7
Homer Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	The township will enforce and maintain zoning regulations.	Ongoing from previous plan – The township enforces strict zoning regulation and always looking to improve them.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Homer Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Homer Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Homer Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan – The township is working with the community to get an economic plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Homer Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan – The township is looking to update equipment to help with this.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score= 6
Homer Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Homer Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system including outdoor warnings sirens, mass notification systems, social media, and weather alert radios. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	Flooding	To reduce damages to existing	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes

		development from natural hazards	2) Maintain storm drains and detention/retention basins in order to reduce stormwater flooding.			L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins in order to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board	Flooding	To protect the natural environment as a	1)Provide protection for existing streams, natural wetlands, and riparian corridors	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes

of Township Trustees		mitigation measure	through use of land use planning and local zoning techniques.			P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Lafayette Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Litchfield Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, with weather alert radios in public buildings and places of assembly, and by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan – The township has no access to a local cable TV channel. The township needs a generator for the town hall.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Litchfield Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.	Ongoing from previous plan – continual ditch cleaning and pushing ditches back	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - neutral E – yes

						Score= 5
Litchfield Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	Maintain zoning regulation and guides.	Ongoing from previous plan – continuous updating of zoning status	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Litchfield Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan – The township is unaware of any township roads that a prone to flooding at this time.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Litchfield Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	The township has determined that this action not applicable.	2011-2024	
Litchfield Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan – Mitigation planning meetings are open to the public.	2011-2024	S – yes T - yes A - yes P - yes L - yes E – yes E – yes Score= 7
Litchfield Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	The township has determined that this action not applicable. – No existing streams, natural wetlands and riparian corridors on township property.	2011-2024	
Litchfield Township, Board	Flooding	To reduce vulnerability of	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss	The township has determined that this action not applicable. – Not in floodplain.	2011-2024	

of Township Trustees		existing development	properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.			
Litchfield Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan. Work has been completed for this – zoning code states one cannot build within 25' of a waterway.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, including mass notification systems, social medina, and weather radios 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	Continue to follow approved building codes.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Liverpool Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Liverpool Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes

			rates due to the completion of the Community Rating System (CRS) program.			Score= 7
Medina Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - neutral E – yes Score= 5
Medina Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce storm water flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for storm water detention basins, culverts, and storm drains, in conjunction with the County drainage maintenance program that is used in subdivision developments with public roads constructed since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina Township, Board	Flooding	To reduce damages to present and future	1) Public roads and infrastructure will be located outside the floodplain, above the	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes

of Township Trustees		development financed by public funds	floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.			P - yes L - yes E - yes E – yes Score= 7
Medina Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E - neutral Score= 5
Medina Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Medina Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Montville Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan – Work has been completed on this action. Systems in action are continually being monitored and upkept. Education and awareness systems are being developed and enacted.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Montville Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.	Ongoing from previous plan – The township recently entered into EPA Stormwater Phase 2 requirements, increasing monitoring of stormwater, retention basins, ect.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - neutral E – yes Score= 6
Montville Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	Incorporate riparian/ wetland language into local zoning code and comprehensive plan to protect areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Montville Township, Board	Flooding	To reduce damages to present and future	1) Public roads and infrastructure will be located outside the floodplain, above the	Ongoing from previous plan – Berm work to increase drainage flow and culvert repairs are ongoing	2011-2024	S – yes T - yes A - yes

of Township Trustees		development financed by public funds	floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.			P - yes L - yes E - neutral E – yes Score= 6
Montville Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan – This is implemented in each development review	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Montville Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Montville Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan – Riparian/ wetland protection measures are being enforced. Equipment has been required to assist with stream bank clean up.	2011-2024	S – yes T - yes A - yes P - neutral L - neutral E - neutral E – yes Score= 4
Montville Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - neutral E – yes Score= 5

Montville Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Preventing and regulating the new construction in flood-prone areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan – Open space and riparian/ wetland regulations aide to the encroachment onto or into vulnerable areas.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Sharon Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - neutral E – yes Score= 5
Sharon Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Sharon Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning and standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for stormwater detention basins, culverts, and storm drains. 3) Create overlay districts to help the conservation of the floodplains and flood-	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

			prone areas by placing structures in safety areas.			
Sharon Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Sharon Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Sharon Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - neutral L - yes E - yes E – yes Score= 6
Sharon Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Sharon Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes

			eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.			E - yes E – yes Score= 7
Sharon Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Spencer Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Spencer Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Spencer Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for stormwater detention basins,	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral

			culverts, and storm drains, in conjunction with the County drainage maintenance program that is used in subdivision developments with public roads constructed since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.			Score= 0
Spencer Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Spencer Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Spencer Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Spencer Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral

						Score= 0
Spencer Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Spencer Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Wadsworth Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Wadsworth Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Wadsworth Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for stormwater detention basins, culverts, and storm drains, in conjunction with the County drainage maintenance program that is used in subdivision developments with public roads constructed since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Wadsworth Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Wadsworth Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Wadsworth Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Wadsworth Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Wadsworth Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Westfield Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - yes P - yes L - yes E - neutral E - neutral Score= 3
Westfield Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3)Purchase and install generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan. Work has been completed for this.	2011-2024	S – yes T - neutral A - yes P - yes L - neutral E - yes E – yes Score= 5
Westfield Township, Board	Flooding	To reduce damages to	1) Utilize current engineering standards to alleviate existing flooding problems in the	Ongoing from previous plan.	2011-2024	S – yes T - yes

of Township Trustees		existing development from natural hazards	township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to reduce stormwater flooding.			A - yes P - yes L - neutral E - neutral E – yes Score= 5
Westfield Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	1) Utilization and development of local zoning standards for new development that would make it less vulnerable to natural hazards with assistance from Medina County Planning Services. 2) Continue to implement a maintenance program for stormwater detention basins, culverts, and storm drains, in conjunction with the County drainage maintenance program that is used in subdivision developments with public roads constructed since 1980. 3) Create overlay districts to help the conservation of the floodplains and flood-prone areas by placing structures in safety areas.	Ongoing from previous plan.	2011-2024	S - neutral T - neutral A - neutral P - neutral L - neutral E - neutral E - neutral Score= 0
Westfield Township, Board of Township Trustees	Flooding	To reduce damages to present and future development financed by public funds	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure. 2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.	Ongoing from previous plan – Road in the township that typically experience flooding are Friendsville, Westfield, Mud Lake, Kennard, Chippewa Rd., Seville Rd.	2011-2024	S - yes T - yes A - neutral P - yes L - neutral E - neutral E – yes Score= 4
Westfield Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Westfield Township, Board	All Hazards	To protect and advance the long-	Involvement of the private sector and public-at-large in the hazard mitigation planning	Ongoing from previous plan – Comprehensive Plan is in place.	2011-2024	S – yes T - yes

of Township Trustees		term economic prosperity	process is needed to protect short and long-term economic interests.			A - yes P - yes L - yes E - yes E – yes Score= 7
Westfield Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan - Comprehensive Plan is in place	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Westfield Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Westfield Township, Board of Township Trustees	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain. in or near the floodplain.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes E – yes Score= 6
Westfield Township, Board of Township Trustees	All Hazards	Update Comprehensive Plan and Zoning Code		Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - neutral E - yes

						E – yes Score= 6
York Township, Board of Township Trustees	All Hazards/ Flooding	To reduce loss of life and personal injury from natural hazards	1) Update and maintain the existing early warning system, which utilizes cable television and weather alert radios in public buildings and places of assembly by adding sirens and lightning protection for parks. 2) Identify dangerous road flooding areas and notify the public of the dangers using the emergency notification system or signage. 3) Maintain generators in critical facilities to maintain a viable facility needed for shelter or to maintain vital facilities.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	Flooding	To reduce damages to existing development from natural hazards	1) Utilize current engineering standards to alleviate existing flooding problems in the township by improvement of drainage capabilities. 2) Maintain storm drains and detention/retention basins to current engineering standards to reduce stormwater flooding. 3) Identify all structures within the floodplains to target structures that may benefit from flood impact reduction measures, then determine the structure's floor elevation, which should be above the base flood elevation.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	All hazards/ Flooding	To reduce damages to future development from natural hazards.	Develop and maintain a current comprehensive land-use plan and zoning regulation.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	Flooding	To reduce damages to present and future development	1) Public roads and infrastructure will be located outside the floodplain, above the floodplain, or designed to reduce the effects of flooding on the infrastructure.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes

		financed by public funds	2) Identify those township roads most heavily affected by the flooding and make improvements or changes to mitigate hazards.			L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	Flooding	To reduce public expense for emergency and recovery services following disasters	Development within the flood-prone areas will be discouraged through the use of appropriate planning and land use zoning to reduce or eliminate emergency response and recovery expenses assumed by the community.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	All Hazards	To protect and advance the long-term economic prosperity	Involvement of the private sector and public-at-large in the hazard mitigation planning process is needed to protect short and long-term economic interests.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	Flooding	To protect the natural environment as a mitigation measure	1)Provide protection for existing streams, natural wetlands, and riparian corridors through use of land use planning and local zoning techniques.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township, Board of Township Trustees	Flooding	To reduce vulnerability of existing development	Encourage utilization of NFIP, enforcement of local zoning, and seek federal and state/local grants to buy out those high repetitive loss properties. All townships are members of the NFIP, and those with flood insurance are eligible for a 5% discount on their insurance rates due to the completion of the Community Rating System (CRS) program.	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
York Township,	Flooding	Reduce vulnerability of new development	1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support	Ongoing from previous plan.	2011-2024	S – yes T - yes A - yes

Board of Township Trustees			higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations. 3) Educate the public and developers about the dangers of developing in or near the floodplain.			P - yes L - yes E - yes E – yes Score= 7
Countywide Mitigation Strategies						
Jurisdiction/ Agency	**Hazard**	**Goal**	**Actions**	**Status**	**Time Frame**	**STAPLEE Priority**
Medina County EMA	All Hazards	The installation/repair of outdoor early warning sirens.	1. Pursue funds to purchase/install/repair the outdoor early warning sirens.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Highway Engineer's Office (unincorporated areas)	All Hazards/ Flooding	Minimize the impacts of hazards in Medina County.	1. Continue to enforce standards for the design of storm drains, and detention/retention basins to mitigate upstream development.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding		2. Identify dangerous flooding areas.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	All Hazards	Enhancing security at critical	1. Pursue funds to purchase/install security systems for critical facilities	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes

		infrastructure such as water facilities.				P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	All Hazards		2. Pursue funds to purchase generators for critical facilities	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	All Hazards	Update county emergency notification system	1. Purchase and maintain an emergency mass notification system	Ongoing from previous plan. Medina County EMA provides an emergency mass notification system to local jurisdictions. Maintenance of the data is ongoing.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Highway Engineer	Flooding	Reduce the risks of the hazards in Medina County.	1. Identify areas of repetitive flooding, map the geographic boundaries of these areas using Geographic Information Systems.	Ongoing from previous plan. Maps have been created, and the project is ongoing. Technical assistance if commonly provided GIS Technician of the Medina County Highway Engineer's Office.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Engineer's Office Medina County Auditor Medina County Planning Services	Flooding	Minimize the impacts of hazards in Medina County.	1. Use a Geographic Information System to identify all structures within the floodplain.	Ongoing – Parcels with improvements (buildings) in the floodplain, fully or partially have been identified. Further work needs to be completed to map the footprints of buildings.	2011-2024	S - yes T - neutral A - neutral P - yes L - yes E - neutral E – yes Score= 4

Medina County Highway Engineer's Office (unincorporated areas)	Flooding		2. Continue to enforce standards of the Medina County Flood Damage Regulations in unincorporated areas.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County Highway Engineer's Office (unincorporated areas)	Flooding		3. The County will continue to manage a maintenance program for stormwater detention basins, culverts, and storm drains in subdivision developments with public roads constructed since 1980 in unincorporated areas to minimize future flooding events.	Ongoing from previous plan. There are Medina County Perpetual Drainage Maintenance Agreements and annual assessments under Sections 6131.63 & 6137 of the ORC for storm system improvements in new subdivisions that have been in place since 1980, and any before then is to be handled by the townships. The storm sewer maintenance and repair needs are determined by the Stormwater Group's inspections, homeowner reports, or township officials.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding		4. Purchase and relocate or elevate flood-prone properties and utilize the most vulnerable part of the floodplain as a greenway, park, wildlife habitat, or other use not affected by the floodplain status.	Ongoing from previous plan. Medina County EMA, working in cooperation with a citizens committee from Gloria Glens and the township trustees from Westfield Township, submitted flood mitigation grant requests to buy-out repetitive flood loss structures in each area. Each community made the areas green space or community parkland in perpetuity as required by the FEMA deed restrictions. The projected completion was September 30, 2006, with the completion being in 2010. An additional buyout occurred in Montville Township in 2016.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

				Completions have been made for this action and work is ongoing.		
Medina County EMA Medina County Park District Summit/Medina Land Conservancy	Flooding		5. Purchase the Development Rights of undeveloped land, open spaces, and farmlands within a flood-prone area to prevent future developments. Maintain those areas in a fundamental function of farming, recreation, and conservation.	Ongoing from previous plan. The Medina County Park District and the Summit Medina Land Conservancy currently purchase land and development rites when the property becomes available, and dollars are available. As of May 17, 2011, 1,619 acres have been purchased that is located in the flood zone. This is an ongoing venture.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Planning Services Township, City, and Village Zoning Boards	Flooding		6. Creation of overlay districts to help the conservation of the floodplains and flood-prone areas, by making possible the relocation and development of structures in safety areas in which in normal conditions it is not possible for those types of development or densities.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County – OSU Extension Services	Flooding		7. Encourage activities within the floodplains that do not represent a risk to life and safety; agriculture or aquaculture, recreation, and preservation. Utilization of existing public education programs of the Ohio State University Extension Service	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding		8. Develop and outreach program to increase property owner participation in NFIP.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding		9. Post and maintain flood hazard information on the County and EMA website.	Ongoing from previous plan – Information has been posted.	2011-2024	S - yes T - yes A - yes P - yes

						L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding		10. Minimize loss of life and property on flooded roadways.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Chippewa Subdistrict of the Muskingum Watershed Conservancy District	Flooding		11. Maintain waterway flow in MWCD controlled channels.	Ongoing from previous plan.	2011-2024	S - neutral T - yes A - neutral P - neutral L - neutral E - yes E - neutral Score= 2
Medina County EMA Local Jurisdictions	Flooding		12. Conduct a High Watermark Campaign marking historic flood depths with signage to indicate the danger of flooding	New - Medina County EMA will pursue this action when resources are available.	2019-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding	To enhance flood response coordination and training.	1. Improve response of the first responders and recovery of those affected within the County	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	All Hazards	Minimize the impacts of hazards in Medina County.	1. Publish and maintain community preparedness information Medina County EMA website for all hazards	Ongoing from previous plan – Community preparedness information in currently published.	2011-2024	S - yes T - yes A - yes

						P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Sanitary Engineer	Drought		2. Extend public water into areas currently not served	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Red Cross	All Hazards	Minimize the impacts of hazards in Medina County	1. Identify appropriate shelters for people who may need to evacuate due to utility outages	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	All Hazards		2. Purchase generators through grant funding projects.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Tornado Siren Owners Medina County EMA	Tornado	Minimize the impacts of hazards in Medina County.	1. Ensuring the existing community sirens are in working order.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Tornado		2. Pursue grant funding for purchase/installs of the outdoor early warning sirens.	Ongoing from previous plan.	2011-2024	S - yes T - yes

Local Jurisdictions						A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Tornado		3. Encourage the purchase and use of weather radios	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA – Local Chief Elected Officials	Tornado		4. Construct community safe rooms and support homeowners and business for their construction of safe rooms	New for 2019.	2019-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Building Department	All Hazards		5. Enforce the Ohio Building Code	Ongoing from previous plan. The Medina County Building Department will ensure all installations are in accordance with the Ohio Basic Building Code. This is an ongoing task.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Department of Planning Services	Tornado		6. Introduction of a manufactured home clause in existing development code.	Ongoing from previous plan. The Medina County Department of Planning Services will be the responsible agency for this action and can assist local communities upon request with model zoning.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Medina County EMA	All Hazards	Help residents prepare for and recover from disasters in Medina County.	1. Disseminate preparedness information by the website, social media, public outreach events, and speaking engagements.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Severe Storms		2. Interview officials with the U.S. Department of Agriculture regarding the Federal Crop Insurance Corporation, and make this data available.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Highway Engineer's Office Medina County Soil and Water	Landslides, Land Subsidence	Reduce the risks of hazards in Medina County.	1. Identify the areas of steep slopes and abandoned underground mines and map the geographic boundaries of these areas using Geographic Information Systems.	Ongoing from previous plan. The project was completed in the summer of 2006. Ongoing maintenance of this data is required.	Completed	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Flooding/ All Hazards	Minimize the impacts hazards in Medina County	1. Send hazard information to property owners identified as being at risk.	Ongoing from previous plan – Parcels adjacent to repetitive loss properties have been identified.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Dam Failure	Reduce the risks of hazards in Medina County.	1. Identify the areas prone to be impacted by dam failure and map the geographic boundaries of these areas using Geographic Information Systems.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes

						E – yes Score= 7
Medina County EMA	Dam Failure		2. Make sure each community is aware of the locations of the Dams (classes of), and who is responsible for the maintenance and safety planning.	Ongoing from previous plan – Dam location information is provided in the plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Dam Failure		3. Educate those responsible on the importance of proper maintenance and repair.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Dam Failure		4. Keep Dam Plans on file.	Ongoing from previous plan – Dam Plans are provided to Medina County EMA by ODNR.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	All Hazards	Expand the county's capabilities to respond to disasters.	1. Develop a local IMAT.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Hazardous Materials		2. Integrate into the All Hazards team training and exercises. The All Hazards Team is made up of first responders from Medina County. This will be ongoing indefinitely as the County exercises annually	Ongoing from previous plan – Administration of the Hazmat Team has been integrated with All-Hazards Team administration.	2011-2024	S - yes T - yes A - yes P - yes L - yes

						E - yes E – yes Score= 7
Medina County EMA	Terrorism	Protection of critical infrastructure.	1. Utilize federal grants to enhance security measures at critical facilities and potential targets.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA Medina County Sheriffs Office	Terrorism	Equip and train first responders for potential terrorism activities in the county.	1. Enhance interoperability between local and interagency departments for coordination of CBRNE response operations.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
Medina County EMA	Terrorism	Provide or enhance mass decontamination capabilities	1. Purchase equipment needed and provide the training necessary.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7
	Terrorism	Coordinate appropriate first responder training.	1. Offer awareness operations, and as appropriate, the advanced level training to each emergency response organization within the county.	Ongoing from previous plan.	2011-2024	S - yes T - yes A - yes P - yes L - yes E - yes E – yes Score= 7

Completed, Deleted, and Deferred Mitigation Actions					
Jurisdiction	**Hazard**	**2011 Goal**	**2011 Actions That Have Changed**	**Description**	**Status**
All Townships	Flooding	To reduce damages to existing development from natural hazards	3) Identify all structures within the floodplains to target structures that may benefit from flood impact then determined the structure's floor elevation, which should be above the base flood elevation.	The goal remains. This action was discontinued. The townships are unlikely to do this, and there is a countywide action to identify all structures in the floodplain with GIS.	Discontinued 2019
All Townships	Flooding	To reduce damages to present and future development financed by public funds.	2) Identify those roads most heavily affected by the flooding and make improvements or changes to reduce the dangers of driving on them.	The goal remains. This action was revised from "to reduce dangers of driving on them" to "to mitigate hazards" since it's not intended to be a traffic safety action.	Changed 2019
All Townships	Flooding	To protect the natural environment as a mitigation measure	2) Devise a maintenance program/ project to clear debris that causes backup and flooding that may not otherwise occur if the streams. Creeks were clean. This would lessen the accumulation and deposit of debris on private or public properties. Purchase equipment to be able to clear debris.	The goal remains. The action was deleted due to the scope of the project for individual townships and private property access issues.	Discontinued 2019
All Townships	Flooding	Reduce vulnerability of new development	1) Prevent and regulating the new construction areas and enforcement of building code regulations. 2) Enforce higher standards and discourage upstream and flood zone development by enforcing codes and regulations.	The goal remains. Action revised to the following to better reflect enforcement authorities: 1) Regulate new construction in flood-prone areas. Support building code enforcement by Medina County Building Dept and support higher standard enforcement by Medina County Engineer. Discourage upstream and flood zone development by enforcing codes and regulations.	Changed 2019
Countywide	Flooding	Lessen the impacts of flooding on the county	1. Enlarge storm drains, detention/retention basins and mitigate upstream development 2. Identify and improve dangerous road flooding areas. 3. Develop an efficient maintenance program for stream/creek clearing.	The goal was changed to the following incorporate all hazards: "minimize the impacts of hazards in the county" The actions were revised to be more inclusive and, reflect good engineering practices, and to reflect private property access issues.	Changed 2019

Countywide	Flooding	Avoid the risks of the floodplain	1. Become a partner with FEMA for map updates. Identification of areas of repetitive flooding, map the geographic boundaries of these areas using Geographic Information Systems, purchase a (Global) Geographic Positioning System which would allow exact coordinate locations of flood hazards.	The action was revised to reflect our current practices. The project involving FEMA mapping is over, although geographic analysis of floodplains, software and data upgrades are ongoing.	Changed 2019
Countywide	Flooding	Minimize/ Lessen the impact of flooding	Action not applicable. Listed to show revision goal revision.	These goals were combined for conciseness to "Minimize the impacts of hazards in Medina County."	Changed 2019
Countywide	Tornadoes	Minimize the impact of tornadoes in Medina County	Action not applicable. Listed to show revision goal revision.		
Countywide	Drought	Reduce the impact of drought on residents and businesses alike in Medina County	Action not applicable. Listed to show revision goal revision.		
Countywide	Subsidence	Minimize the impact of subsidence & Reduce the impact	Action not applicable. Listed to show revision goal revision.		
Countywide	Earthquake	Minimize the impact of earthquakes	Action not applicable. Listed to show revision goal revision.		
Countywide	Dam Failure	Minimize the impact of dam failure in Medina County	Action not applicable. Listed to show revision goal revision.		
Countywide	Hazardous Materials	Minimize the impact of hazardous materials incidents	Action not applicable. Listed to show revision goal revision.		
	Terrorism	Reduce the effects of terrorism on the	Action not applicable. Listed to show revision goal revision.		

		population of Medina County.			
Countywide	subsidence and landslides	Reduce the risks of subsidence and landslides.	Action not applicable. Listed to show revision goal revision.	These goals were changed to encompass all hazards: "Reduce the risks of hazards in Medina County".	Changed 2019
Countywide	Dam Failure	Reduce the risks of dam failure.	Action not applicable. Listed to show revision goal revision.		
Countywide	Flooding	Avoid the risks of the floodplain	Action not applicable. Listed to show revision goal revision.		
Countywide	Drought	Avoid the risk of drought	Action not applicable. Listed to show revision goal revision.		
Countywide	All-Hazards	Lessen the impact of flooding in Medina County	1) Enlarge storm drains, detention/retention basins and mitigate upstream development 2) Identify dangerous road flooding areas 3) Develop an efficient maintenance program for stream/ creek clearing.	1) Revised to encompass all proper engineering standards. 2) Revised to encompass all dangerous flooding areas. 3) This was redundant.	Changed 2019
Countywide	Flooding	Minimize the impact of flooding	2. After action (1) has been completed, determine whether the structure's furnished floor elevation is above or below the base flood elevation. 3. The County could institute a maintenance program for stormwater detention basins, culverts, and storm drains to minimize future flooding events. 11)Maintain waterway flow in creeks, streams, and rivers from debris accumulation 12) To improve ditch and driveway culverts in existing development	2) This action was changed to, "Continue to enforce standards of the Medina County Flood Damage Regulations in unincorporated areas" which has elevation requirement. 3) More precise language was added. 11) This was revised to reflect waterways for which authority exists. 12) Ditch and driveway culverts in new development are maintained to proper engineering standards.	Changed 2019
Countywide	Drought	Reduce the impact of drought on residents and businesses alike in Medina County	1. Publish water saving techniques on the Medina County EMA website	This was changed to encompass all hazards.	Changed 2019
Countywide	Winter Storms	Minimize the effects of winter	1. Identify appropriate shelters for people who may need to evacuate due to loss of electricity of heat 2. Public outreach through the posting	1) Revised to encompass all hazards. 2) Revised to encompass all hazards. 3) This is completed.	Changed 2019

		storms in the county	of safety information on the county EMA website 3) Install the new emergency notification system to be completed and operational by December 2011.		
Countywide	Tornados	Minimize the effects of tornados in Medina County	2. Create an Emergency Management Web Page linked with the county Web page with information regarding tornado hazard mitigation. 5. Ensure that existing mobile homes are securely tied down in accordance with building codes 6) Provide safety recommendations for mobile home residents based on modern research.	2) This action was redundant and was revised for all hazards 5) This was changed in include all Ohio Buiding Codes 6) The action was redundant as we will provide public safety information for all hazards based on modern research.	Changed 2019
Countywide	Severe Storms	Help residents be prepared for and recover from windstorms and severe thunderstorms.	1. Publish a special section in the local newspaper with emergency information about thunderstorms and lightning. Place special emphasis on what people should do if they are caught outside. Print the phone numbers of local emergency service offices, the Red Cross, and the nearest hospitals. 3. Provide information on first aid to persons struck by lightning, and make this data available. 4) Purchase an emergency notification system, through grants, that is more reliable and serves the needs of the County.	1) This is completed, and other media outlets are now utilized for outreach. 3) Revised to incorporate all hazards and additional media outlets. 4) This was revised for all hazards.	Changed 2019
Countywide	subsidence and landslides	Reduce the risks of subsidence and landslides.	2. Introduce regulatory controls to monitor areas highly susceptible to landslides and subsidence 3. Adopt soil conservation, slope stabilization, open space dedication, steep slope ordinances, and zoning to control maximum density, minimum lot size, road width, and setbacks in areas of high or severe landslide risk.	2) These actions were discontinued since they are not pursued in practice.	Changed 2019

Countywide	subsidence and landslides	Minimize the impacts of subsidence	1. Send hazard information to property owners identified as being at risk. 2. Compile subsidence mitigation information and make it available to all residents and business owners. 3. Create an Emergency Management Web Page linked with the county Web page with information regarding landslide and subsidence hazard mitigation.	1) Action revised to encompass all hazards. 2) This action was redundant and included in public information actions. 3) This action was revised for all hazards. 4) Updated to reflect current practice. These actions have been transitioned to an all-hazards community preparedness action. 4) Updated to reflect current practice.	Changed 2019
Countywide	Dam Failure	Reduce the risks of dam failure.	4. Keep Dam Plans up to date and on hand with the owners, and with the Medina County EMA.		Changed 2019
Countywide	Dam Failure	Minimize the impacts of a dam failure on Medina County	1) Present information on how to be protected if a dam failure was to occur while at home, in your car, outside, etc. This information will be accessible from the Medina County Emergency Management Website.		Changed 2019
Countywide	Hazardous Materials	Minimize the impacts of a hazardous materials incident in Medina County.	1) Present information on how to be protected if a hazardous materials incident was to occur while at home, in your car, outside, etc. This information will be accessible from the Medina County Emergency Management Website.		Changed 2019
Countywide	Terrorism	Reduce the effects of terrorism on the population of Medina County.	1)Present information on how to be protected if a terrorist incident was to occur while at home, in your car, outside, etc. This information will be accessible from the Medina County Emergency Management Website.	These actions have been a transition to an all-hazards community preparedness action. This action was updated to reflect current practice. This action was updated to reflect current practice.	Changed 2019 Changed 2019 Changed 2019
Countywide	Hazardous Materials	Expand the county's capabilities to respond to hazardous materials incidents.	1) Develop a regional partnership with Wayne County for response, and develop a Local IMAT.	4) Updated to reflect current practice.	Changed 2019
Countywide	Terrorism	Protection of critical infrastructure.	1) The Medina County Security Task Force (the required advisory team) will utilize federal	These actions have been transitioned to an all-hazards community preparedness action.	Changed 2019

			grants to enhance security measures at critical facilities and potential targets.		
Countywide	Terrorism	Reduce the effects of terrorism on the population of Medina County.	2. Locally developed public education campaigns and utilization of public speaking opportunities. 3. The Medina County EMA will present information on how to create/maintain community contingency plans and the importance of them. This will be an ongoing project for the next five years	These actions have been transitioned to all hazards oriented outreach actions.	Changed 2019

Chapter 7: Funding Sources & Resources

Hazard Mitigation Grant Program (HMGP): HMGP is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, United States Code (U.S.C.) 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. HMGP is available when authorized under a Presidential major disaster declaration in the areas of the State requested by the Governor. The amount of HMGP funding available to the Applicant is based upon the estimated total Federal assistance to be provided by FEMA for disaster recovery under the Presidential major disaster declaration.

Pre-Disaster Mitigation Grant (PDM): The PDM program is authorized by Section 203 of the Stafford Act, 42 U.S.C. 5133. The PDM program is designed to assist States, Territories, Indian Tribal governments, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding from future disasters.

Flood Mitigation Assistance Grant (FMA): The FMA program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).

National Flood Insurance Program: Communities participating in the NFIP agree to enforce floodplain management regulations in identified flood hazard areas. Flood insurance can be purchased to cover structures (e.g. homes and businesses) as well as the contents of the buildings. FEMA initiated a Community Rating System to reward communities that exceed the NFIP minimum floodplain management.

National Dam Safety Program: Dams can also pose a significant risk if not maintained properly. When a dam fails, the potential energy of the water stored behind it even for a small dam can cause extensive property damage and loss to life downstream. The NDSP provides grant assistance to states to improve their dam safety programs. The NDSP also funds the National Inventory of Dams that is conducted by USACE.

Community Development Block Grant: The CDBG program provides grants to entitlement communities for post-disaster hazard mitigation and recovery following a presidential declaration of a Major Disaster of Emergency. Funds can be used for activities such as

acquisition, rehabilitation or reconstruction of damaged properties and facilities, and redevelopment of disaster-affected areas. HUD provides for the CDBG, and the Division of Community Assistance administers the program in each state.

Small Business Administration Disaster Assistance Program: This program provides loans to businesses affected by presidentially declared disasters. Businesses of any size are eligible. The SBA administers the Disaster Assistance Program.

Additional funding sources: Other sources for local and additional grant funding, as available, will be utilized.

Chapter 8: Adoption, Monitoring, & Evaluation

This chapter examines the formal adoption procedure, as well as, monitoring and evaluation measures that will be put in place to ensure the plan is effective.

8.1 Adoption Procedure

This plan has been submitted to all political subdivisions in Medina County for adoption. Each community has adopted the plan by resolution or motion at a public meeting, and the Medina County Commissioners have also adopted the plan. The benefits of having a countywide mitigation plan include but are not limited to:

- Eligibility for funding under Federal programs that require the formal adoption of a mitigation plan.
- An assurance that hazard loss reduction efforts will continue over time.
- A cooperative statement of what Medina County and the local communities will do to reduce the effects of a hazard situation.
- A demonstrated community commitment to hazard loss reduction efforts.

8.2 Monitoring and Evaluation

Monitoring and evaluation involve the ongoing process of compiling information on the outcomes of the hazard mitigation objectives. The goal is to determine whether the county's vulnerability has decreased as a result of the plan. When vulnerability has decreased as a result of identified mitigation measures the county will determine why and will implement those successful mitigation measures in other locations. Where vulnerability has increased or remained constant, the county will identify if other potential mitigation strategies may be more successful, or whether revisions should be made to existing measures.

Other issues that should be assessed include:

- The adequacy of the county's resources to implement mitigation strategies

- Any redundancy in objectives
- Technical, legal or coordination problems associated with implementation
- Funding issues

The Planning team will monitor and evaluate the plan on an ongoing basis. Meetings may be conducted on as determined by the Planning Team to monitor plan progress. Strategy updates may be added as determined necessary and appropriate by the Planning Team.

8.3 Updates and Revisions

The county will review and update the plan, given the existence of necessary funding and resources, every five years, or following state and federal guidelines if different, or if local changes occur. Local changes can include increased development; changes brought about by the implementation of mitigation measures, new mitigation processes, or changes in state or federal statutes.

Medina County Office of Emergency Management & Homeland Security will be responsible for coordinating any updates or revisions made to this plan. This plan will be reviewed annually (based on funding), and any changes will be addressed and documented.

Five-year plan reviews will be conducted involving the public, in meetings where comments will be accepted and considered. The public will be notified by the newspaper, Medina County EMA website, and any other means of communication available to make the communities aware of the importance of their input to this plan. The public will be advised of the monitoring, evaluation, and updates that have been taken place when applicable.

This plan is available on the Medina County EMA website.

Appendix A: Flood Loss Computer Modeling Method of Analysis

HAZUS Level 2 – Random Distribution Method and HAZUS Process

Step 1: Format County Tax Parcel Data into a Usable Form for HAZUS Entry

A. Open ArcMap
- Ensure that you are running ArcInfo License for access to all required tools in the ArcTool box.

B. Add the county parcel shapefile into ArcMap (example: Fairfield_SFHA_Parcels.shp)
- Parcel layers should already be intersected with the 100-year return scenario.

C. Open the county parcel shapefile attribute table to review fields needed to transition tax parcel data to usable HAZUS field data. Data fields from the county will not always be labeled in the desired field name but should include fields that contain the following information:
- Name/PIN
- Land Use Code
- Year Built
- Building Value
- Land Value
- Number of Stories
- Foundation Type

D. Open ArcCatalog and create a personal geodatabase using the county name (Example: Fairfield.gdb)

E. Export county parcel shapefile to a new shapefile by right clicking on county parcel shapefile and going to Data and then selecting Export Data.
- Name the Output feature class: County_Parcels_00 (Example: Fairfield_Parcels_00) Note: Naming convention should follow the geodatabase layer naming convention provided throughout the document for consistency.

F. Delete all unnecessary fields in County_Parcels_00
- Open ArcTool box > Data Management > Fields > Delete Field Tool
- Input Table and select fields to delete (Example of remaining fields)

- Note: Do not select more fields than is visible at one time in the drop field window as it will not typically work many fields are selected at once. Repeat the deleting process until only required fields remain.

G. Export County_Parcels_00 to County_Parcel_01 (Example: Fairfield_Parcel_01) by right clicking on County_Parcels_00 >Data >Export Data.

H. Delete all fields that do not have a building value

- Turn on editor tool bar
- Click the drop down arrow under Editor > Start Editing > Select County_Parcel_01
- Open County_Parcel_01 layer attribute table
- Select by Attributes using field that has appraised building value where the building value is less than or equal to zero (Example: Select*From Fairfield_Parcels_01 WHERE: "APRBLDG" <= 0)
    i. This action will highlight all of the non-values in the attribute table
- Hit the delete button on the keyboard
- Go to Editor tool bar > Save Edits
- Go to Editor tool bar > Stop Editing
- Open the County_Parcels_01 attribute table to view results. To perform quality control on the results, there should be no blank or zero costs in the building value attribute field.

I. Create Total Cost

- Add a new field to the County_Parcel_01 layer by opening attribute table and adding a new field.
    i. Field Name : UDF_Cost
    ii. Type: Double
- Right click on newly created UDF_Cost field and select field calculator and select UDF_Cost equals land value and building value. (Example: UDF_Cost= [APRLAND] + [APRBLDG]. Click okay to populate field
- Once UDF_Cost Field is populated, delete land and building values

J. Number of Stories Field

- Assumptions may need to be made based on data provided by the county. Using Fairfield County as an example, 1.5 stories in the attribute table was assumed 2 stories, 2.5 stories in the attribute table was assumed 3 stories, etc.
- Open the County_Parcels_01 attribute table and Select by Attributes where number of stories equals zero. (Example: Select*From Fairfield_Parcels_01 Where: "STORIES" = 0”)
- Right click on the Number of Stories field (Example: Fairfield attribute name is STORIES) and open Field Calculator

- In the Field Calculator dialog box enter number of stories = 1 (Example: Stories = 1). Note: By using the field calculator, all of the zero fields are filled in with 1 story as we had to assume that no story equates to a slab.
    i. Repeat these steps for other assumptions in data gaps. For example:
        1. Every field that has a "0" assume 1 story
        2. Every field that has a "1.5" stories assume 2 stories
        3. Every field that has "2.5" stories assume 3 stories

K. Landuse Code (LUC) - Update LUC to create an occupancy field for HAZUS

- Ensure that the Landuse code "UDF_Occupancy" table is located within the County_personalgeodatabase and add the table to the current ArcMap session
- Open County_parcels_01 and add a field called UDF_Occ
    i. Type: Text
    ii. Length : 5
- Join UDF_Occupancy Table to County_Parcel layer based on LUC
- Right click on UDF_Occ field and open field calculator to populate the UDF_Occ field based on matching LUC
    i. In the field calculator County_Parcels_01.UDF_Occ = [UDF_Occupancy.Occupancy]
    ii. Note: Ensure there are no "Null" values. If there are "Null" values, update the values with an appropriate Occupancy type using the editor tool bar or field calculator to assign values.
        1. Example: LUC 699 was not populated. The description is Regional Water District. Updated the UDF_Occ code to COM1 by looking at similar series in the UDF_Occupancy Type table.
    iii. Delete LUC once UDF_Occ is populated
    iv. Remove joins when completed

L. Year Built - Census blocks are needed for this action and should be located in the county geodatabase. For this action, we are only using the parcels that have cost values. By utilizing census blocks to look at housing, we are averaging the year based on the census block to determine the average year built. Determining average year built will help populate missing year built fields. Missing year built field assumptions are based on the average year for the census block in which the parcel id intersects.

- Add census block data from geodatabase into ArcMap
- Intersect County_Parcels_01 with tabblock2010_39_pophu
    i. Output feature class should be called : Parcel_Block_Points_01

- Export Parcel_Block_Points_01 to Parcel_Block_Points_02 by right clicking on Parcel_Blocl_Points_01 > export
- Open an editing session and start editing Parcel_Block_Points_02 feature class
    i. Open the Parcel_Block_Points_02 attribute table
    ii. Open Select by Attributes where [YRBLT] = 0
    iii. This will highlight all of the zero records in the yearbuilt field
    iv. Once highlighted hit the delete button on the key board to remove all zeros records
- Dissolve the remaining year built fields based on block id and calculating the mean year for the census block
    i. Open the Dissolve tool
        1. Input feature: Parcel_Block_Points_02
        2. Output feature: Disolve Parcel_Block_Points_Meanyear
        3. Disolve field: Block ID (ex:BlockID10)
        4. Statistical field: Year Built
        5. Statistical Type: Mean
- Join Parcel_Block_Points_Meanyear with Parcel_Block_Points_01
    i. Join based on BLOCKID10 and keep only matching records
- Open attribute table and Select by Attributes where [Pacel_Block_Points_01.YRBLT] = 0
- Open field calculator on Year Built attribute field and have the yrblt field equal the mean_yearblt. This will populate all of the missing zero records with the average year built for the census block. (example: Parcel_Block_Points_01.YRBLT= [Parcel_Block_Points_Meanyear.MEAN_YRBLT])
- Dissolve Pacel_Block_Points_01 by Opening the Dissolve Tool to make unique IDs for the parcel
        1. Input feature: Parcel_Block_Points_01
        2. Output feature: Parcel_Block_Points_03
        3. Disolve field: Parcel ID (example: PIN)
        4. Statistical field: Year Built (example: YRBLT)
        5. Statistical Type: FIRST
- Link Parcel_Block_Points_03 to County_Parcel_01 by joining the Parcel_Block_Points_03 to County_Parcel_01 based on the Parcel ID (example: PIN). This links the mean year built to our current UDF table.
- Open the attribute table and open Select by Attributes tool where County_Parcel_01.YRBLT = 0 to select all the zeroes
- Open field calculator on the year built field by right clicking and select County_Parcel_01.YRBLT

=[Pacel_Block_Points_03.FIRST_Pacel_Block_Points_01_YRBLT]. This populates the mean year built

- Remove join and then open the County_Parcel_01 attribute table
- Right click on Year Built field and click ascending. This will sort the field to see if there are remaining year built fields with zeroes.
    i. If there are any remaining fields with Null or zero values re-join Pacel_Block_Points_01 and give these fields the average of all the blocks without zero by opening select by attributes and entering [Pacel_Block_Points_01.YRBLT] > 0
        1. Right click on the year built field > statistics > the mean value would be used (Example : 1947)
        2. Clear selection and open Select by Attributes and select where: [YRBLT] = 0 (This will highlight all of the zero year built attributes
        3. Open field calculator > Example > [Pacel_Block_Points_01.YRBLT] = 1947
- Rename field to UDF_YRBLT to indicate complete

M. Foundation Type

- The table below is a text field and one character long. County data whether it is numeric or text needs to be converted to the values below

Table 1: Foundation Values

Domain	Name/Value	Field Description
Foundation Type	1	Pile or Column
Foundation Type	2	Pier (Post or Beam)
Foundation Type	3	Solid Wall
Foundation Type	4	Basement
Foundation Type	5	Crawlspace
Foundation Type	6	Fill
Foundation Type	7	Slab

Table 2: Foundation Type original data from Fairfield County.

Fairfield (FOUNDATIONTYPE) Example	
Value	*Description*

blank	*No Data*
1	None (Pile, Pier, Fill, Slab, etc)
2	Crawlspace
3	Partial Basement
4	Full Basement

- Open County_Parcel_01 and add a field
  i. Name: UDF_Foundation
  ii. Type: text
  iii. Length: 1
- For existing county foundation types Select by Attributes in the County_Parcel_01
  i. Example: [BSMT] = '1'. This will highlight all of the 1 BSMT attributes.
- In the attribute table right click on the UDF_Foundation field and open field calculator to populate column from county with HAZUS foundation type values
  i. Example: UDF_Foundation = 7 (based on previous county value 1)
- **Continue with all remaining valid numbers until complete and blank values will be calculated based on year built**
- Based on research conducted by LRH Landscape Architect, foundation values for blank foundation fields were populated based on historical construction practices.
- Fill in Null Values by evaluating UDF occupancy group types (first three characters of the occupancy code i.e. AGR, COM, etc.) already calculated
  i. Base missing foundation types on two things
    (1) Filled in foundation types for all occupancy types except residential - foundation types are going to be filled in by the largest number of foundation types that are not blank
    (2) Year built for residential structures determined by year built formula
- To get an overview of missing occupancy types right click on UDF_Occupancy >Statistics> UFD Foundation > click First and Last. This table is only to be used as a reference table to better understand the missing foundations per occupancy type. If there are blank values in the First and Last UDF Foundation columns, foundation values for that occupancy are missing and will need to be determined.
- **Step 1 Missing foundation types** - AGR Fairfield County Example
  ii. Select by Attributes in the County_Parcel_01 : [UDF_Occ] = 'AGR1'

iii. Review the existing UDF_Foundation values for AGR1 and assign based on the highest number of category values.
iv. Right click on UDF_Foundation > Summarize the sum on the Foundation to get the number of categories value. The output table is UDF_AGR.txt and add to the map
v. For Fairfield, AGR1 fields had 262 foundations with a HAZUS occupancy value, therefore, all NULL AGR1 values were assigned a basement value of 4.
vi. Open Select by Attributes and Select From County_Parcels_01 WHERE [UDF_Occ] = 'AGR1' AND [UDF_Foundation] is Null
vii. Right Click on UDF_foundation field > select Field Calculator > add value (in Fairfield example = 4)

- **Continue with all blank UDF_Foundation fields by evaluating the occupancy groups as shown above with the exception of Residential. In the example above, we did the remaining COM and IND.**
- **Step 2 Missing Foundation Types** – Fairfield County Example
  i. Open County_Parcel_01 attribute table and Select by Attributes. In the dialag box type [UDF_Occ] LIKE 'RES*' and [YRBLT] > 1934 and [UDF_Foundation] is null and [YRBLT] < 1966
  ii. Open field calculator on UDF_Foundation field and type in 4 to set to basement
  iii. Clear selection
  iv. Select by Attributes and in the dialog box type: [UDF_Occ] LIKE 'RES*' and [YRBLT] > 1965 and [UDF_Foundation] is null
  v. Open field calculator on UDF_Foundation field and type in 5 to set to Crawlspace
  vi. Clear selection
  vii. Select by Attributes and in the dialog box type [UDF_Occ] LIKE 'RES*' and [UDF_Foundation] is null
  viii. Open field calculator on UDF_Foundation field and type in 7 to set to Slab
  ix. Once complete check entire record to ensure all fields have a value and then delete the original foundation/basement field from the county.

N. Content Cost

- Add the UDF_Occupancy table from the geodatabase if not already added
- Open County_Parcel_01 attribute table and add a field
  i. Name: UDF_Contents
  ii. Type: Double
- Join UDF_Occupancy table to County_Parcel_01 based on Occupancy

- Right click on UDF_Contents field and open field calculator
- In the field calculator enter UDF_Cost times the content multiplier from the joined field (Example: [Fairfield_Parcels_01.UDF_Cost] * [UDF_Occupancy.Content_Multiplier])
- Remove Join and check to see if all fields are populated

O. First Floor Height

- Identify the pre and post FIRM date from referenced Ohio document
  i. Pre FIRM year is going to be less than the FIRM date
  ii. Post FIRM year is greater than and equal to the year the FIRM year
- Add the UDF_Height table. This table includes a crosswalk with each pre and post FIRM foundation height values
- Open County_Parcel_01 add First Floor Height field
  i. Name: UDF_Height
  ii. Type: Double
- Join UDF_Height table to the County_Parcel_01 based on UDF_Foundation
- Open the County_Parcel_01 attribute take and select all attributes that have year built less then then the pre firm date (Example: [Fairfield_Parcels_01.YRBLT] < 1989)
- Open field calculator on the UDF_Height field and select that County_Parcels_01.UDF_Height equals the pre field in the UDF_Height table (example: Fairfield_Parcels_01.UDF_Height=[UDF_Height.PRE])
- Open the County_Parcel_01 attribute take and select all attributes that have year built that are greater than or equal to the firm date (Example: [Fairfield_Parcels_01.YRBLT] >= 1989)
- Open field calculator on the UDF_Height field and select [UDF_Height.POST]
- Remove UDF_Height table join

Example of a completed UDF before Step 3, Random Distribution

Step 2: Federal Levee Protected Area

- Add the Federal levee protected area layer located in the geodatabase to ArcMap for the following counties: Cuyahoga County, Franklin County, Hamilton County, Lake County, Licking County, and Stark County. Other counties can skip to the next step, Creating Random Distribution. When working on final reporting for the entire project, this will allow us to breakout the damage cost based on the levee protected areas.
- Add the levee protected from the geodatabase into ArcMap
- Add a field to County_Parcel_01 called UDF_Levee (make field text with one character)

- Select by Location > Federal Levee Protected Area layer > intersects > County_Parcel_01. This will highlight the appropriate parcel polygons that intersects the levee protected area .
- Open the County_Parcel_01 attribute table and right click on UDF_Levee field > field calculator and type "Y". This will place a "Y" in all of the selected records.

Step 3: Creating the Random Distribution

- Add census block data to ArcMap from the county geodatabase and keep the County_Parcel_01 working file in ArcMap. Remove all unnecessary data layers.
- Go to Selection > Select by location to select all census blocks that **intersect the source layer feature** with the County_Parcel_01 layer. This will highlight the blocks that intersect the parcel layer.
- Right Click on the census block layer and export selected features to the county geodatabase and name the file Block_Parcel_Intersect and add the new layer to ArcMap.
- Open ArcTool Box > Data Management Tools > Feature Class > Create Random Points Tool (this tool will create random distributed points in each block boundary) See output
    i. Output location : geodatabase
    ii. Outpoint Point Feature Class: Block_Random_Housing
    iii. Constraining Feature Class: Block_Parcel_Intersect
    iv. Field: HOUSING10
- Go to Geoprocessing > Intersect (to capture all of the random points inside the parcels)
    i. Add the County_Parcels_01 and Block_Random_Housing layers
    ii. Output feature class : Block_Random_Housing_02
- Add a center point to all of the parcels that do not have random points
    i. Right click on County_Parcels_01 and select all features
    ii. Selection > Select by Location
        - **Selection Method : Remove from the currently selected features in**
        - **Target Layer: County_Parcels_01**
        - **Source Layer: Block_Random_Housing_02**
        - **Spatial Selection method: intersect the source layer feature**
- Export selected features on the County_Parcel_01 layer to the geodatabase and name the output : Block_Random_Housing_03
- Open Arc Toolbox > Data Management > Feature to Point tool
    i. Input Feature: Block_Random_Housing_03

ii. Output Feature: Block_Random_Housing_04
iii. Ensure that you check Inside option (this will make sure that the outpoint points are inside the polygons) (Result)

- Geoprocessing > Merge (This will create point coverage on all parcels)
  i. Input datasets : Block_Random_Housing_02 and Block_Random_Housing_04
  ii. Output datasets: UDF_Point_Distribution_01
  iii. Results
- Open UDF_Point_Distribution_01 attribute table and clean fields that are not needed but were created when merging the two files. Keep all fields labeled UDF and the PIN and deleted the rest.
- Add a latitude and longitude field (type: double) to the UDF_Point_Distribution_01 attribute table
- Change data frame coordinate system to Geographic Coordinate System > World > WGS 1984
- Populate Latitude and Longitude by right clicking on the lat and long fields and opening calculate geometry
  i. X Coordinate of Point is Longitude
  ii. Y Coordinate of Point is Latitude
  iii. Ensure that the coordinate system WGS 1984 is selected and the units are Decimal Degrees
- Dissolving to count how many points are in each parcel to distribute costs
  i. Geoprocessing > Dissolve
    - Input Feature: UDF_Point_Distribution_01
    - Output Feature Class: UDF_Point_Count
    - Dissolve fields: PIN
    - Statistic Type: Count
  ii. Export UDF_Point_Distribution_01 to a new layer by right clicking > export
    - Name the new layer : UDF_Point_Distribution_02
  iii. Create 2 fields in the UDF_Point_Distribution_02 layer
    - Name: UDF_Cost2 and UDF_Contents2
    - Type: Double
  iv. Join the UDF_Point_Count layer to the UDF_Point_Distribution_02 based on the PIN. This will help us divide the cost and content by the number of points in each parcel.
  v. Open field calculator on the UDF_Cost2 field
    - UDF_Cost divided by Count_Pin from the joined field (Example: [UDF_Point_Distribution_02.UDF_Cost] / [UDF_Point_Count.COUNT_PIN])

vi. Open field calculator on the UDF_Contents2 field
    - Example: [UDF_Point_Distribution_02.UDF_Contents] / [UDF_Point_Count.COUNT_PIN]

vii. Remove join

- Add a field to UDF_Point_Distribution_02 to create a unique identifier for each point
    i. Name: Name
    ii. Type: text
    iii. Length: 40
- Open field calculator for the Name field in the UDF_Point_Distribution_02. We are creating a name that can be joined back to previously created layers by manipulating the name
    i. Name = [PIN] & ":" & [OBJECTID] (use the UDF_Point_Distribution_02 OBJECTID)
- In the attribute table export UDF_Point_Distribution_02 to a table in the current geodatabase. Name the table: UDF_ County (example: UDF_FairfieldCounty)
- Close ArcMap

Step 4: Finalizing data for input into HAZUS using Microsoft Access

1. Open County geodatabase in access
2. Click on the UDF_County table that was just created
3. Open design view on the UDF_ County by right clicking on the table and going to design view . In design view to assign the correct name, type, field size, and decimal places to each field (See table below). This table will be the HAZUS input. **Reminder: UDF_Cost2 is the COST field and UDF_Contents2 is the ContentCost. Keep only necessary fields for the HAZUS run.** Lastly, save changes when finished.

Table 3 Name, Type, and Field Size Requirements for Input into HAZUS

Name/Value	Type	Field Size	Decimal Places
CONTENTCOST	Currency	N/A	Auto
FIRSTFLOORHT	Number	Double	8
FOUNDATIONTYPE	Text	1	N/A
LATITUDE	Number	Double	15
LONGITUDE	Number	Double	15
NAME	Text	40	N/A

NUMSTORIES	Number	Byte	Auto
OCCUPANCY	Text	5	N/A
YEARBUILT	Number	Integer	2
COST	Currency	N/A	Auto

Step 5: HAZUS UDF Processing

1. HAZUS Set-up
    - Open HAZUS 2.1
    - On the HAXUS_MH Startup menu create a new region for the county
    - Assign a Study Region Name: OH_County_UDF (i.e. OH_Franklin_UDF)
    - Hazard Type > Select Flood
    - Aggregation Level > County
    - State Selection > Ohio
    - County Selection > Select County
    - Finish Completion of New Region Wizard
    - Once created select open a region
    - Select OH_County_UDF and hit finish (Results)
    - Select > Hazard> Flood Hazard Type > Riverine Only
2. Create Scenario for 25r
    - Add 25r depth grid by going to Hazard > User Data > Depth Grid and browse for the 25r depth grid
    - Set Parameters
        i. Units: Feet
        ii. Return Period: 25
    - Go to Hazard > Scenario> Create New Scenario
        i. Enter a unique name : 25r
        ii. After completed the depth grid appears on the map
    - In the New Scenario dialog box select Add to Selection "+" and click on the depth grid to select features and save selection and okay (This will select the depth grids, result example).
    - To Delineate Floodplain go to Hazard > Riverine > Delineate Floodplain and select okay
    - Go to File > Save to save county updates
3. Create 100r scenario using the steps above. Ensure when creating a new scenario and selecting the depth grid that the 100r is selected
4. UDF import
    - Go to Inventory > User Defined Facilities
    - Right click in the grey box > Import *the database where the UDF county table cannot be located on a network drive. Recommend placing on external hard drive *

- Link the Field Mapping with the Target based and click okay (in our example object ID, PIN, COST, and CONTENTCOST remain in the source mapping field) Results
    i. Name to Name and click add
    ii. NUMSTORIES and NUMSTORIES
    iii. YEARBUILT AND YEARBUILT
    iv. OCCUPANCY AND OCCUPANCY
    v. FOUNDATION TYPE AND FOUNDATION TYPE
    vi. FIRSTFLOORHT AND FIRSTFLOORHT'
    vii. LATITUDE AND LATITUDE
    viii. LONGITUDE AND LONGITUDE
    ix. UDF_COST AND COST
    x. UDF_CONTENTS AND CONTENTCOST

UDF Points will be used for both scenarios*

5. Calculate damages for both the 25r and 100r scenarios
    - Go to Hazard > Scenario > Open Scenario > Select 100r
    - Analysis > Run
        i. In Analysis Option Select "User Defined Structures"
        ii. If you receive an odd error select okay. The structure are in a location where there are no values. If you receive an unusual amount of errors there is something wrong.
        iii. Results to show that it is completed
    - Change scenarios by going to Hazard > Scenario > Open Scenario > Select 25r and repeat steps above
6. Results
    - Go to Results > View Current Scenario by > 25r. This will show the damages for the 25r return period.
    - Go to Results > User Defined Facilities for the 25r
    - Right click on the results box and export data
        i. Name the file OH_CountyName_Damages_25r
    - Repeat steps above for 100r return period by going to Hazard Scenario >Open Scenario>Select 100r
    - Go to Results > View Current Scenario by > 100r
    - Go to Results > User Defined Facilities for the 100r
    - Right click on the results box and export data
        i. Name the file OH_CountyName_Damages_100r.txt

Step 6: Validate Damage Results

1. Create a Microsoft Access Database named OH_CountyName_UDF_Test.accdb
2. Import External Data > Link that was used in HAZUS (i.e. UDF_Fairfield)
3. Import > External Data > Text File for both the 100r and 25r output HAZUS text files
    - Link to data source by creating a linked table
    - Select Delimited
    - Choose tab and ensure that the First Row Contains Field Names is checked
    - Go to create > Query Design > in the window right click and select SQL and paste the following formula into the window. Change the county name in the formula

      SELECT Sum(UDF_FairfieldCounty.UDF_Cost) AS SumOfUDF_Cost, Sum(OH_Fairfield_Damages_25r.BldgLossUSD) AS SumOfBldgLossUSD FROM UDF_FairfieldCounty INNER JOIN OH_Fairfield_Damages_25r ON UDF_FairfieldCounty.Name = OH_Fairfield_Damages_25r.FacilityName;

The sum of the UDF_Cost needs to be greater than the sum of the building loss. If not, redo entire process!

Appendix B: Hazus-MH Earthquake Global Risk Report

Medina

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Hazus-MH: Earthquake Global Risk Report

Region Name: Medina

Earthquake Scenario: Medina, 5 mag, 5 km depth

Print Date: February 21, 2018

Disclaimer:

This version of Hazus utilizes 2010 Census Data.

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

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

Table of Contents

General Description of the Region

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

The 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 422.90 square miles and contains 37 census tracts. There are over 65 thousand households in the region which has a total population of 172,332 people (2010 Census Bureau data). The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 67 thousand buildings in the region with a total building replacement value (excluding contents) of 22,003 (millions of dollars). Approximately 92.00 % of the buildings (and 78.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 1,848 and 1,363 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 67 thousand buildings in the region which have an aggregate total replacement value of 22,003 (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 71% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

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

For essential facilities, there are 3 hospitals in the region with a total bed capacity of 206 beds. There are 53 schools, 17 fire stations, 13 police stations and 0 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes 71 hazardous material sites, no military installations and no 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 3,211.00 (millions of dollars). This inventory includes over 154.10 miles of highways, 164 bridges, 7,445.89 miles of pipes.

Table 1: Transportation System Lifeline Inventory

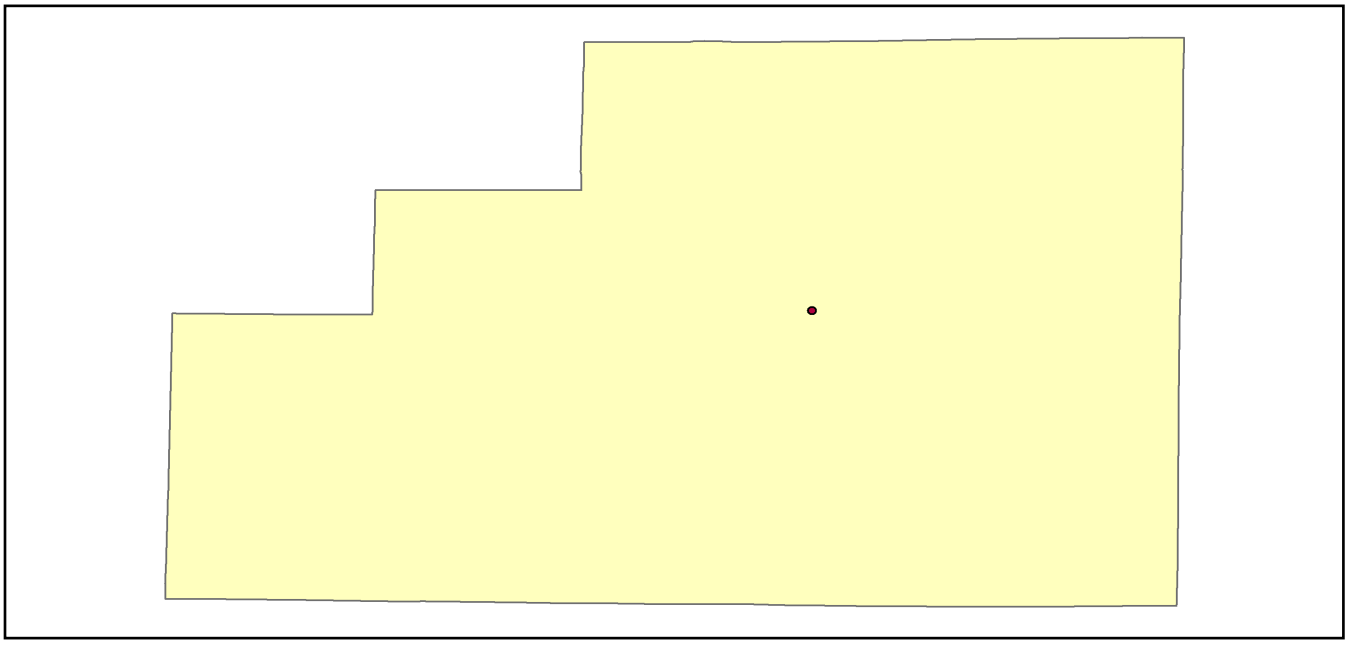
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	164	157.6270
	Segments	90	1325.2539
	Tunnels	0	0.0000
		Subtotal	**1482.8809**
Railways	Bridges	8	0.8568
	Facilities	0	0.0000
	Segments	58	141.9725
	Tunnels	0	0.0000
		Subtotal	**142.8293**
Light Rail	Bridges	0	0.0000
	Facilities	0	0.0000
	Segments	0	0.0000
	Tunnels	0	0.0000
		Subtotal	**0.0000**
Bus	Facilities	1	1.1445
		Subtotal	**1.1445**
Ferry	Facilities	0	0.0000
		Subtotal	**0.0000**
Port	Facilities	0	0.0000
		Subtotal	**0.0000**
Airport	Facilities	3	31.9530
	Runways	5	189.8200
		Subtotal	**221.7730**
		Total	**1,848.60**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	119.8316
	Facilities	2	69.9300
	Pipelines	0	0.0000
		Subtotal	**189.7616**
Waste Water	Distribution Lines	NA	71.8990
	Facilities	15	1048.9500
	Pipelines	0	0.0000
		Subtotal	**1120.8490**
Natural Gas	Distribution Lines	NA	47.9326
	Facilities	4	4.5780
	Pipelines	0	0.0000
		Subtotal	**52.5106**
Oil Systems	Facilities	0	0.0000
	Pipelines	0	0.0000
		Subtotal	**0.0000**
Electrical Power	Facilities	0	0.0000
		Subtotal	**0.0000**
Communication	Facilities	0	0.0000
		Subtotal	**0.0000**
		Total	**1,363.10**

Earthquake Scenario

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



Scenario Name	Medina, 5 mag, 5 km depth
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-81.86
Latitude of Epicenter	41.14
Earthquake Magnitude	5.00
Depth (km)	5.00
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	Central & East US (CEUS 2008)

Direct Earthquake Damage

Building Damage

Hazus estimates that about 11,541 buildings will be at least moderately damaged. This is over 17.00 % of the buildings in the region. There are an estimated 686 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

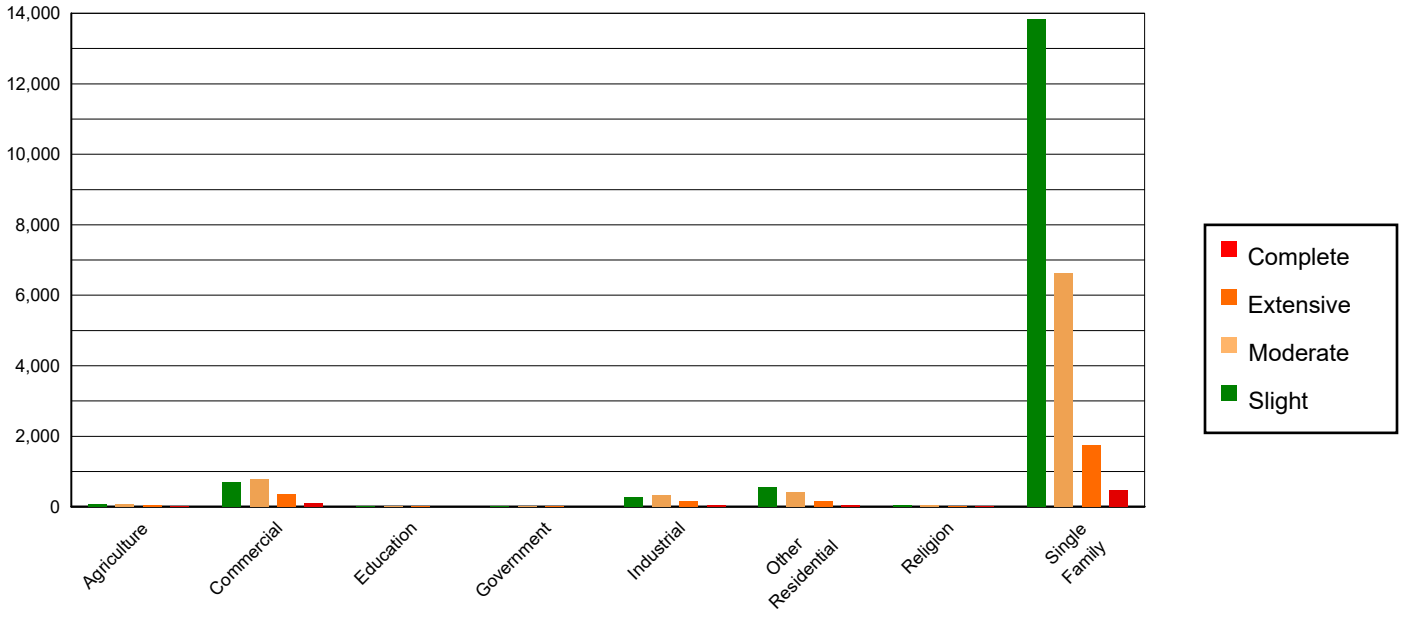


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	145.85	0.36	69.26	0.45	86.20	1.04	46.14	1.82	11.55	1.68
Commercial	1335.80	3.34	711.61	4.57	782.11	9.39	367.61	14.54	99.86	14.54
Education	40.30	0.10	19.90	0.13	22.36	0.27	9.56	0.38	2.88	0.42
Government	37.25	0.09	18.76	0.12	22.72	0.27	9.38	0.37	2.89	0.42
Industrial	549.83	1.37	271.31	1.74	323.74	3.89	164.78	6.52	42.34	6.17
Other Residential	1346.42	3.37	567.65	3.65	413.36	4.96	143.82	5.69	33.75	4.91
Religion	136.91	0.34	60.27	0.39	54.32	0.65	26.12	1.03	7.38	1.07
Single Family	36415.19	91.02	13835.78	88.95	6621.31	79.52	1761.60	69.66	486.12	70.78
Total	**40,008**		**15,555**		**8,326**		**2,529**		**687**	

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

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	31738.13	79.33	11278.51	72.51	3930.63	47.21	464.97	18.39	32.34	4.71
Steel	579.52	1.45	273.32	1.76	477.19	5.73	302.50	11.96	81.33	11.84
Concrete	193.03	0.48	83.82	0.54	100.64	1.21	47.22	1.87	8.93	1.30
Precast	186.26	0.47	67.24	0.43	109.47	1.31	73.98	2.93	12.73	1.85
RM	75.97	0.19	21.52	0.14	35.03	0.42	21.95	0.87	2.54	0.37
URM	6908.81	17.27	3666.49	23.57	3469.61	41.67	1537.23	60.78	532.10	77.48
MH	325.83	0.81	163.65	1.05	203.56	2.44	81.15	3.21	16.81	2.45
Total	**40,008**		**15,555**		**8,326**		**2,529**		**687**	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 206 hospital beds available for use. On the day of the earthquake, the model estimates that only 91 hospital beds (45.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 58.00% of the beds will be back in service. By 30 days, 81.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	3	1	0	2
Schools	53	14	0	13
EOCs	0	0	0	0
PoliceStations	13	5	0	3
FireStations	17	4	0	3

Transportation Lifeline Damage

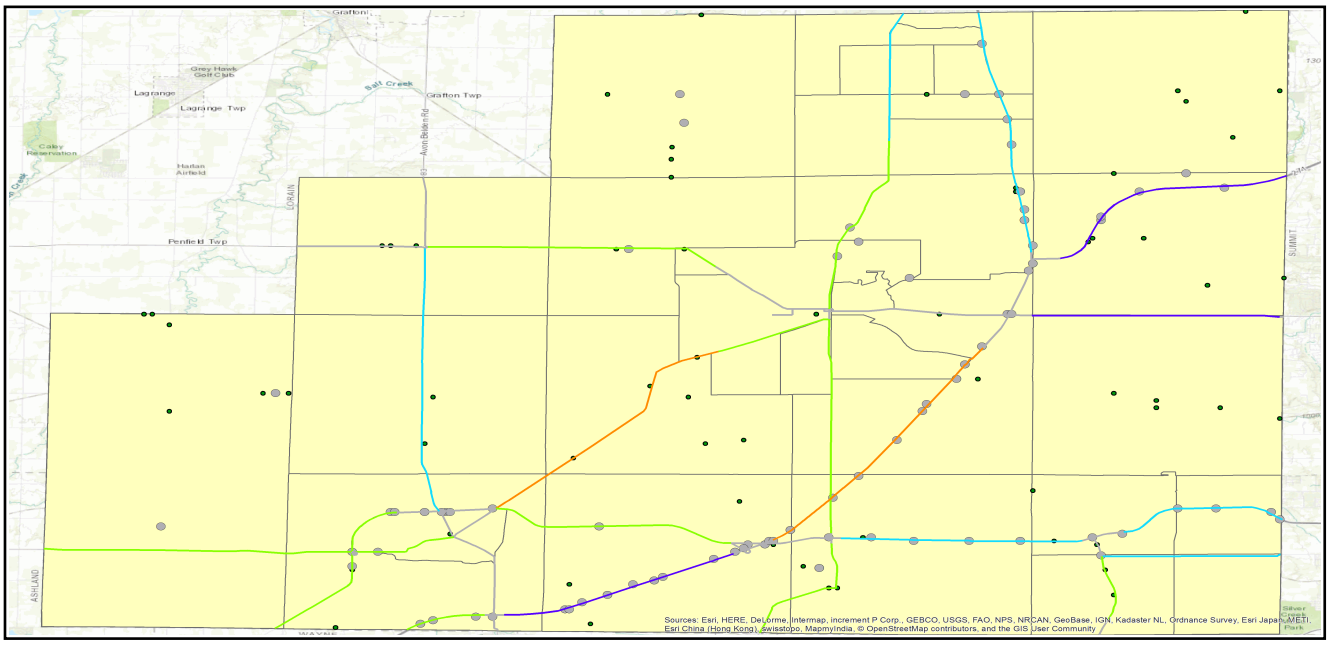


Table 6: Expected Damage to the Transportation Systems

System	Component		Number of Locations			
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 % After Day 1	With Functionality > 50 % After Day 7
Highway	Segments	90	0	0	90	90
	Bridges	164	0	0	164	164
	Tunnels	0	0	0	0	0
Railways	Segments	58	0	0	58	58
	Bridges	8	0	0	8	8
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	0	0	1	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	3	1	0	3	3
	Runways	5	0	0	5	5

Table 6 provides damage estimates for the transportation system.

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

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

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	2	1	0	1	2
Waste Water	15	5	0	2	15
Natural Gas	4	3	0	1	4
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	0	0	0	0	0

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

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	3,723	540	135
Waste Water	2,234	271	68
Natural Gas	1,489	93	23
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	65,143	1,509	228	0	0	0
Electric Power		30,545	18,124	6,485	1,026	39

Induced Earthquake Damage

Fire Following Earthquake

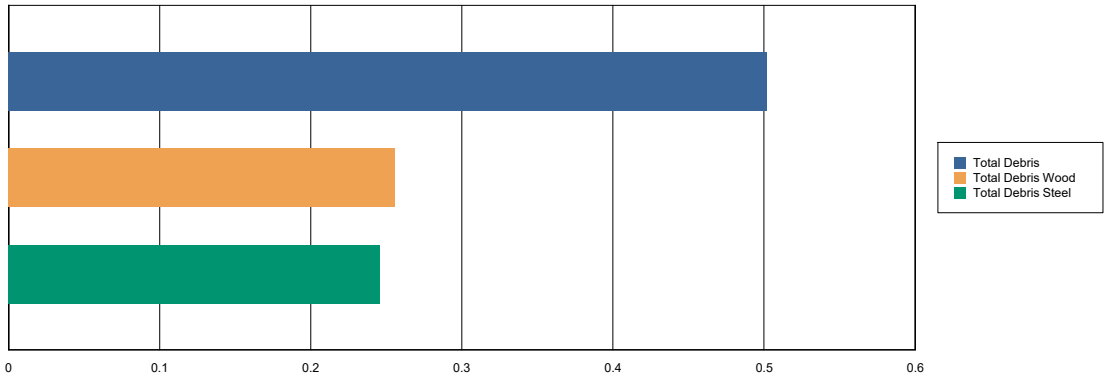
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there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

Debris Generation

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

The model estimates that a total of 502,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 51.00% 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 20,080 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



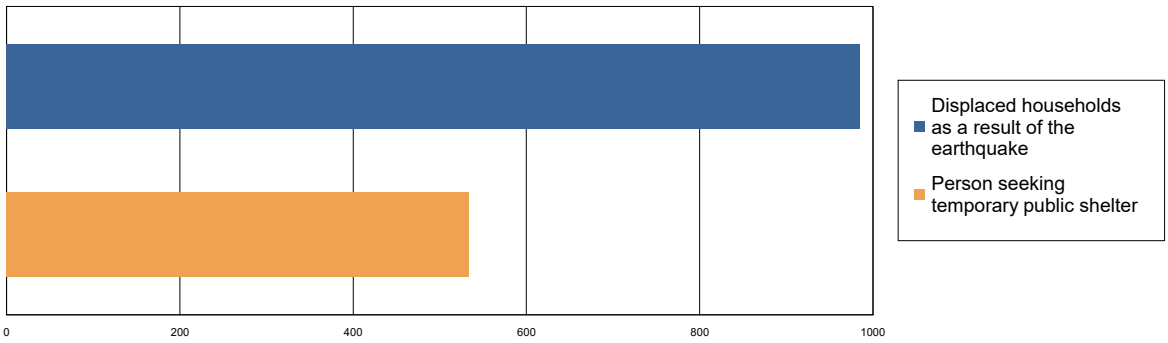
Brick/ Wood	Reinforced Concrete/Steel	Total Debris	Truck Load
0.26	0.25	0.50	20,080 (@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 985 households to be displaced due to the earthquake. Of these, 534 people (out of a total population of 172,332) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter
985	534

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	5.72	1.30	0.16	0.32
	Commuting	0.01	0.01	0.02	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	10.48	2.36	0.29	0.57
	Other-Residential	46.60	10.26	1.33	2.59
	Single Family	314.79	68.97	9.13	17.89
	Total	**378**	**83**	**11**	**21**
2 PM	Commercial	322.65	73.40	9.37	18.15
	Commuting	0.09	0.11	0.19	0.04
	Educational	151.77	36.47	5.19	10.06
	Hotels	0.00	0.00	0.00	0.00
	Industrial	77.30	17.44	2.19	4.20
	Other-Residential	8.91	2.02	0.27	0.51
	Single Family	59.90	13.54	1.87	3.51
	Total	**621**	**143**	**19**	**36**
5 PM	Commercial	230.64	52.79	6.83	13.04
	Commuting	1.70	2.13	3.76	0.72
	Educational	10.71	2.56	0.36	0.71
	Hotels	0.00	0.00	0.00	0.00
	Industrial	48.31	10.90	1.37	2.63
	Other-Residential	18.43	4.17	0.56	1.06
	Single Family	126.25	28.56	3.95	7.40
	Total	**436**	**101**	**17**	**26**

Economic Loss

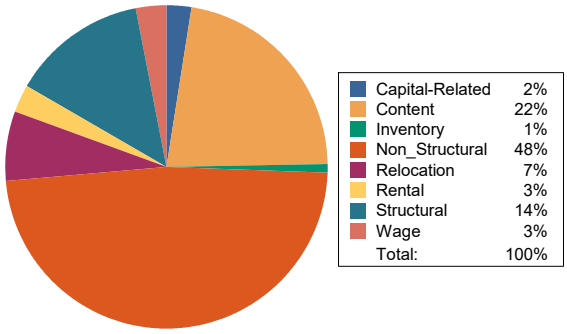
The total economic loss estimated for the earthquake is 2,189.90 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

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 1,994.97 (millions of dollars); 15 % 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 59 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

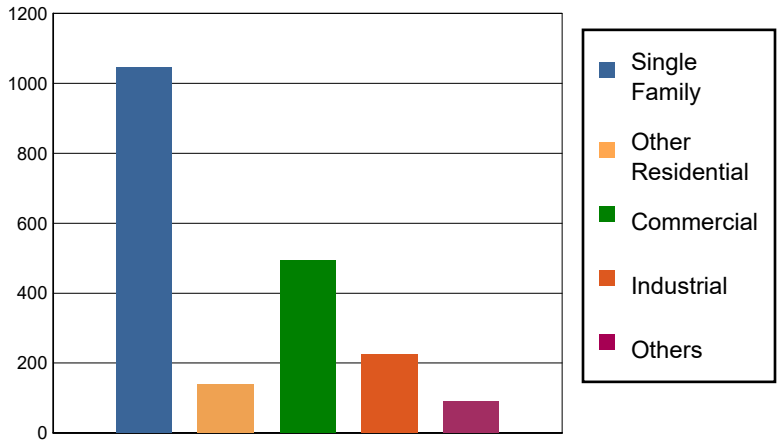


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	3.5769	50.2301	4.5634	3.2656	61.6360
	Capital-Related	0.0000	1.5254	44.4123	2.9568	0.6908	49.5853
	Rental	21.4570	7.9412	25.0446	1.7581	1.2470	57.4479
	Relocation	74.8676	4.8282	38.7896	8.8047	10.8372	138.1273
	Subtotal	**96.3246**	**17.8717**	**158.4766**	**18.0830**	**16.0406**	**306.7965**
Capital Stock Losses							
	Structural	145.0571	12.6629	66.2250	31.0436	16.1824	271.1710
	Non_Structural	570.9532	81.4508	171.8867	96.5033	35.8112	956.6052
	Content	232.7699	26.5802	95.6907	68.8562	21.5678	445.4648
	Inventory	0.0000	0.0000	2.7126	11.6393	0.5764	14.9283
	Subtotal	**948.7802**	**120.6939**	**336.5150**	**208.0424**	**74.1378**	**1688.1693**
	Total	**1045.10**	**138.57**	**494.99**	**226.13**	**90.18**	**1994.97**

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.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1325.2539	0.0000	0.00
	Bridges	157.6270	2.3973	1.52
	Tunnels	0.0000	0.0000	0.00
	Subtotal	**1482.8809**	**2.3973**	
Railways	Segments	141.9725	0.0000	0.00
	Bridges	0.8568	0.0034	0.40
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**142.8293**	**0.0034**	
Light Rail	Segments	0.0000	0.0000	0.00
	Bridges	0.0000	0.0000	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Bus	Facilities	1.1445	0.3569	31.18
	Subtotal	**1.1445**	**0.3569**	
Ferry	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Port	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Airport	Facilities	31.9530	8.0900	25.32
	Runways	189.8200	0.0000	0.00
	Subtotal	**221.7730**	**8.0900**	
	Total	**1,848.63**	**10.85**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	69.9300	14.7131	21.04
	Distribution Lines	119.8316	2.4302	2.03
	Subtotal	**189.7616**	**17.1433**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	1048.9500	164.1813	15.65
	Distribution Lines	71.8990	1.2208	1.70
	Subtotal	**1120.8490**	**165.4021**	
Natural Gas	Pipelines	0.0000	0.0000	0.00
	Facilities	4.5780	1.1238	24.55
	Distribution Lines	47.9326	0.4182	0.87
	Subtotal	**52.5106**	**1.5420**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Communication	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
	Total	**1,363.12**	**184.09**	

Appendix A: County Listing for the Region

Medina,OH

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
Ohio					
	Medina	172,332	17,198	4,805	22,003
Total Region		**172,332**	**17,198**	**4,805**	**22,003**