COLUMBIANA COUNTY

Multi-Jurisdictional All-Hazard Mitigation Plan 2013

JH Consulting LLC

COLUMBIANA COUNTY
MULTI-JURISDICTIONAL ALL-HAZARD
MITIGATION PLAN

SPONSORED BY THE COLUMBIANA COUNTY EMERGENCY MANAGEMENT AGENCY

RELEASED FEBRUARY, 2013

FOR COLUMBIANA COUNTY, OHIO AND ALL MUNICIPALITIES THEREIN

TABLE OF CONTENTS

1.0 INTRODUCTORY MATERIALS

1.0 Introduction..... i
1.1 Documentation of the Planning Process..... 1
1.2 Description of the Planning Area..... 9
1.3 Record of Changes..... 27

2.0 RISK ASSESSMENT

2.1 Identifying Hazards..... 31
2.2 Profiling Hazards..... 39
2.3 Asset Inventory..... 43
2.4 Estimate Losses..... 59
2.5 Analyzing Development Trends..... 61

3.0 LOCAL HAZARD MITIGATION GOALS

3.0 Local Hazard Mitigation Goals..... 65

4.0 PROJECT IMPLEMENTATION

4.1 Identification and Analysis of Mitigation Actions..... 82
4.2 Implementation of Mitigation Actions..... 103

5.0 PLAN MAINTENANCE PROCESS

5.0 Plan Maintenance Process..... 112

6.0 APPENDICES

Appendix 1: Hazard Profiles, Loss Calculations, Mapping..... A1-1
Appendix 2: Calculation Methodologies..... A2-1
Appendix 3: Glossary..... A3-1
Appendix 4: Evidence of Public Involvement..... A4-1
Appendix 5: Adopting Resolutions..... N/A

LIST OF FIGURES

Figure 1.1: Columbiana County Population Trends..... 11
Figure 1.2: Employment by Industry, 2009..... 15
Figure 2.1: Municipal Hazard Comparisons..... 37
Figure 2.2: Probability vs. Severity Chart..... 39
Figure 2.3: Risk Assessment Decision Matrix..... 42
Figure 2.4: Summary of Estimated Losses..... 60
Figure 2.5: Population Projection Chart..... 62

LIST OF TABLES

Table 1.1: Columbiana County Core Planning Committee (CPC)..... 4
Table 1.2: Participating Jurisdictions..... 5
Table 1.3: Columbiana County Population Projections..... 11
Table 1.4: Municipal Population Densities..... 12
Table 1.5: Approximate Route/Location..... 13
Table 1.6: Record of Changes Table..... 27
Table 2.1: Hazard Identification Table..... 33
Table 2.2: Jurisdictions Covered by the Plan..... 38
Table 2.3: Townships, Designated Places, & Unincorporated Communities..... 38
Table 2.4: Probability & Severity Values..... 40
Table 2.5: Hazard Probability Classifications..... 41
Table 2.6: Hazard Severity Classifications..... 41
Table 2.7: Columbiana County Asset Inventory..... 46
Table 2.8: Residential Construction..... 63
Table 4.1: Columbiana County Project Prioritization..... 104
Table 4.2: City of Columbiana Project Prioritization..... 109
Table 4.3: City of East Liverpool Project Prioritization..... 109
Table 4.4: City of Salem Project Prioritization..... 109
Table 4.5: Village of East Palestine Project Prioritization..... 109
Table 4.6: Village of Hanoverton Project Prioritization..... 110
Table 4.7 Village of Leetonia Project Prioritization..... 110
Table 4.8: Village of Lisbon Project Prioritization..... 110
Table 4.9: Village of New Waterford Project Prioritization..... 110

Table 4.10: Village of Rogers Project Prioritization..... 110
Table 4.11: Village of Salineville Project Prioritization..... 111
Table 4.12: Village of Summitville Project Prioritization..... 111
Table 4.13: Village of Washingtonville Project Prioritization..... 111
Table 4.14: Village of Wellsville Project Prioritization..... 111

1.0 INTRODUCTORY MATERIALS

1.0 INTRODUCTION

The *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan* update has been completed in accordance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390). The guidelines for the completion of this plan appear in the Code of Federal Regulations (CFR) under Title 44: Emergency Services, Part 201.6, as well as Comprehensive Preparedness Guide 201 (CPG 201): Threat and Hazard Identification and Risk Assessment (THIRA) Guide. The Ohio Emergency Management Agency (OEMA) – Mitigation Branch further monitored both the original and update planning processes. Funding for the original project was distributed by OEMA under the Pre-Disaster Mitigation (PDM) program. The first update of the plan was funded through Columbiana County utilizing the Emergency Management Performance Grant (EMPG) program.

The Columbiana County Emergency Management Agency (CCEMA) acted as the lead agency for the completion of this plan update at the local level, and worked in cooperation with municipal governments, citizens, and business owners of Columbiana County in a whole-of-community approach to compete the update. The CCEMA administered a consulting contract for both the Hazard Risk Assessment (HRA) and Action Plan (AP). The original HRA was completed in 2006; the updated HRA was completed in November, 2012. The original AP was completed in 2006; the first updated AP was completed in May 2013. The plan was formally adopted by participating jurisdictions in 2006. The first update was adopted in February of 2014.

The *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan* is considered “multi-jurisdictional” for several reasons. In addition to the county governing body of Columbiana County, all 13 municipal jurisdictions participated in the data compilation and AP development. The municipal jurisdictions provided representatives on the Hazard Mitigation Core Planning Committee (CPC) and contributed at least one (1) project to the AP. Further, all 13 governmental entities in Columbiana County formally adopted the plan by resolution (see Appendix 5).

The updated *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan* will serve to better prepare the county to become more disaster resistant to natural and man-made hazard events such as flooding, severe winter storms, and hazardous

materials incidents. The updating of this plan provides continued eligibility for future mitigation funds for Columbiana County and its citizens.

A number of documents were utilized as resources throughout the development and updating of the hazard mitigation plan. References to these documents are, at times, direct and cited; other references are indirect and implied. This paragraph and the table on page iii serves to formally recognize these documents.

- *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan, 2006*
- *Columbiana County Emergency Operations Plan, 2011*
- *Columbiana County Comprehensive Plan, 2013*
- *Columbiana County Radiological Emergency Plan, 2011*
- *Columbiana County Hazardous Materials Response Plan, 2008*

Community	Planning Commission	Comprehensive Plans	Floodplain Regulations	Building Codes[1]	Zoning Ordinances	Capital Budget[2]	Public Works Budget[2]
Columbiana County	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
City of Columbiana	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
City of East Liverpool	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
City of Salem	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of East Palestine	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of Hanoverton	Yes	Yes	Yes	Yes	No	None	Limited in-kind wages only.
Village of Leetonia	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of Lisbon	Yes	No	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of New Waterford	Yes	No	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of Rogers	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of Salineville	Yes	Yes	Yes	Yes	Yes	None	Limited in-kind wages only.
Village of Summitville	No	No	No	Yes	Yes	None	Limited in-kind wages only.
Village of Washingtonville	Yes	Yes	Yes	Yes	No	None	Limited in-kind wages only.
Village of Wellsville	Yes	No	Yes	Yes	Yes	None	Limited in-kind wages only.

[1] All jurisdictions within the state now follow the State Building Code. (Ohio Administrative Code 4101:1.)

[2] Budget that would allow the jurisdiction to devote financial resources towards hazard mitigation activities.

1.1 DOCUMENTATION OF THE PLANNING PROCESS

§201.6(b) and §201.6(c)(1)	An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

At the direction of the Columbiana County Emergency Management Agency (CCEMA), Columbiana County and its municipalities have developed and conducted the first update to their Multi-Jurisdictional All-Hazards Mitigation Plan in a continuing effort to indentify probable hazard risks, profile future hazard events, estimate damage and losses as a result of future hazard events, and advocate mitigation projects to reduce the effects of the identified hazards on the communities within the county. The plan's aim is to create safer, more disaster-resistant communities. The following plans and studies were integrated into this plan; the *Columbiana County Multi-Jurisdictional All-Hazards Mitigation Plan, 2006; Columbiana County Emergency Operations Plan, 2011; Columbiana County Comprehensive Plan, 2013; Columbiana County Radiological Emergency Plan, 2011; and Columbiana County Hazardous Materials Response Plan, 2008*.

The planning process utilized by Columbiana County is in accordance with Part 201.6 of Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390). Several resources were used during the development of the plan, including the US Department of Homeland Security's (USDHS) Federal Emergency Management Agency (FEMA) *Mitigation Planning How-To Series*, the governing regulations found in Title 44 – Emergency Management of the Code of Federal Regulations (CFR), and documents provided by Ohio Emergency Management Agency

(OEMA). The planning process utilized to update the plan included the following steps, which will be described in greater detail throughout the plan:

- Step 1: Re-establishment of a Core Planning Committee (CPC),
- Step 2: Conducting an update to the Hazard Risk Assessment (HRA),
- Step 3: Development of an updated Action Plan (AP), and
- Step 4: Re-adopting and implementing the updated plan.

The 2012-2013 Core Planning Committee (CPC) was formed by notifying and assembling individuals and organizations that previously served on the team when the plan was first drafted for 2006 and invited them to participate in updating the plan:

<u>County Organizations</u>
Columbiana County Commissioners,
Columbiana County Auditor's Office,
Columbiana County Engineer's Office,
Columbiana County Health Department,
Columbiana County Land Use Task Force,
Ohio State University Extension,
USDA – Farm Service Agency,
Columbiana County Soil and Water District, Floodplain Management.

<u>Major Employers</u>
American Standard Brand,
Flex-N-Gate/Ventra Salem,
Fresh Mark Inc.,
Hall China Company,
Matec Industries,
Salem Community Hospital,
Stevenson Manufacturing Co.,
Wellsville Terminals Co.

Colleges and Universities

Allegheny Wesleyan College – Salem,
Kent State University – Salem,
Kent State University – East Liverpool.

Non-Profit Organizations

AWARE (Alliance for Watershed Action and Resource Education),
Little Beaver Creek Land Foundation,
Tuscarawas River Buried Valley Watershed Council,
Yellow Creek Watershed Restoration Project.

The contiguous counties to Columbiana County were also invited to attend and participate these counties include:

Ohio:	Pennsylvania:	West Virginia:
Carroll County	Beaver County	Hancock County
Jefferson County	Lawrence County	
Mahoning County		
Stark County		

Although representatives of these counties were invited, none chose to participate as most were conducting the same processes to update their mitigation plans.

To guide the completion of the plan update at the local level, a multi-jurisdictional CPC was established to examine the community's risks and vulnerabilities to natural and man-made hazards. This committee was comprised of key officials representing state, county, municipal, and private entities with a stake in mitigation, and included the following.

Columbiana County Core Planning Committee (CPC)

Name	Organization
Bob Floor, Chief	Salem Police Department
Bob Zehentbauer, Emergency Planning	Columbiana County Health Department
Bill Jones, Chief	East Liverpool Fire Department
Doug Britvec, Project Manager	JH Consulting, LLC
Edie Dillard, Interim Director	Columbiana County EMA
Jay Groner, Service Director	City of Columbiana
Jeff Hughes, Chief	Salem Fire Department
Jim Hoppel, Commissioner	Columbiana County Commission
Joe Ferris, Trustee	Unity Township
John Payne, Commissioner	Columbiana County Commission
Julie Dunlop, Emergency Preparedness Coordinator	East Liverpool City Hospital
Ken Kenst, Service Director	City of Salem
Matt Hoopes, Assistant Superintendent	City of Salem Utilities
Rudy Sacchet	General Public
Sally Keating, Councilwoman	Village of Salineville
Samantha Works, Deputy Director	Columbiana County EMA
Sean Sharp, Emergency Planner	JH Consulting, LLC
Tim Weigle, Trustee	Unity Township

Table 1.1

The incorporated jurisdictions of Columbiana County listed in Table 1.2 below are seeking inclusion into the *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan*, and provided input into the plan by attending the Core Planning Committee (CPC) Meeting / Public Meeting, and providing mitigation ideas for integration into the plan via email and conference calls.

Community/Jurisdiction	Position/Title	Agency/Organization
Columbiana County	Commission President	Columbiana County Board of Commissioners
City of Columbiana	Council President	City Council – City of Columbiana
City of East Liverpool	Mayor	City of East Liverpool
City of Salem	Mayor	City Council – City of Salem
Village of East Palestine	President of Council	Village Council – Village of East Palestine
Village of Hanoverton	Mayor	Village Council – Village of Hanoverton
Village of Leetonia	Mayor	Village Council – Village of Leetonia
Village of Lisbon	President of Council	Village Council – Village of Lisbon
Village of New Waterford	Mayor	Village Council – Village of New Waterford
Village of Rogers	Mayor	Village Council – Village of Rogers
Village of Salineville	Mayor	Village Council – Village of Salineville
Village of Summitville	Mayor	Village Council – Village of Summitville
Village of Washingtonville	Mayor	Village Council – Village of Washingtonville
Village of Wellsville	Mayor	Village Admin. – Village of Wellsville

Table 1.2

1.1.1. First Plan Update Process

1.1.1A OVERVIEW

This current updated version of the *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan* was compiled by the Columbiana County Emergency Management Agency (CCEMA) staff, and its Risk Assessment Core Planning Committee (CPC), as well as JH Consulting, LLC of West Virginia. The planning process to complete the first five (5)-year update of the plan was similar to the process used to originally develop the document. In December 2010, the Columbiana County Emergency Management Agency (CCEMA), with assistance from the Soil Conservation District compiled a list of potential members for the Core Planning Committee (CPC). The committee included primarily representatives from the county, cities, villages, and the emergency services organizations within the

county (i.e., fire, police, etc.). Other organizations that were involved in the process included utility providers, and county engineering staff. In January 2011, the CCEMA hosted a Hazard Mitigation Overview course conducted by the Ohio Emergency Management Agency (OEMA). This course outlined each of the requirements necessary for communities and businesses participating in updating the county Multi-Jurisdictional All-Hazard Mitigation Plan. In February 2011, the CPC met and collectively determined that revision to the existing plan was most appropriate. Stakeholders were to review existing strategies and goals and return updates/additions during follow-up meetings. In May 2011, additional mitigation strategies were added for the following communities; East Palestine, New Waterford, Leetonia, and Hanoverton.

The update process was completed between December, 2010 and, February, 2014. It was facilitated through a stakeholders/public meeting. The "stakeholders" meeting were sessions with the Core Planning Committee (CPC). The CCEMA utilized the services of a planning consultant (JH Consulting, LLC of West Virginia) to guide the update process. The consultant provided an objective perspective to ensure that the CPC was achieving the goals that the HMC had intended to achieve in 2006.

CPC members consistently reported the actions of the project stakeholders back to the participating jurisdictions. As such, participating jurisdictions and the public were continually updated as to the status of the plan's preparation.

Feedback received from the CPC and the public provided valuable in the development of the plan. All governmental jurisdictions in Columbiana County were polled in an effort to gather local opinion on prominent hazards and high-priority mitigative actions. As a result, the plan reflected Columbiana County's specific needs, and proved to be a document county residents felt ownership of, and utilized to make educated decisions to reduce their vulnerability to hazards.

1.1.1B METHODOLOGY

A Core Planning Committee (CPC) Meeting / Public Meeting was held during the updating process. The CPC/Public Meeting was held on September 7, 2012 at the Columbiana County Emergency Management Agency (CCEMA) facility. The CCEMA invited members of the CPC to this meeting via memorandum (see Appendix 4 – Public Involvement), this meeting was also publicized in the *Morning*

Journal, and notice was openly posted at the CCEMA office. The primary topics of discussion were updating the hazard list, discussing any emergencies, or large-scale natural hazard events that had occurred since 2006, updating the asset inventory list, and addressing any new development trends that may have occurred since 2006.

This meeting provided the public the opportunity to comment on the existing mitigation plan, as well as the proposed revisions to the document. The meeting was poorly attended by the general public.

Many of the same resources used for research during the original development of the plan were again utilized to update the plan. The Hazard Risk Assessment (HRA) phase of the mitigation plan update was completed using a variety of research techniques. Federal Emergency Management Agency (FEMA) GeoHazards, National Climatic Data Center (NCDC), Spatial Hazard Events and Losses Database for the United States (SHELDUS), and other Internet sites were searched for historical hazard event records. Representatives from JH Consulting, LLC conducted searches of local newspaper archives and existing reports and plans that were on file with the county EMA and participating jurisdictions to assist in the determination of hazard-susceptibility areas. Interviews and other discussions were conducted with numerous local officials, including first responders and other emergency services officials to ascertain the risks associated with particular hazards in specific areas of the county. After identifying the areas in which the hazards were most prominent, they were profiled and positioned into a base map of the county. This Geographic Information System (GIS)-based map contains several themes with information regarding the individual hazards. Assets (i.e., structures, utilities etc.) were inventoried and loss estimates were calculated for each of the inventoried assets with respect to the hazards profiled on the GIS-based maps. The consultant compiled all project documents and forwarded them to the CCEMA for draft distribution to CPC members. As such, the CPC could comment on the plan as it was being developed. Further, this allowed participating jurisdictions an on-going opportunity to be engaged as participants and to provide input to affect the plan's content, which expedited the adoption process (see section 1.1.1.C below).

During the initial stages of the updating process the CCEMA published an advertisement in the local newspaper inviting the public to the review the original plan at the Columbiana County Emergency Operations Center (EOC) during regular business hours. A Public Comment Form was developed and distributed by the

CCEMA to any member of public that visited the EOC to review the original plan, allowing them to comment on improvements that could be made to the original plan during the update.

Following the compilation of the updated/revised plan, the CCEMA published an advertisement in the local newspaper inviting the public to review the revised Columbiana County Multi-Jurisdictional All-Hazards Mitigation Plan at the Columbiana County Emergency Operations Center (EOC) during regular business hours. Public Comment Forms were distributed for the revised/updated plan as well. Copies of the updated/revised plan were also made available for the public online at the CCEMA website. Comments received were implemented into the plan as appropriate.

1.1.1C FORMAL ADOPTION OF THE UPDATED PLAN

The updated *Columbiana County Multi-Jurisdictional All-Hazards Mitigation Plan* was developed as a multi-jurisdictional plan; therefore, to meet the requirements of Section 322 the final plan will be re-adopted by formal resolution by each of the participating municipalities, as well as the county to implement the plan in their jurisdiction. This process was aided by the on-going participation of the jurisdictions during the update process. Further, the Columbiana County Emergency Management Agency (CCEMA) provides technical assistance to any governing body requesting it during the adoption process. To ensure that jurisdictions only need to sign a single resolution, the adoption process will be started upon federal approval pending adoption. See Appendix 5 – Adopting Resolutions for adoption letters for the county and each participating municipality.

1.2 DESCRIPTION OF THE PLANNING AREA

1.2.1. Columbiana County

Columbiana County is one (1) of 88 counties in the State of Ohio, the county is located in the northeastern portion of the state and is considered part of the state's Appalachian Region. It is bordered on the north by Mahoning County, OH; on the northeast by Lawrence County, PA; on the east by Beaver County, PA; on the southeast by Hancock County, WV, and the Ohio River; on the south by Jefferson County, OH; on the southwest by Carroll County, OH; and on the west by Stark County, OH. The county was established on May 1, 1803, and named for Christopher Columbus and Queen Anna. The county contains 13 incorporated municipalities including the Cities of Columbiana, East Liverpool and Salem, as well as the Villages of East Palestine, Hanoverton, Leetonia, New Waterford, Rogers, Salineville, Summitville, Washingtonville, Wellsville and Lisbon, which functions as the county seat with a population of 2,821. Columbiana County has a total population of 107,841 (2010 U.S. Census) with a population density of 203 persons per square miles (203/mi^2), and is the sole county in the East Liverpool – Salem Micropolitan Statistical Area (µSA). Metropolitan cities located within close proximity to Columbiana County include Youngstown, OH (17 miles) and Pittsburgh, PA (50 miles).

According to the U.S. Census the county has a total area of 532 square miles (mi^2). Columbiana County varies in elevation from a low of 652 feet above sea level, to a high of 1,447 feet above sea level at Round Knob in Madison Township, yielding a maximum relief of 795 feet. Rivers and streams are prominent features in the Columbiana County landscape with the Ohio River forming the southeastern border of the county, and various branches of Yellow Creek and Beaver River draining most of the region. A watershed passing through the western portion of the county is responsible for draining the northwestern section into the Mahoning River, while the southwestern section is drained by the Tuscawaras – Muskingum system. The topography of Columbiana County is varied with a glacial boundary running through the central portion of the county from east to west near the Village of Lisbon. As a result the northern section of the county is very fertile and suited to agriculture, while the southern section is somewhat more hilly and is more adapted to pastureland, fruit production and timber. The county is located on the border of an area known as the Glaciated Allegheny

Plateaus. Northeast Ohio was covered by glaciers during the Wisconsinan glaciations, and the current landscape in the northern part of the county was formed to some extent as the glaciers receded approximately 14,000 years ago.

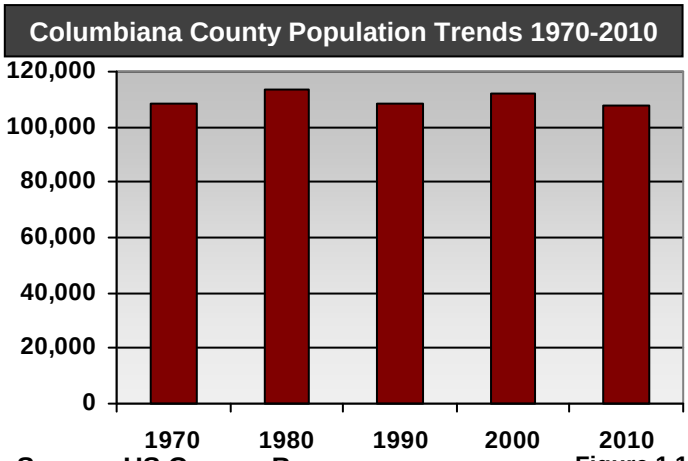
Land Cover / Climate

A large portion of Columbiana County's land cover is forested; nearly 56 percent (56%) of the total land cover is that of forest. Agricultural cropland makes up another 25% of the total land cover. Approximately 1,030 individual farms operate in Columbiana County, with an average size of 125 acres per farm. Columbiana County's topography is varied with the northern portion being flat and open, to gently sloping, offering limited protection against strong straight-line winds or tornadoes that may form and touchdown. These high winds can be damaging to both structural and agricultural assets. The southern area of the county, with its rolling hills, has a somewhat higher degree of protection from these hazards.

Columbiana County has a continental-type climate, predominantly influenced by air from the west. There is considerable variation in seasonal temperatures, with none of the temperatures being considered severe. The climate of Columbiana County is seasonal in nature, with wet stormy springs, warm summers, colorful falls, and cold snowy winters. The average temperature in January is 26°F; the July average temperature is 71°F, creating a mean average temperature of 49°F. Precipitation is evenly distributed throughout the year, with an annual average of approximately 39 inches (39"). Data from the National Weather Service (NWS) indicate that the area experiences approximately 30 inches (30") of snowfall per year, usually during the November to April winter season.

Population Trends

Demographic information is an integral part of community and mitigation planning. According to the Federal Emergency Management Agency's (FEMA) *Risk, Hazard and Value Evaluation*, "an awareness of changes in population projections help decision makers anticipate needs before they arise." Columbiana County's population has maintained a constant variance since the 1970's. This fluctuation can partially be attributed to the fact that the county is located along the nation's former industrial belt, and one (1) of its economic focuses was pottery and the supporting manufacturing industries. Industrial and extractive industries were important in the development of the county. Coal, limestone, and clay mines are located beneath areas of the county. Agriculture, pottery and other related industries were the driving factors behind Columbiana County's economy. Columbiana County's population trends are represented in Figure 1.1 above. According to 2010 reports from the U.S. Census Bureau, Columbiana County has a population of 107,841, which is a decrease of 4,234 from 2000. Census figures also indicate that there are 47,088 housing units in Columbiana County. Housing units include both traditional houses and apartments. The county has an average of 2.48 persons per household. Further, the county's Median Household Income (MHI) is listed at $39,502.



Source: US Census Bureau **Figure 1.1**

The Ohio Department of Development predicts the following population projections for Columbiana County:

Columbiana County Population Projections		
Year	**Percent change from Year 2000 Population**	**Population Projections**
2020	4.45% increase	112,520
2030	0.75% decrease	112,000

Source: Ohio Department of Development **Table 1.3**

Population density is measured in person per square mile. Because Columbiana County's boundaries are set and the population is decreasing, population density is also decreasing. The population density within the incorporated areas of Columbiana County is much higher than in the rural areas. Table 1.4 demonstrates this fact. Such a situation can be expected in future years, as municipalities offer the greatest access to such services as health care, emergency services, educational facilities, recreation, etc.

Municipal Population Densities			
Municipality	**Population (2010)**	**Land Area (in sq.mi.)**	**Persons per Square Mile**
City of Columbiana	6,384	6.00	1,064
City of East Liverpool	11,195	4.56	2,455
City of Salem	12,303	6.43	1,913
Village of Hanoverton	408	0.71	575*
Village of East Palestine	4,721	2.77	1,704
Village of Leetonia	1,959	2.11	928
Village of Lisbon	2,821	1.11	2,541
Village of New Waterford	1,238	0.89	1,391*
Village of Rogers	237	0.23	1,030*
Village of Salineville	1,311	2.22	591
Village of Summitville	135	0.93	145*
Village of Washingtonville	801	0.67	1,196
Village of Wellsville	3,541	1.76	2,012
Columbiana County (Total)	107,841	532	203

* Persons per square mile totals are higher than populations because municipal land area is less than 1 square mile.

Table 1.4

The highest concentration of residents lives in the Cities of Columbiana, East Liverpool, and Salem. The most heavily populated area is the urbanized northern portion of the county. The southern and western rural areas are less densely populated; however, unincorporated areas account for approximately sixty percent (60%) of the county's total population. The population density within what are termed "rural areas" can vary significantly as well. For instance, subdivision or unincorporated communities may include clusters of person and homes that result in very small, dense areas located sporadically throughout rural Columbiana County.

Highway infrastructure

Columbiana County's transportation infrastructure is comprised of highway, railway, and air elements. The county contains approximately 58 miles of U.S. Highway, and 252 miles of State Highway. U.S. Routes 30; and OH State Routes 11 are the

principal arterial routes through the county with State Route 11 providing direct connection between the Ohio River and Lake Erie (see Table 1.5 below). Many sections of these roadways are two-lane, divided highway. There are several bridges and culverts located throughout Columbiana County, which are vital components of the transportation infrastructure. Other components of Columbiana County's highway infrastructure include State Routes 14, 39, 154, 172, 173, 344, 517, 518 and 558 all of which travel east and west, and State Routes 7, 9, 45, 46, 164, 170, and 644 which travel north and south.

Highway	Approximate Route/Location
	East/West – U.S. Route 62 traverses Columbiana County from Salem heading West where it enters Stark County. The route travels along the Columbiana/Mahoning county line across Butler and Knox Townships.
	East/West – U.S. Route 30 (Lincoln Hwy) travels through Lisbon from West Virginia through Hanoverton and Minerva before crossing into Stark County.
	East/West – State Route 39 travels from East Liverpool West through the Highlandtown Wildlife Area and Salineville before entering into Carroll County.
	East/West – State Route 154 travels from Lisbon heading East passing through Rogers before entering into the State of Pennsylvania.
	East/West – State Route 172 travels from Lisbon heading West past Guilford Lake, through Zeppernick Lake and State Wildlife Area before entering into Stark County.
	East/West – State Route 344 is contained entirely in Columbiana County. Its western terminus is at State Route 14 and 9 in downtown Salem, and its eastern terminus is along a concurrency with State Route 164 in downtown Columbiana. The route passes through Leetonia.
	East/West – State Route 558 is a 16 mile long route that runs between Salem and East Palestine. Most of the route is a rural two-lane highway passing through farmland, woodland, and spare residential properties.
	North/South – State Route 7 travels North from Wellsville to East Liverpool passing the Beaver Creek State Forest, then travels through Rogers and Columbiana before entering Mahoning County.
	North/South – State Route 9 travels North from Carroll County passing through Hanoverton on its way to Salem where it continues as U.S. Route 62 in Mahoning County.
	North/South – State Route 11 is in the eastern portion of Ohio. Its southern terminus is on U.S. Route 30 in East Liverpool at the West Virginia state line on the Jennings Randolph Bridge over the Ohio River; its northern terminus is at State Route 531 in Ashtabula. The route is concurrent with U.S. Route 30 through East Liverpool and with Interstate 80 near Youngstown. Exits off of State Route 11 in Columbiana County include; Midland, East Liverpool, Calcutta, East Palestine, Lisbon, Rogers, Leetonia, and Columbiana.

Table 1.5

Highway	Approximate Route/Location
45	North/South – State Route 45 travels North from Wellsville passing through Lisbon on its way to Salem where it joins with U.S. Route 62.
46	North/South – State Route 46 travels North from New Waterford to Columbiana. Its southern terminus is at State Route 170 in East Palestine.
164	North/South – State Route 164 travels North from Jefferson County passing through Salineville, the Highlandtown Wildlife Area, and Lisbon on its way to Columbiana before crossing into Mahoning County.
170	North/South – State Route 170 travels North from East Liverpool passing through East Palestine on its way to Mahoning County.
644	North/South – State Route 644 travels North from Salineville passing through Summitville, continuing to U.S. Route 30 just South of Hanoverton. Its southern terminus is at State Route 39 in downtown Salineville.

Table 1.5 Continued

Railway Infrastructure

Railway lines are also a part of the county's transportation infrastructure. Columbiana County is served by Norfolk Southern (NS) and CSX Railways as well as the Columbiana County Port Authority's regional railroad (Youngstown and Southeastern).

These rails pass through or near the municipalities of Columbiana, East Liverpool, East Palestine, Leetonia, New Waterford, Rogers, Salem, Salineville, Summitville and Wellsville.

Airway / Waterway Infrastructure

Airways play a part in the county's transportation infrastructure. The Columbiana County Airport, located between East Liverpool and Lisbon, is a limited service public airport and home to 28 aircraft. There are two (2) airports within close proximity to Columbiana County that provide international service, Cleveland Hopkins International Airport (CLE), and Pittsburgh International Airport (PIT). There are two (2) regional airports within close proximity to Columbiana County, including Youngstown-Warren Regional Airport (YNG), and Akron-Canton Regional Airport (CAK); they provide general and commercial aviation. The Youngstown-Warren Regional Airport is located in Vienna Township and is home to the 910th Airlift Wing (AW) of the US Air Force. There are also several small public and private airstrips throughout the county.

Columbiana County is approximately 100 miles south of the Lake Erie port of Ashtabula on State Route 11, known as the " Lake to River road", which terminates at East Liverpool. In regard to cargo movement on the Ohio River, Columbiana County is geographically located as the northern most point of the Ohio River. It serves as a feeder port for the industrial base of the Cleveland/Pittsburg corridor. Lesser known than the Lake Erie ports, the Ports of Columbiana County account for the handling of over 15 million tons of cargo on the Ohio River each year. This is extremely important as the Ohio River is a main conduit for the internal rivers and waterways running throughout the United States. According to Cleveland Plus (2007) the Ohio River accounts for over one-third of the maritime cargo moving inland in the United States each year, (approximately 275 million tons), and by comparison handles more cargo per year than the Panama Canal. When combined with the adjacent 10 county Port of Pittsburgh system, Columbiana County constitutes the 7th largest Port in the United States.

Economic Trends

Columbiana County has a very diverse employment sector. According to 2009 Economic Census information from the Ohio Department of Development, the largest areas of employment are service, transportation/utilities, and construction as illustrated in Figure 1.2 Total employment is currently 46,100 persons. The county's unemployment rate is approximately 10.2 percent (10.2%). In 2011, a total of 152 new businesses opened bringing the net formation of active businesses to 1,838. The major employers of the county include American Standard Brands, Columbiana County Government, East Liverpool City Schools, East Liverpool City Hospital, Flex –N – Gate/Ventra Systems, Fresh Mark Inc., Salem City Schools, Salem Community Hospital and Wal-Mart Stores.

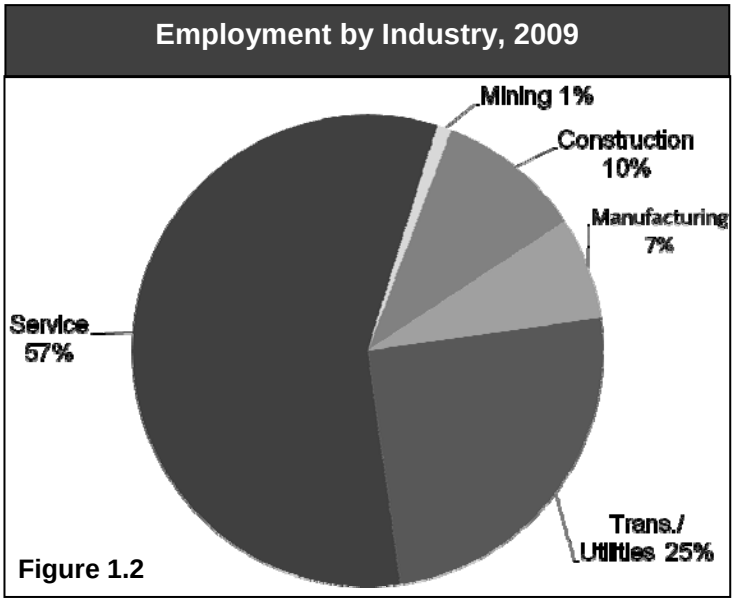


Figure 1.2

Columbiana County is the home of several tourist attractions, including Beaver Creek State Park, Guilford Lake State Park, Highlandtown Wildlife Area, Leetonia Coke Ovens, Museum of Ceramics, Sandy and Beaver Canal District, Scenic Vista Park, Sheepskin Hollow State Nature Preserve, Thompson House Museum, Yellow Creek State Forest, and Zeppernick Lake State Wildlife Area.

Education System

The education system in Columbiana County consists of 40 public schools at which 16,641 students attend and 1,014 teachers instruct, as well as four (4) private schools at which another 621 students attend, Kent State University at East Liverpool, and Kent State at Salem. The graduation rate is currently at 86.1percent (86.1%).

Healthcare System

Several health care facilities are located in Columbiana County. Currently, there are two (2) registered hospitals with 376 available beds, including Salem Community Hospital, and East Liverpool City Hospital. There are also six (6) licensed residential care facilities with 329 available beds, and 14 licensed nursing homes with 948 available beds. Evacuation of these facilities during an emergency situation could be a concern due to the large number of vulnerable populations that fill them. The Columbiana County Health Department is a public health agency that serves most of the communities and townships in the county.

1.2.2. City of Columbiana

The City of Columbiana is considered a suburb of Youngstown, Ohio and is located in northern Columbiana County in Fairfield Township. A portion of the city is also located in southern Mahoning County. The Columbiana County portion of the city is part of the East Liverpool–Salem Micropolitan Statistical Area (µMA), while the Mahoning County portion is part of the Youngstown–Warren–Boardman, OH-PA Metropolitan Statistical Area (MSA). The City of Columbiana is situated 78 mile east of Cleveland, 17 miles south of Youngstown, and 58 miles west of Pittsburgh. The city can be accessed utilizing State Routes 14, 46, and 164.

Columbiana was the home of an early settler by the name of Joshua Dixon. He came to Fairfield Township in 1798, Dixon laid out the village of Columbiana on August 21, 1803. Columbiana had a railroad and three (3) stores by 1831. Columbiana was the birthplace of Harvey S. Firestone, who founded the Firestone rubber company in Akron, Ohio. There is still a Firestone tractor-tire test facility a few miles northeast of the city, and many town facilities are named after him. Columbiana is also known for the Shaker Woods Festival, held annually in August, which features some of the best crafters and artisans in the country. Another major town event is the Columbiana Street Fair, which is held Thursday through Saturday following Labor Day. The Village of Columbiana became The City of Columbiana in 2000.

The City of Columbiana has three (3) public schools; Joshua Dixon Elementary School, South Side Middle School and Columbiana High School. Also operating within the city is one (1) private school; Heartland Christian School.

The City of Columbiana has a land area of 6.0 square miles (mi^2) and the general elevation of the village is 1,043 feet above sea level. According to the Columbiana County Emergency Operations Plan (EOP), portions of Columbiana City is located in a known 100-year floodplain. According to the 2010 Census, the City of Columbiana has a total population of 6,384 (5,718 – Columbiana County; 666 – Mahoning County) and contains 3,181 total housing units with an average of 2.36 persons per household. The city currently reports a Median Household Income (MHI) of $38,464.

1.2.3. City of East Liverpool

The City of East Liverpool is considered a suburb of Youngstown, Ohio and is located in southeastern Columbiana County in Liverpool Township, and is part of the East Liverpool–Salem Micropolitan Statistical Area (μSA). The City of East Liverpool is situated at the point where the States of Ohio, Pennsylvania, and West Virginia meet, approximately 51 mile east of Canton, 47 miles south of Youngstown, and 39 miles west of Pittsburgh. The city can be accessed utilizing U.S. Route 30, as well as State Routes 7, 11, 39, and 267. The Columbiana County Airport is located nearby, and the city is only 23 miles from Pittsburgh International Airport (PIT).

The city was incorporated in 1834 and became known as “The Crockery City” after James Bennett established the pottery industry in the city and became its leading employer. East Liverpool has been noted for producing over half of the annual output of ceramics in the United States at one point in time. Throughout the city’s ceramics history there have been over 300 potteries, however only three (3) remain in operation in the area today.

The City of East Liverpool has three (3) public schools within its limits; North Elementary School, East Liverpool Middle School and East Liverpool Junior/Senior High School. Also operating within the city is two (2) private school; St. Aloysius Elementary. Kent State University also has a regional campus located within the city. There is also an online school located in East Liverpool.

The City of East Liverpool has a land area of 4.4 square miles (mi^2) and the general elevation of the village is 689 feet above sea level. According to the 2010 Census, the City of East Liverpool has a total population of 11,195 and contains 5,316 total housing units, with an average of 2.38 persons per household. The city currently reports a Median Household Income (MHI) of $28,397

1.2.4. City of Salem

The City of Salem is located in northern Columbiana County in Perry Township and is a principal city of the East Liverpool–Salem Micropolitan Statistical Area (µSA), while a small portion of the city lies in Mahoning County, and is considered part of the Youngstown – Warren – Boardman, OH – PA Metropolitan Statistical Area. The City of Salem is centrally situated approximately 65 miles from both Pittsburgh and Cleveland, and 20 miles southwest of Youngstown. The city can be accessed utilizing U.S. Route 62, as well as State Routes 9, 14, 45 and 344.

The city was founded in 1806 by a Pennsylvanian potter and a New Jersey clockmaker, and its name is derived from “shalom” or “salaam”, meaning “peace”. Early settlers to the area included members of the Religious Society of Friends (Quakers) to whom the local schools system honor by collectively referring to themselves as the “Quakers”.

The City of Salem has four (4) public schools within its limits; Buckeye Elementary School, Reilly Elementary School, Southeast Elementary and Salem Junior/Senior High School. Also operating within the city is one (1) private school; St. Paul Elementary. Kent State University also has a regional campus located south of the city. Salem contains a large portion of the county’s industrial and commercial assets to include Salem City Hospital, which is a registered hospital.

The City of Salem has a land area of 6.4 square miles (mi^2) and the general elevation of the village is 1,227 feet above sea level. According to the 2010 Census, the City of Salem has a total population of 12,301 and contains 5,763 total housing units with an average of 2.25 persons per household. The city currently reports a Median Household Income (MHI) of $33,939

1.2.5 Village of Hanoverton

The Village of Hanoverton is located in western Columbiana County in Hanover Township approximately 11 miles south of Salem, and 25 mile east of Canton. The village is accessible using U.S. Route 30 and State Routes 9. The Guilford Lake State Park is located just to the north and east of the village.

Hanoverton is home to the historic Spread Eagle Tavern, an inn/restaurant (illustrated on right) which has been visited by Abraham Lincoln, Dan Quayle, Dick Cheney, and most recently John McCain, who was campaigning for the 2008 Presidential race at the town's school, United Local High School.

The Village of Hanoverton has a land area of 0.7 square miles (mi^2) and the general elevation of the village is 1,227 feet above sea level. According to the 2010 Census, the Village of Hanoverton has a total population of 408 and contains 175 total housing units with an average of 2.52 persons per household. The village currently reports a Median Household Income (MHI) of $38,077

1.2.6 Village of East Palestine

The Village of East Palestine is located in northeastern Columbiana County in Unity Township approximately 23 miles south of Youngstown, 18 miles north of East Liverpool, and 51 miles northwest of Pittsburgh. The village is accessible using State Routes 170 and 558. The East Palestine Reservoir and Werner/Duncan Lake dams which are Class II dams are located within close proximity to the city.

The village was founded in 1828 and later incorporated in 1875. Nearby clay pits supported the pottery industry; the W.S. George Pottery Company was formed in 1909 from the East Palestine Pottery Company and operated until 1970.

The Village of East Palestine has three (3) public schools within its limits; East Palestine Elementary School, East Palestine Middle School and East Palestine High School.

The Village of East Palestine has a land area of 2.8 square miles (mi^2) and the general elevation of the village is 1,001 feet above sea level. According to the 2010 Census, the Village of East Palestine has a total population of 4,721 and contains 2,125 total housing units with an average of 2.46 persons per household. The village currently reports a Median Household Income (MHI) of $43,139

1.2.7 Village of Leetonia

The Village of Leetonia is in north central Columbiana County in Salem Township just east of the City of Salem, and adjoins the Village of Washingtonville. The village is accessible utilizing State Route 344, with State Route 11 close by.

The Village of Leetonia was founded in 1869, following the American Civil War. Leetonia was named for William Lee of Randolph, New York. Lee was one of the founders of the Leetonia Iron and Coal Company which was laid out in the village in 1866-1867.

The Village of Leetonia has a land area of 2.11 square miles (mi^2) and the general elevation of the village is 1,021 feet above sea level. According to the 2010 Census, the Village of Leetonia has a total population of 1,959 and contains 838 total housing units with an average of 2.62 persons per household. The village currently reports a Median Household Income (MHI) of $38,694

1.2.8 Village of Lisbon

The Village of Lisbon is in central Columbiana County in Center Township and serves as the county seat. The village is located 33 mile east of Canton, 23 miles southwest of Youngstown, and 56 mile northwest of Pittsburgh. The village is accessible utilizing several thoroughfares to include U.S. Route 30, and State Routes 11, 45, 154, 164 and 517.

On the north bank of Middle Beaver Creek, the Village of Lisbon was founded shortly after 1800. The village was incorporated under a special act of legislature on February 7, 1825. Originally known for its iron and whiskey production (sold at $0.25 per gallon), New Lisbon became a hodge-podge of mills, tanneries, a cement works, a salt works, carpenters, gunsmiths, hotels, clothiers, etc. The Village also claimed the county's first bank, the Columbiana Bank of New Lisbon, its first insurance company, Columbiana County Mutual Insurance, and its first newspaper, a German paper called "Der Patriot am Ohio."

The Village of Lisbon has two (2) public schools within its limits; McKinley Elementary School, and the David Anderson Junior/Senior High School and the Columbiana County Career and Technical Center south of the village.

The Village of Lisbon has a land area of 1.11 square miles (mi^2) and the general elevation of the village is 968 feet above sea level. According to the 2010 Census, the Village of Lisbon has a total population of 2,821 and contains 1,287 total housing units with an average of 2.35 persons per household. The village currently reports a Median Household Income (MHI) of $31,174.

1.2.9 Village of New Waterford

The Village of New Waterford is in northeastern Columbiana County in Unity Township. The village is located five (5) miles southeast of Columbiana, and four (4) mile northwest of East Palestine. The access to the village is limited to utilizing State Route 46 only. Bull Creek flows along the village's entire eastern border.

In 1851, New Waterford was laid out and platted by John and Robert Silliman in anticipation of the railroad. John Taylor made two (2) additions later. The railroad station was originally called Bull Creek Station in 1852, but was changed a few years later. It is believed the first Taylor family came from Waterford, Ireland and thus the name New Waterford was selected.

The Village of New Waterford has a land area of 0.9 square miles (mi^2) and the general elevation of the village is 1,047 feet above sea level. According to the 2010 Census, the Village of New Waterford has a total population of 1,238 and contains 558 total housing units with an average of 2.41 persons per household. The village currently reports a Median Household Income (MHI) of $37,856

1.2.10 Village of Rogers

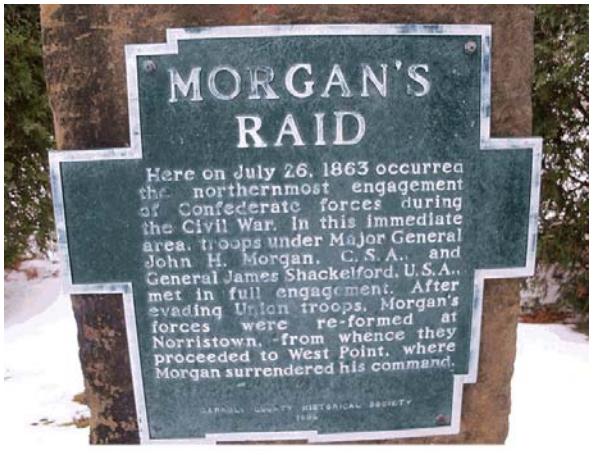
The Village of Rogers is located in east central Columbiana County in Middleton Township. The village is located 10 miles east of Lisbon, and is accessible utilizing State Route 7, and 154.

The village is noted as being the home to Rogers Community Auction and Flea Market which draws over 1,000 vendors. One of the largest flea markets in Ohio, it is an open air market held year-round.

The Village of Rogers has a land area of 0.2 square miles (mi^2) and the general elevation of the village is 1,027 feet above sea level. According to the 2010 Census, the Village of Rogers has a total population of 237 and contains 93 total housing units with an average of 2.79 persons per household. The village currently reports a Median Household Income (MHI) of $28,740.

1.2.11 Village of Salineville

The Village of Salineville is located in southern Columbiana County in Washington Township near the Columbiana-Jefferson County Line. The village is accessible utilizing State Routes 39,164, and 644. The Yellow Creek State Forest is located just to the west of the village, and Yellow Creek flows through the northern portion of the village.



The Civil War Battle of Salineville, which ended Morgan's Raid and resulted in the capture of Confederate General John Hunt Morgan, took place near Salineville on July 26, 1863. The community was named for the local salt springs.There is one (1) school located in the Salineville area, Southern Local Junior/Senior High.

The Village of Salineville has a land area of 2.2 square miles (mi^2) and the general elevation of the village is 899 feet above sea level. According to the 2010 Census, the Village of Salineville has a total population of 1,311 and contains 591 total housing units with an average of 2.52 persons per household. The village currently reports a Median Household Income (MHI) of $30,206.

1.2.12 Village of Summitville

The Village of Summitville is located in southern Columbiana County in Franklin Township. Summitville is 27 miles east of Canton, Ohio, and 49 miles west of Pittsburgh, Pennsylvania. The village is conveniently located inside the Youngstown–Warren–Boardman; OH-PA Metropolitan Statistical Area (MSA). The village is accessible utilizing State Route 644, which runs north/south through the center of the village. Brush Creek flows just to the north of the village.

The Village of Summitville has a land area of 0.9 square miles (mi^2) and the general elevation of the village is 1,109 feet above sea level. According to the 2010 Census, the Village of Summitville has a total population of 135 and contains 55 total housing units with an average of 2.65 persons

per household. The village currently reports a Median Household Income (MHI) of $44,617.

1.2.13 Village of Washingtonville

The Village of Washingtonville is located in north central Columbiana County in Salem Township and borders with the Village of Leetonia. Washingtonville is another one of the incorporated communities within Columbiana County that is co-located within another county. Main Street serves as the county line between Columbiana and Mahoning counties.

Washingtonville is split between the East Liverpool–Salem Micropolitan Statistical Area (µSA), and the Youngstown–Warren–Boardman, OH-PA Metropolitan Statistical Area (MSA). The community was named for George Washington. The village is accessible utilizing State Route 14.

The Village of Washingtonville has a land area of 0.7 square miles (mi^2) and the general elevation of the village is 1,057 feet above sea level. According to the 2010 Census, the Village of Summitville has a total population of 801 and contains 358 total housing units with an average of 2.48 persons per household. The village currently reports a Median Household Income (MHI) of $35,007.

1.2.14 Village of Wellsville

The Village of Wellsville is located in southern Columbiana County in Yellow Creek Township along the Ohio River. Wellsville is very close to major city markets as it is located just forty minutes south of Youngstown, west of Pittsburgh, and north of Wheeling. The village is thirty minutes from the Pittsburgh International Airport (PIT), and two (2) hours from the Canton/Akron Airport.The village is noted to be the largest river port in Ohio and has recently became home to a gas to liquids (GTL) facility due to its strategic location within the current shale gas operations area. The village is accessible utilizing State Routes 7, 39, and 45, a main line Norfolk Southern Railroad which passes through it, as well as its river terminals. The Wellsville Reservoir, a large Class-I dam, is located within close proximity to the village.

The area was first surveyed in 1770 by George Washington and William Crawford and is near the site of the Yellow Creek Massacre, which initiated Lord Dunmore's War with local Indian tribes. The village was founded about 1795 and finally took shape around 1823.

The Village of Wellsville has three (3) public schools within its limits; Garfield Elementary School, DAW Middle School and Wellsville High School.

The Village of Wellsville has a land area of 1.8 square miles (mi^2) and the general elevation of the village is 695 feet above sea level. According to the 2010 Census, the Village of Wellsville has a total population of 3,541 and contains 1,774 total housing units with an average of 2.40 persons per household. The village currently reports a Median Household Income (MHI) of $25,010.

1.3 RECORD OF CHANGES

This "Record of Changes" document lists each section of the *Columbiana County Multi-Jurisdictional All-Hazards Mitigation Plan* and indicates if it was updates as part of the 2013 revision. To determine which sections would be updated, the Hazard Mitigation Core Planning Committee (CPC) reviewed and analyzed each section of the plan. The CPC meeting (reference 1.1 – Documentation of the Planning Process) focused on reviewing all components of Sections 1.0, 2.0, 5.0, and the appendices as well as reviewing all components of Sections 3.0 and 4.0. These changes are reflected in the following "Record of Changes". Where no changes were made, the group decided that no change was needed and that the information from the original plan remains current and valid.

Section	Description of Change
INTRODUCTION	
General, Section-Wide Revisions	• Added 1.0 numbering. • Reorganization of document layout. • Reformatted headers and footers.
1.1 Documentation of the Planning Process	• Notes on the process used to update the plan were included, plan updating schedule was reset.
1.2 Description of the Planning Area	• Verified and/or updated demographic data. • Verified and/or updated population statistics of all jurisdictions (including municipalities). • Verified and/or updated population growth trends. • Verified and/or updated housing data. • Verified and/or updated commercial infrastructure data. • Verified and/or updated employment data. • Verified and/or updated land use data. • Verified and/or updated transportation Infrastructure. • Verified and/or updated economic trends. • Verified and/or updated climatology information.
1.3 Record of Changes	• Entire section added per 201.6 requirements.
HAZARD RISK ASSESSMENT	
General, Section-Wide Revisions	• Added 2.0 numbering. • Reformatted headers and footers. • Condensed specific information from original plan development into more general statements and added similar information from updating process (e.g., removed names of agencies consulted during the first process). • Updated hazards list, if and as appropriate, to include events occurring between 2003 and 2011.

Table 1.6

HAZARD RISK ASSESSMENT	
2.1 Identify Hazards	• Re-assessment and identification of all natural, technological, and man-made hazards. • Field reconnaissance to obtain updated hazard data for Columbiana County. • Review of local media archives. • Review of existing plans and reports, such as updated emergency operations plans. • Interviews with local officials. • Add appropriate research sources. • Confirm web addresses. • Included all potential hazards in Table format.
2.2 Profile Hazards	• Delineation of hazard susceptibility areas using previously-compiled data and new data. • Development of GIS base maps of Columbiana County using Census and other available GIS data. • Creation of hazard susceptibility area "shape files" for use in GIS mapping. • Creation of GIS-based hazard susceptibility maps for all identified hazards. • Reduced to a single cover page referencing the new Appendix 1. • For usability and overall plan maintenance, the cover page was only included once rather than repeated for each participating jurisdiction. • Developed a "Probability vs. Severity" chart. • Added significant NFIP language to the flooding profile.
2.3 Inventory Assets	• Revised text to focus only on methodology. • Utilized Worksheet #3b. • Added hazard information as another row to Worksheet #3b. • Updated the master, countywide asset inventory list with new facilities, removed closed facilities, updated values where applicable, and added values where applicable. • Revised hazard vulnerabilities. • Created asset inventories for all participating municipalities. • Labeled revised Worksheet #3b for county and municipalities as "tables" in Section 2.3. • Added hazard vulnerabilities for each facility to the master inventory spreadsheet.
2.4 Estimate Losses	• Revised text to focus only on methodology. • Revised numbers based on updated asset inventory list. • Significantly revised loss estimate damage percentages in an attempt to be more accurate. • Listed losses in tabular format for greater usability and easier reference.
2.5 Analyze Development Trends	• Updated list of planned development projects. • Listed potential hazard susceptibilities to planned development projects. • Removed much of the hazard-specific language from the development trends narrative to make Section 2.5 easier to update.

Table 1.6 continued

ACTION PLAN	
3.0 Local Hazard Mitigation Goals	• Alphabetized the municipal project listings and re-numbered accordingly. • Added new projects as directed by CPC. • Added a status statement for each project from the original version of the plan to document if the objective has been started, completed, unchanged, deleted, etc. • Moved the timeframe, funding, coordinating agency, and mitigation type notations to organize all implementation and prioritization discussions under Section 4.0.
4.1 Identification and Analysis of Mitigation Measures	• Moved implementation information (i.e., timeframe, funding source, coordinating agency, mitigation type) to this section for usability (so that all implementation and prioritization information was listed behind a single tab). • Deleted the project list that formerly comprised this section (since the former section was a re-statement of the previously-presented project list). • Updated per the development of new goals, objectives and strategies.
4.2 Implementation of Mitigation Actions	• Revised the project list for consistency with Sections 3.0 and 4.1. • Revised the prioritization methodology so that projects under a single hazard are prioritized in comparison to one other only. Hazards were then prioritized as a means of ranking the entire project list. • Revised language formerly referring to a “benefit-cost analysis” to now read “benefit cost review” per FEMA publication 386-5. • Incorporated the STAPLEE method of prioritizing projects into the Columbiana County plan.
5.0 Plan Maintenance Process	• Revised the updating schedule to be a formal process every five (5) years rather than after every significant hazard event. Such a decision was made by the Core Planning Committee (CPC) to encourage greater participation (by lessening the time commitments and numbers of meetings). Additionally, waiting for the full five (5)-year period would allow CPC members to determine trends as opposed to making decisions based on what could have been an anomalous hazard event. • Added additional, secondary performance measures to guide future plan updates. • Formally identified the Columbiana County Emergency Management Agency (CCEMA) as the custodial agency for this document. • Added a discussion as to how the project administration requirements of other funding sources that could be involved in mitigation projects could assist in the overall monitoring of plan maintenance. • Strengthened the discussion on implementing mitigation strategies through existing programs, using projects that actually were implemented via the framework established by existing programs as evidence.

Table 1.6 continued

APPENDICES	
Appendix 1: Multi-Jurisdictional Hazard Risk Assessment	• Re-named "Hazard Profiles, Loss Calculations, and Mapping". • All original risk assessment information was revised appropriately and moved to Section 2.0: Risk Assessment. • Hazard list revised accordingly so that tabbing could be accurate. • Updated research sources in profiles for consistency with Section 2.1. • Removed graphics from hazard definitions for readability. • Updated hazard occurrences since 2003. • Added a statement regarding buyouts. • Added NFIP discussion to flooding profile. • Added the following section to each hazard profile; Introduction, Hazard Identification, History of Events, Hazard Impacts, Past Mitigation Efforts, Mapping.
Appendix 2: Calculation Methodologies	• Added to supplement the methodology discussions in the sections above.
Appendix 3: Glossary	• Added for usability.
Appendix 3: Completed Questionnaires & Prioritization Matrices	• Removed so that the plan document could be more manageable. Information gleaned from matrices and questionnaires was absorbed into the appropriate narrative discussions.
Appendix 4: Evidence of Public Involvement	• Appropriate information from updating process added. • Re-numbered to Appendix 4.
Appendix 5: Adopting Resolutions	• Re-numbered as "Appendix 5". • Original resolutions replaced with resolutions adopting the current update.

Table 1.6 continued

2.0 RISK ASSESSMENT

2.1 IDENTIFYING HAZARDS

§201.6(c)(2)(i)	[The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction.

The first step in the Hazard Risk Assessment (HRA) process was to identify each of the hazards that can occur within Columbiana County and or its incorporated municipalities. This hazard identification process began with a review of previous hazard events based on historical data provided by the Columbiana County Emergency Management Agency (CCEMA), the Core Planning Committee (CPC), and the National Weather Service (NWS). A consultant also conducted reviews of existing resources, plans, local media archives, reports provided by the Federal Emergency Management Agency (FEMA), Columbiana County, and other sources, as well as conducting interviews with local officials in order to ensure accurate data and understand the nature and extent of natural, technological and man-made hazards in the county. The findings from these steps were utilized to determine the priority hazards for Columbiana County and its municipalities, which will become the focus of the mitigation strategies developed in the Action Plan (AP) of the *Columbiana County Multi-Jurisdictional All-Hazards Mitigation Plan*.

The hazards listed below have been updated utilizing an extensive research process with input from the sources listed below. As a result of this research landslide, mine subsidence, and terrorism, have been removed; and drought and earthquake have been added as identified hazards for Columbiana County and its municipalities; updated information has been integrated into all other existing hazard profiles.

- Local media archives ranging in date from 1970 to 2012,
- Interviews with local officials/experts:
  - Mrs. Edie Dillard, Columbiana County EMA Interim Director,
  - Mr. Bert Dawson, P.E., P.S., Columbiana County Engineer,
  - Mr. Pete Conkle, Columbiana County Floodplain Coordinator,
  - Mr. Raymond Stone, Columbiana County Sheriff,
  - Mrs. Nancy Milliken, Columbiana County Auditor,
  - Columbiana Soil and Water Conservation District,
  - Columbiana County Economic Development Corporation (CCEDC)
  - Representatives of the Core Planning Committee (CPC), and
  - Representatives of the general public.

- Existing plans:
  - *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan, 2006*
  - *Columbiana County Emergency Operations Plan, 2011*
  - *Columbiana County Comprehensive Plan, 2013*
  - *Columbiana County Radiological Emergency Plan, 2011*
  - *Columbiana County Hazardous Materials Response Plan, 2008*

- Reviews of Flood Insurance Rate Map (FIRM) information for Columbiana County and the Cities of Columbiana, East Liverpool, Salem; and the Villages of East Palestine, Hanoverton, Leetonia, Lisbon, New Waterford, Rogers, Salineville, Washingtonville, and Wellsville. No information is available for the Village of Summitville.
- Searches of multiple Internet sites concerning hazard mitigation and planning (The following sites are general listings that were searched at the onset of the project. Sites that were searched regarding specific hazards are listed with those hazards below.):
  - American Red Cross – Local Chapters
    http://www.redcross.org
  - Disaster Center
    http://www.desastercenter.com
  - FEMA Map Service Center
    http://msc.fema.gov
  - ESRI
    http://www.esri.com
  - Federal Emergency Management Agency
    http://www.fema.gov
  - HAZUS Instruction and Technical Information
    http://www.fema.gov/hazus
  - Socio-Economic Data Resources
  - USDA Natural Resources Conservation Service
    http://www.nrcs.usda.gov
  - National Oceanic Atmospheric Administration
    http://www.ncdc.noaa.gov/
  - Flood Map Information – Ohio Department of Natural Resources (ODNR)
    http://dnr.state.oh.us/water/tabid.aspx

The following table (Table 2.1) illustrates the hazards to which the county and its municipalities are susceptible. The intent of this chart is to justify the inclusion of these hazards in the plan; more detailed information about how they affect the areas within the county can be found in the hazard profiles in Appendix 1.

Hazard	*How Identified*	*Why Identified*
Dam Failure	• Local media research • ODNR, Division of Soil & Water Resources – Dam Safety • National Dam Inventory • Association of State Dam Safety • Internet research	• There are currently 22 Class II & six (6) Class I dams in Columbiana County. • According to the ODNR, Division of Soil & Water – Dam Safety, the potential downstream hazard associated with Class I dams includes probable loss of life, serious hazard to health, and structural damage to high value property.
Drought	• Local media research • Columbiana County Emergency Operations Plan (EOP) • ODNR, Division of Soil & Water Resources • Palmer Drought Severity Index (PDSI) • National Climatic Data Center (NCDC) Event Record Database • USGS website	• The Palmer Drought Severity Index indicates that Ohio counties spend 0-5% of the summer and autumn months under drought conditions. • The NCDC reported zero (0) drought events in Columbiana County between 2006 and 2012.
Earthquake	• Ohio Seismic Network • ODNR, Division of Geology • ESRI GIS information for Ohio • USGS National Seismic Hazard Mapping Project	• The USGS lists Columbiana County as a PGA 2.0-3.0 (MMI IV). • An instrumental 5.0-5.4-magnitude earthquake was recorded in 1998 along the Pennsylvania border, just to the east of Columbiana County. • There is a known major fault located to the north of Columbiana County under Lake Erie.
Flooding	• Public input • Local media research • Columbiana County EOP • FIRM information & digital Q3 data • NCDC Event Record Database • Past disaster declarations	• Of the 22 NCDC-reported events, six (6) were designated “flash floods” resulting in $335K in damages. • The NCDC reported 22 flood events between 2006 and 2012 resulting in $695K in damages. • The Ohio River flows along the majority of the southeastern border of Columbiana County.

Table 2.1

Hazard	*How Identified*	*Why Identified*
Hazardous Materials	• Public input • Local media research • US DOT – Hazardous Materials Safety • US EPA – Envirofacts Warehouse	• There are 24 EHS facilities in Columbiana County. • Hazardous materials in various forms have to potential to result in death, serious injury, produce long-lasting health effects, and damage to property.
Severe Thunderstorm/ Hail/Lightning	• Columbiana County EOP • Local media research • NCDC Event Record Database • National Weather Service (NWS) • Interviews with local representatives • Climatology Reports	• The NCDC reported 37 hail events in Columbiana County between 2006 and 2012. • Severe thunderstorms and wind storms are often accompanied by hail.
Severe Wind/Tornado	• Columbiana County EOP • Local media research • NCDC Event Record Database • FEMA "Mitigation Planning How-To Series" • National Weather Service (NWS) • Past disaster declarations	• From 1950 to 2012, 15 tornadoes have been reported in Columbiana County. • A Presidential Declaration was made on June 5, 1985 as a result of extensive damage from an F2 tornado. • The NCDC reported 44 thunderstorm winds events in Columbiana County between 2006 and 2012, resulting in $1.8 million in property damage.
Severe Winter Storm	• Columbiana County EOP • Public input • Local media research • NCDC Event Records • Past disaster declarations	• Columbiana County is highly vulnerable to the wide-ranging effects of snowstorms, lake effect snow, blizzards, ice storms, and severe cold snaps • Columbiana County has endured 10 winter storm events over the past six (6) years according to the National Oceanic and Atmospheric Administration.
Extreme Heat	• Local media research • NCDC Event Records • National Weather Service (NWS) • FEMA website	• According to statistics from the National Weather Service approximately 237 Americans succumb to the taxing demands of heat every year. • Approximately 16% or 17,400 people in Columbiana County are over the age of 65.

Table 2.1 continued

Several hazards were not identified in Columbiana County. The following are hazards that were not discovered to be significant risks in Columbiana County.

- Avalanche – Columbiana County contains very limited elevated terrain and, although it receives significant amounts of snowfall per year, the general elevation in not high enough to cause snow to be present year-round. Therefore, avalanches do not appear to be a significant hazard.
- Coastal Erosion – Columbiana County is a landlocked county and does not have any coastal boundaries.
- Coastal Storm – Columbiana County is positioned inland from large bodies of water; however, the county does occasionally receive lake effect snow from Lake Erie, which is discussed in the *Severe Winter Storm Profile*.
- Epidemic – Historical research indicates that the probability o an epidemic outbreak occurring in Columbiana County is extremely low. This hazard is also covered in detail in the *Columbiana County Pandemic Influenza Plan* maintained by the Columbiana County Health Department.
- Hurricane – While Columbiana County sometimes receives precipitation as hurricanes hit the eastern and southern coastal states, the county does not experience intense hurricane conditions. The precipitation that is received can be classified as a severe thunderstorm or winter storm (*see Severe Thunderstorm/Hail and Severe Winter Storm Profiles*).
- Landslide – Though the southeastern portion of Columbiana County does have topographical features commonly associated with landslides, there is no recorded incidences of large-scale landslide occurrences.
- Terrorism – There is no current evidence that suggests that a group or groups is interested in the unlawful use of force or violence against persons or property in Columbiana County to intimidate or coerce government, civilian population, or any segment thereof in furtherance of political or social objections.
- Tsunami – Columbiana County is located inland from the Atlantic Ocean and has no coastal boundaries; historical records indicate that the county has not endured a tsunami.
- Volcano – Research shows no volcanic activity in Columbiana County.
- Wildfire – According to the National Climatic Data Center (NCDC) maintained by the National Oceanic and Atmospheric Administration (NOAA) there have been no reported wildfires in Columbiana County from 1950 to present day.

MULTI-JURISDICTIONAL REQUIREMENTS

§201.6(c)(2)(iii)	For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The development of a Hazard Risk Assessment (HRA) is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural, technological, or man-made hazards. The results of this HRA will assist Columbiana County and its incorporated municipalities in identifying and understanding their risks from natural, technological and manmade hazards. This information also serves as the foundation for the development of strategies to help reduce risks from future hazard events, which are outlined in the Action Plan (AP).

The Columbiana County HRA followed the methodology described in the Federal Emergency Management Agency (FEMA) publication 386-2 "*Understanding Your Risks – Identifying Hazards and Estimating Losses*" and was based on a four (4)-step process: 1) Identifying Hazards, 2) Profiling Hazard Events, 3) Inventory of Critical Assets, and 4) Estimating Losses. Using FEMA guidance, as well as Section 322 regulations for developing local multi-jurisdictional hazard mitigation plans, a HRA that identifies the following has been developed for Columbiana County.

- The hazards to which Columbiana County and its communities are susceptible.
- The impact of those hazards on physical, social, and economic assets.
- The areas within Columbiana County most vulnerable to the identified hazards.
- The potential costs of damages or costs avoided through future mitigation projects.

While it is true that the municipalities can be said to be susceptible to the above hazards by virtue of their location in Columbiana County, it is stressed that it may be more or less susceptible to these hazards than each other and the balance of Columbiana County. The following chart (Figure 2.1) determines if they are equally (=), more (>), or less (<) susceptible to these hazards than the balance of the county. (Only those hazards affecting the county are listed below.)

	Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Severe Thunderstorm/Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
City of Columbiana	=	=	=	=	=	=	=	=	=
City of East Liverpool	=	=	<	>	>	=	=	=	=
City of Salem	>	=	>	>	>	=	=	=	=
Village of East Palestine	>	=	=	>	=	=	=	=	=
Village of Hanoverton	=	=	=	=	<	=	=	=	=
Village of Leetonia	=	=	>	>	>	=	=	=	=
Village of Lisbon	=	=	=	>	>	=	=	=	=
Village of New Waterford	<	=	=	>	=	=	=	=	=
Village of Rogers	=	=	=	=	<	=	=	=	=
Village of Salineville	=	=	<	=	=	=	=	=	=
Village of Summitville	<	=	=	=	=	=	=	=	=
Village of Washingtonville	=	=	>	=	=	=	=	=	=
Village of Wellsville	>	=	<	>	=	=	=	=	=

Figure 2.1

KEY
= : Municipality affected by hazard same as county.
>: Municipality affected by hazard more than county.
<: Municipality affected by hazard less than county.

For the purpose of this assessment, risk will be assessed separately for each jurisdiction involved where it differs significantly. If the risk affects one (1) jurisdiction and not another, or if the risk affects one (1) jurisdiction in a significantly different manner, it will be so noted in the hazard identification and hazard profile steps. If the risks are determined to impact each jurisdiction equally or in the same manner, it will be so noted. In such cases, please refer to the larger jurisdiction's hazard profile (i.e., Profiling Hazard Events – Columbiana County for risks affecting Columbiana County and all of its municipalities in the same manner.)

This Hazard Risk Assessment (HRA) and Action Plan (AP) of the *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan* will cover the following jurisdictions of Columbiana County.

JURISDICTIONS COVERED BY THIS PLAN	
Cities	
Columbiana	
East Liverpool	
Salem	
Villages	
East Palestine	Rogers
Hanoverton	Salineville
Leetonia	Summitville
Lisbon	Washingtonville
New Waterford	Wellsville

Table 2.2

The Village of Minerva extends across both Columbiana County and Stark County. Minerva is a participant in the *Stark County Multi-Jurisdictional All-Hazard Mitigation Plan*, and thus is not included in this plan. The Cities of Columbiana and Salem, and the Village of Washingtonville extends across both Columbiana County and Mahoning County, all are participating in this plan.

No municipal jurisdictions have been added or removed from the *Columbiana County Multi-Jurisdictional All-Hazards Mitigation Plan* since it was first approved and adopted in 2006. Columbiana County also contains the following townships, designated places, and unincorporated communities:

Townships					
Butler	Fairfield	Knox	Middleton	St. Clair	Wayne
Center	Franklin	Liverpool	Perry	Unity	West
Elkrun	Hanover	Madison	Salem	Washington	Yellow Creek
Designated Places					
Calcutta		Glenmoor		La Croft	
Other Communities					
Clarkson		Elkton	Kensington	West Point	
Damascus		Fredericktown	Negley	Winona	
East Rochester		Homeworth	North Georgetown		

Table 2.3

2.2 PROFILING HAZARDS

§201.6(c)(2)(i)	[The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

2.2a Section Overview

The second step in the Hazard Risk Assessment (HRA) process is to create a profile for each of the priority hazards identified in Columbiana County. Several hazards affect Columbiana County, as noted in Section 2.1: Identifying Hazards. Those hazards, however, may not affect the county in ways that residents and planners may typically think. Additionally, while a hazard may occur frequently, it may cause little damage or disruption; conversely, a hazard that rarely occurs may cause significant damage and disruption. Consequently, this section discusses the probability and severity of the hazards identified by Section 2.1.

Further, this section references detailed descriptions of how the identified hazards affect Columbiana County and the municipalities therein. As such, refer to Appendix 1 of this plan for detailed hazard profiles (including scholarly discussions of the hazards, historical occurrences, and impacts), extensive asset inventory and loss estimate data, and Geographic Information System (GIS)-based mapping that predicts low, moderate, and high susceptibility areas.

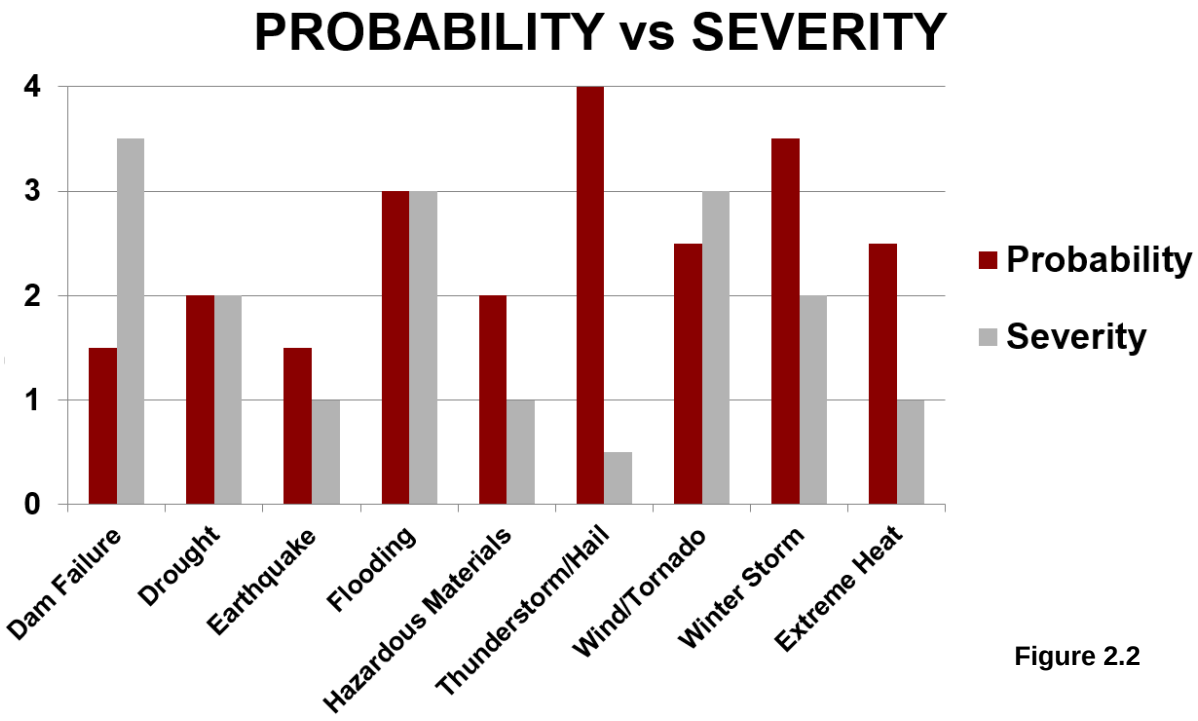


Figure 2.2

2.2b Probability vs. Severity Explanation

In the case of many hazards, it is not possible to eliminate risks; they can only be reduced. When many risks exist at once, or when resources are limited, mitigation and preparedness require the setting of priorities. For example, local officials may want to invest mitigation and preparedness dollars in projects that lessen losses from higher probability hazards. The classification of "probability" and "severity" for hazard risks in Columbiana County is quantified by the *Risk Assessment Decision Matrix* in Figure 2.3 below.

Figure 2.2 on page 39 above was created to enhance the usability of the plan. It provides a more holistic snapshot of risk in terms of probability and severity in a format that is more familiar to most readers of this plan. To create the bar graph, the approximations in Table 2.4 were used.

PROBABILITY		SEVERITY	
Frequent	= 4	Catastrophic	= 4
Probable	= 3	Critical	= 3
Occasional	= 2	Marginal	= 2
Remote	= 1	Negligible	= 1
Improbable	= 0		

Table 2.4

2.2c Probability vs. Severity Methodology

The first task that was undertaken was to determine the frequency of hazard occurrences. For instance, how many floods occur in a year? How many tornadoes has Columbiana County experienced in the past 60 years? To answer these questions, the *NCDC Event Records* database and SHELDUS database were used. The National Climatic Data Center (NCDC) keeps records of significant storm events back to 1950. The number of hazard events (i.e., floods, hailstorms, thunderstorms, tornados, winter storms, etc.) was counted.

Based on records for only Columbiana County, probability was determined. As such, probability for hazards in Columbiana County is a comparison between the hazards that have actually occurred in Columbiana County as opposed to a comparison with data from another location. For example, a total of ten (10) occurrences of Event "X" may be significant in Columbiana County, but could be a very low number of occurrences in a neighboring or other county.

If the information contained in the NCDC and/or SHELDUS databases were insufficient, other historical data, such as local media archives and interviews with local officials, were gathered. If repeated coverage was given to a particular hazard event, that event was considered highly probable to occur. Also, local officials were able to

verify or identify those hazards occurring frequently. Table 2.5 lists the classifications considered for hazard probability.

HAZARD PROBABILITY CLASSIFICATION

Label	Specific Hazard Event	Frequency
Frequent	Likely to occur frequently.	Continuously experienced.
Probable	Will occur several times in the life of an item.	Experienced several times.
Occasional	Likely to occur sometime in the life of an item.	Experienced.
Remote	Unlikely but possible to occur in the life of an item.	Unlikely that it has been experienced.
Improbable	So unlikely it can be assumed occurrence may not be experienced.	Not experienced.

Table 2.5

The second and final task was to determine the severity of identified hazard events. Again, *NCDC Event Records* and SHELDUS information were used. These documents record the atmospheric conditions of the event and other details, such as wind speeds, damage incurred, and the number of deaths/injuries. If it appeared that thunderstorms frequently occurred but did not result in significant monetary losses or deaths, then thunderstorms were said to have a high probability and low severity. If winter storms, for example, appeared to occur frequently and also cause significant damage and deaths/injuries, winter storms were said to have a high probability *and* high severity. As with probability, if the NCDC or SHELDUS databases were insufficient, local media archives and interviews with local officials were used. Table 2.6 lists the severity classifications that were considered.

HAZARD SEVERITY CLASSIFICATIONS

Description	Mishap Definition
Catastrophic	Death or major structural loss.
Critical	Severe injury, severe illness, or marginal structural damage.
Marginal	Minor injury, minor illness, or structural damage.
Negligible	Less than minor injury, illness, or structural damage.

Table 2.6

Figure 2.3 combines the probability and severity information into a "Risk Assessment Decision Matrix" that generalizes the potential impact of each hazard included in the plan. This is the figure that was re-formatted into a bar graph as described in Section 2.2b above.

RISK ASSESSMENT DECISION MATRIX

HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent	Probable	Occasional	Remote	Improbable
Catastrophic				**1**	
Critical		**4, 7**			
Marginal	**8**		**2, 5**		
Negligible	**6**		**3, 9**		

Figure 2.3

Risk reduction required.

Risk reduction suggested.

Risk reduction not required.

1 – Dam Failure
2 – Drought
3 – Earthquake
4 – Flooding
5 – Hazardous Materials
6 – Severe Thunderstorm/Hail
7 – Severe Wind/Tornado
8 – Severe Winter Storm
9 – Extreme Heat

2.3 ASSET INVENTORY

§201.6(c)(2)(ii)	[The risk assessment shall include a] description of the jurisdiction's vulnerability of the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
§201.6(c)(2)(ii)(A)	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

This Hazard Risk Assessment (HRA) identifies "at-risk" community assets such as critical facilities, critical infrastructure, historical properties, commercial/industrial facilities, etc. "Assets" contribute directly to the quality of life in the community as well as ensure its continued operation. As such, government facilities are often listed, as are water/wastewater and transportation infrastructure. "Assets" can also be irreplaceable items within the community, such as historical structures or even vulnerable populations (including the elderly or youths).

METHODOLOGY

Inventorying assets first involves determining what in the community can be affected by a hazard event. Several resources were utilized to inventory and update the assets in Columbiana County, both for the county as a whole and within designated hazard risk areas. For example, HAZUS, and Census data were used, in addition to extensive correspondence with local representatives and members of the Core Planning Committee (CPC). The hazard profiles contained in Appendix 1 each contain a "Worksheet #3a" that lists, in broad terms, the types of assets that are susceptible to the hazards identified in 2.1: Identifying Hazards. Worksheet #3a (SOURCE: FEMA 386-2, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*) lists the total number and value of all structures and people in identified hazard zones by the following types: residential, commercial, industrial, agricultural, religious/non-profit, government, education, and utilities.

The Core Planning Committee (CPC) maintains a specific list of community assets as part of this plan. These assets are grouped into the following categories.

- *Critical Facilities*: Governmental facilities, water/wastewater facilities, dams, emergency services facilities, medical facilities (hospitals/clinics), military facilities, and the transportation infrastructure.

- *Vulnerable Populations*: Schools, nursing homes, and senior centers.
- *Economic Assets*: Large commercial/industrial facilities or large employers (not covered in other categories).
- *Special Considerations*: Residences, community outreach facilities, post offices, and libraries.
- *Historical Considerations*: Areas/structures listed on the National Register of Historic Places.

While inventorying assets, much information can be gathered that will assist in the upcoming loss estimations. Each specific asset is listed with its replacement value (structure only), contents value, function use or value (annual operating budget), displacement cost ($ per day), and occupancy. These values are utilized to compute loss estimates, which is why it is critical to carefully consider all the facilities that are listed in the asset inventory. Following is a brief description of how the above numbers are derived.

- *Replacement Value*: County Assessor data for 2013, and from 2006 with an updated value based on inflation and/or depreciation, or by directly contacting the facility. Reflects the present-day cost of labor and materials to return a physical asset to its pre-damaged condition.
- *Contents Value*: Directly contacting the facility, and/or utilizing 2006 data with updated values based on inflation and/or depreciation. These values may also be based on a percentage of the replacement value for the asset.
- *Function Use or Value*: Directly contacting the facility, and/or utilizing 2006 data with an updated value to include cost of living adjustments. This figure represents the value of a building's use or function that would be lost if it were damaged or closed. The standard method utilized to calculate the monetary damage from losing public functions was to use the budget of the services as a proxy for its value to the community.
- *Displacement Cost*: The figure represents the cost for the assets to be relocated to another structure because of a hazard event (i.e., rent for temporary building space, costs to set up operations in a new space, lost rent from tenants, etc.).

ASSET INVENTORY

The above information for the complete asset inventory is listed on Table 2.7 on the following pages. Table 2.7 is a replica of Worksheet #3b from the *State and Local Mitigation Planning How-To Guide: Understanding Your Risks* (FEMA 386-2). Following is a key for the acronyms found on Table 2.7.

- *ES*: Elementary School
- *EMA*: Emergency Management Agency
- *EMS*: Emergency Medical Services
- *EMT*: Emergency Medical Technician
- *FD*: Fire Department
- *HS*: High School
- *MS*: Middle School
- *PD*: Police Department
- *PO*: Post Office
- *VFD*: Volunteer Fire Department
- *YMCA:* Young Men's Christian Association

Table 2.7

Columbiana County Asset Inventory

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X											
HAZARDS										Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
GOVERNMENTAL FACILITIES																		
Columbiana County Courthouse	203 South Market St. Lisbon, OH	FEMA	X				X		$1,850,000		$700,000		$550,000		$5,000		N/A	
		Hazard								L	L	M	L	M	M	M	H	L
Columbiana City Hall	28 West Friend Street Columbiana, OH	FEMA	X						$1,250,000		$400,000		$275,000		$4,200		15	
		Hazard								M	L	H	L	L	M	M	H	L
East Liverpool City Hall	126 West Sixth St. East Liverpool, OH	FEMA	X				X		$650,000		$325,000		$250,000		$3,250		N/A	
		Hazard								L	L	L	H	M	M	M	M	L
East Palestine Village Offices	144 North Market Street East Palestine, OH	FEMA	X						$425,000		$275,000		$220,000		$3,000		N/A	
		Hazard								L	L	M	M	L	M	M	H	L
Hanoverton Village Offices	Hanoverton, OH	FEMA	X						$375,000		$225,000		$155,000		$2,100		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Salem City Hall	231 South Broadway Ave. Salem, OH	FEMA	X						$976,800		$390,000		$280,000		$3,400		N/A	
		Hazard								M	L	H	L	M	M	M	H	L
Salineville Village Offices	34 Washington Street Salineville, OH	FEMA	X						$311,900		$190,000		$150,000		$1,500		N/A	
		Hazard								L	L	L	L	M	M	M	M	L
Wellsville Village Offices	1200 Main Street Wellsville, OH	FEMA	X						$518,100		$300,000		$165,000		$1,000		N/A	
		Hazard								M	L	L	H	L	M	M	M	L
Leetonia Village Offices	300 East Main Street Leetonia, OH	FEMA	X						$335,000		$90,000		$110,000		$1,000		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
Lisbon Village Offices	203 North Market Street Lisbon, OH	FEMA	X						$979,500		$395,000		$290,000		$1,100		N/A	
		Hazard								L	L	M	M	M	M	M	M	L
New Waterford Village Offices	3760 Park Drive New Waterford, OH	FEMA	X						$265,000		$75,000		$100,000		$1,000		N/A	
		Hazard								L	L	M	M	L	M	M	H	L
Washingtonville Village Offices	415 South County Road Washingtonville, OH	FEMA	X						$250,000		$55,000		$90,000		$1,000		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
Elkrun Township Hall	41725 State Route 154 Lisbon, OH	FEMA	X						$145,000		$70,000		$95,000		$1,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Fairfield Township Hall	3062 Fairfield School Road Columbiana, OH	FEMA	X						$360,000		$220,000		$140,000		$1,000		N/A	
		Hazard								L	L	M	L	L	M	M	H	L
Madison Township Hall	13011 State Route 45 Lisbon, OH	FEMA	X						$245,000		$165,000		$125,000		$1,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Salem Township Hall	37638 Old State Route 558 Leetonia, OH	FEMA	X						$310,000		$200,000		$125,000		$1,000		N/A	
		Hazard								M	L	H	M	M	M	M	H	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X											
HAZARDS										Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
TRANSPORTATION INFRASTRUCTURE																		
Bridges	Columbiana County	FEMA	X						$115,000,000		$0		$0		$0		N/A	
		Hazard								L	L	L	M	L	M	L	L	L
Highways	Columbiana County	FEMA	X						$1,525,000,000		$0		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	L	M	L
Railroads	Columbiana County	FEMA	X						$85,000,000		$0		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	L	M	L
Columbiana County Airport	15606 County Airport Rd. East Liverpool, OH	FEMA	X		X				$679,200		$203,760		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	L	M	L
Columbiana County Port Authority	1250 St. George Street East Liverpool, OH	FEMA	X		X				$595,000		$148,750		$0		$0		N/A	
		Hazard								M	L	M	L	L	M	L	M	L
PUBLIC UTILITIES																		
East Liverpool Water Works	2220 Michigan Ave. East Liverpool, OH	FEMA	X						$1,895,000		$3,550,000		$1,000,000		$30,000		N/A	
		Hazard								L	M	L	H	M	M	M	M	L
East Palestine Sewer and Water	166 Park Drive East Palestine, OH	FEMA	X						$3,165,000		$3,500,000		$750,000		$20,000		N/A	
		Hazard								M	M	M	H	M	M	M	H	L
Leetonia Water Board	300 Main St Leetonia, OH	FEMA	X						$1,750,000		$2,110,000		$375,000		$35,000		N/A	
		Hazard								M	M	H	H	H	M	M	H	L
Salem Sewage Plant	1600 Pennsylvania Ave. Salem, OH	FEMA	X						$7,450,000		$6,250,000		$12,000,000		$80,000		N/A	
		Hazard								M	L	H	H	H	M	M	H	L
Salineville Water Plant	11271 Salineville Rd NE Salineville, OH	FEMA	X						$2,450,000		$3,000,000		$410,000		$12,000		N/A	
		Hazard								M	M	L	L	M	M	M	M	L
Washingtonville Water and Sewer	415 Boston St. Washingtonville, OH	FEMA	X						$9,355,000		$10,000,000		$13,450,000		$95,000		N/A	
		Hazard								L	M	H	L	M	M	M	H	L
Wellsville Filtration Plant	17547 SR 45 Wellsville, OH	FEMA	X						$985,000		$1,255,000		$280,000		$9,000		N/A	
		Hazard								M	L	L	M	M	M	M	M	L
Wellsville Sewage Disposal	100 16th St. Wellsville, OH	FEMA	X						$1,553,000		$2,875,000		$750,000		$18,000		N/A	
		Hazard								L	L	L	M	M	M	M	M	L
Buckeye Water District	P.O. Box 105 Wellsville, OH 43968	FEMA	X						$3,650,000		$4,250,000		$2,350,000		$40,000		N/A	
		Hazard								M	M	L	H	M	M	M	M	L
Columbiana City Water Works/Sewer Dept.	Lisbon, OH 44432	FEMA	X						$2,655,000		$3,150,000		$1,675,000		$35,000		N/A	
		Hazard								M	M	M	M	M	M	M	M	L
Leetonia Sewage Plant	300 Main Street Leetonia, OH 44431	FEMA	X						$3,950,000		$4,550,000		$6,000,000		$65,000		N/A	
		Hazard								M	L	H	H	H	M	M	H	L
Lisbon Village Water Department	8077 State Route 164 Lisbon, OH 44432	FEMA	X						$1,875,000		$2,000,000		$3,250,000		$48,000		N/A	
		Hazard								L	M	M	H	M	M	M	M	L
New Waterford Water / Waste Water Plant	P.O. Box 287 New Waterford, OH 44445	FEMA	X						$2,455,000		$3,655,000		$3,000,000		$45,000		N/A	
		Hazard								L	M	M	M	M	M	M	H	L
Salineville Sewer Plant	39 State Street Salineville, OH 43945	FEMA	X						$5,650,000		$5,000,000		$8,650,000		$75,000		N/A	
		Hazard								M	L	L	L	M	M	M	M	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X											
HAZARDS										Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
EMERGENCY SERVICES																		
Columbiana County Sheriff	8473 Countyhome Road Lisbon, OH	FEMA	X						$350,000		$625,000		$14,400		$2,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Columbiana County EMA	215 South Market Street Lisbon, OH 44432	FEMA	X						$565,000		$200,000		$2,200		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Columbiana County 911 Center	105 South Market Street Lisbon, OH 44432	FEMA	X						$265,000		$635,000		$10,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Columbiana PD	28 South Vine Street Columbiana, OH	FEMA	X						$225,000		$325,000		$5,500		$0		N/A	
		Hazard								M	L	M	L	L	M	M	H	L
East Liverpool PD	126 West Sixth Street East Liverpool, OH	FEMA	X						$215,000		$289,000		$3,000		$0		N/A	
		Hazard								L	L	L	M	M	M	M	M	L
East Palestine PD	75 East Main Street East Palestine, OH	FEMA	X						$210,000		$198,000		$2,600		$0		N/A	
		Hazard								M	L	M	H	L	M	M	H	L
Leetonia PD	300 East Main Street Leetonia, OH	FEMA	X						$235,000		$105,000		$7,000		$0		N/A	
		Hazard								L	L	H	H	L	M	M	H	L
Lisbon PD	203 North Market Street Lisbon, OH	FEMA	X						$979,500		$320,000		$6,000		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Liverpool Township PD	353 Adam Avenue East Liverpool, OH	FEMA	X						$200,000		$165,000		$3,200		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
New Waterford PD	3700 Village Park Drive New Waterford, OH	FEMA	X						$310,000		$175,000		$4,000		$0		N/A	
		Hazard								L	L	M	H	L	M	M	H	L
Ohio State Highway Patrol	9423 state Route 45 Lisbon, OH	FEMA	X						$865,000		$455,000		$80,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Perry Township PD	2198 North Ellsworth Avenue Salem, OH	FEMA	X						$309,900		$170,000		$2,500		$0		N/A	
		Hazard								M	L	H	L	L	M	M	M	L
Salem PD	397 Columbia Street Salem, OH	FEMA	X						$395,000		$265,000		$8,000		$0		N/A	
		Hazard								M	L	H	H	L	M	M	H	L
Salineville PD	34 Washington Street Salineville, OH	FEMA	X						$311,900		$250,000		$9,000		$0		N/A	
		Hazard								M	L	L	L	L	M	M	M	L
St. Clair Township PD	15442 Pugh Road Suite 1 Calcutta, OH	FEMA	X						$295,000		$175,000		$5,500		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Washingtonville PD	415 South County Road Washingtonville, OH	FEMA	X						$235,000		$145,000		$3,500		$0		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
Wellsville PD	1200 Main Street Wellsville, OH	FEMA	X						$518,100		$325,000		$10,000		$0		N/A	
		Hazard								M	L	L	H	L	M	M	M	L
Calcutta FD	15455 Pugh Road Calcutta, OH	FEMA	X						$170,000		$645,000		$4,800		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Columbiana FD	28 West Friend Street Columbiana OH,	FEMA	X						$426,700		$890,000		$6,000		$0		N/A	
		Hazard								M	L	H	L	L	M	M	H	L
East Liverpool FD	626 St. Clair Ave. East Liverpool, OH	FEMA	X						$135,300		$465,000		$4,200		$0		N/A	
		Hazard								L	L	L	H	M	M	M	M	L
East Palestine FD	67 East Clark Street East Palestine, OH	FEMA	X						$192,300		$385,000		$3,800		$0		N/A	
		Hazard								M	L	M	H	L	M	M	H	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X		Dam Failure		Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
Franklin Township VFD	32046 Spruce Street Summitville, OH	FEMA	X						$95,850		$245,000		$3,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Hanoverton VFD	Hanoverton, OH	FEMA	X						$235,450		$300,000		$4,500		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Guilford Lake FD	32120 Sunset Ave. Hanoverton, OH	FEMA	X						$195,000		$345,000		$6,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Highlandtown VFD	18371 Steubenville Pike Rd. Salineville, OH	FEMA	X						$104,900		$295,000		$4,800		$0		N/A	
		Hazard								M	L	L	L	L	M	M	M	L
Homeworth VFD	4354 Middle Street Homeworth, OH	FEMA	X						$113,900		$310,000		$5,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Leetonia FD	330 East Main Street Leetonia, OH	FEMA	X						$124,500		$565,000		$7,000		$0		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
Lisbon FD	Lisbon, OH	FEMA	X						$325,000		$610,000		$10,000		$0		N/A	
		Hazard								L	L	M	H	M	M	M	M	L
Dixonville FD	1181 Anderson Blvd. East Liverpool, OH	FEMA	X						$84,500		$285,000		$3,500		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Lacroft VFD	2360 Sherwood Ave. East Liverpool, OH	FEMA	X						$149,300		$365,000		$4,500		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Negley VFD/EMS	Negley, OH	FEMA	X						$110,200		$410,000		$3,900		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
New Waterford FD	3766 East Main St. New Waterford, OH	FEMA	X						$150,900		$425,000		$4,600		$0		N/A	
		Hazard								L	L	M	H	L	M	M	H	L
North Georgetown VFD	North Georgetown, OH	FEMA	X						$100,100		$315,000		$5,550		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Perry Township VFD	2198 North Ellsworth Avenue Salem, OH	FEMA	X						$309,900		$565,000		$8,000		$0		N/A	
		Hazard								M	L	H	L	L	M	M	M	L
Rogers Village FD	7580 Farr Street Rogers, OH	FEMA	X						$161,000		$435,650		$6,500		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Salem FD	260 South Ellsworth Ave. Salem, OH	FEMA	X						$215,500		$565,000		$10,000		$0		N/A	
		Hazard								M	L	H	H	M	M	M	H	L
Salineville VFD	34 Washington Street Salineville, OH	FEMA	X						$311,900		$325,000		$5,100		$0		N/A	
		Hazard								L	L	L	L	L	M	M	M	L
Wellsville VFD	1202 Main Street Wellsville, OH	FEMA	X						$143,600		$415,000		$4,600		$0		N/A	
		Hazard								M	L	L	H	L	M	M	M	L
West Point FD	West Point, OH	FEMA	X						$200,000		$365,000		$4,800		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Winona FD	Winona, OH	FEMA	X						$172,500		$375,000		$5,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Glenmoor VFD	16320 Annesley Rd. East Liverpool, OH	FEMA	X						$752,000		$650,000		$12,000		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Air Evac Lifeteam 81	15620 County Airport Rd. East Liverpool, OH	FEMA	X						$86,600		$0		$100,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
EMT Ambulance	383 North Lincoln Ave. Salem, OH	FEMA	X						$112,200		$240,000		$6,500		$0		N/A	
		Hazard								M	L	H	M	L	M	M	M	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X			Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
Lifeteam EMS Inc.	740A Dresden Ave. East Liverpool, OH	FEMA	X						$135,000		$220,000		$7,000		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
KLG Ambulance / MICU	1516B South Lincoln Ave. Salem, OH	FEMA	X						$76,500		$182,000		$5,800		$0		N/A	
		Hazard								M	L	H	H	L	M	M	M	L
North Star Critical Care	16356 SR 267 East Liverpool, OH	FEMA	X						$84,900		$175,000		$4,000		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Maple-Cotton Funeral Home and EMS	11009 SR 644 Kensington, OH	FEMA	X						$165,000		$200,000		$3,200		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Tri-County Ambulance	231 Webber Way East Liverpool, OH	FEMA	X						$118,600		$190,000		$3,500		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Columbiana EMS	28 West Friend Street Columbiana, OH	FEMA	X						$426,800		$350,000		$8,000		$0		N/A	
		Hazard								M	L	H	L	L	M	M	H	L
Leetonia EMS	300 Main Street Leetonia, OH 44431	FEMA	X						$185,000		$265,000		$4,300		$0		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
New Waterford EMS	3766 West Main Street New Waterford, OH 44445	FEMA	X						$175,000		$215,000		$4,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	H	L
East Palestine EMS	67 East Clark Street East Palestine, OH	FEMA	X						$265,000		$300,000		$6,000		$0		N/A	
		Hazard								M	L	M	M	L	M	M	H	L
HOSPITALS AND NURSING HOMES																		
East Liverpool City Hospital	East Liverpool, OH	FEMA	X	X					$16,750,000		$8,000,000		$750,000		$104,000		N/A	
		Hazard								L	L	L	M	M	M	M	M	L
Salem Community Hospital	Salem, OH	FEMA	X	X					$17,250,000		$8,350,000		$800,000		$120,000		N/A	
		Hazard								L	L	H	L	M	M	M	H	L
Parkside Healthcare Center	930 East Park Ave. Columbiana, OH	FEMA		X					$2,172,700		$410,000		$300,000		$30,000		N/A	
		Hazard								M	L	M	L	L	M	M	H	L
Vista Center	100 Vista Dr. Lisbon, OH	FEMA		X					$3,536,000		$475,000		$350,000		$35,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Blossom Nursing and Rehab. Center	109 Blossom Ln. Salem, OH	FEMA		X					$1,650,000		$215,000		$300,000		$30,000		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
Calcutta Healthcare Center	48444 Bell School Rd. Calcutta, OH	FEMA	X						$4,947,200		$500,000		$375,000		$40,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
East Liverpool Convalescent Center	709 Armstrong Ln. East Liverpool, OH	FEMA		X					$539,600		$275,000		$300,000		$30,000		N/A	
		Hazard								L	L	L	M	L	M	M	M	M
Nentwick Convalescent Home	500 Selfridge St. East Liverpool, OH	FEMA		X					$2,109,100		$315,000		$425,000		$36,000		N/A	
		Hazard								L	L	M	H	L	M	M	M	M
Essex of Salem #1	2511 Bentley Dr. Salem, OH	FEMA		X					$1,768,800		$500,000		$450,000		$40,000		N/A	
		Hazard								L	L	H	L	M	M	M	H	M
Essex of Salem #2	250 Continental Dr. Salem, OH	FEMA		X					$1,882,800		$465,000		$425,000		$37,000		N/A	
		Hazard								L	L	H	L	M	M	M	H	M
Essex of Salem #3	230 Continental Dr. Salem, OH	FEMA		X					$1,569,900		$395,000		$375,000		$31,000		N/A	
		Hazard								L	L	H	L	M	M	M	H	M
Pleasant View North Retirement	451 Valley Rd. Salem, OH	FEMA		X					$1,243,300		$380,000		$415,000		$33,000		N/A	
		Hazard								L	L	H	M	L	M	M	H	M

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X		Dam Failure		Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
Salem Care Center	1985 East Pershing Street Salem, OH	FEMA		X					$1,443,900		$350,000		$400,000		$37,500		N/A	
		Hazard								L	L	H	L	M	M	M	H	M
Assisted Living Ministry Services	650 St. Clair Ave. East Liverpool, OH	FEMA		X					$212,800		$185,000		$365,000		$34,000		N/A	
		Hazard								L	L	M	H	L	M	M	M	M
Crossroads at Beaver Creek	13280 Echo Dell Rd. East Liverpool, OH	FEMA		X					$3,450,000		$550,000		$650,000		$43,000		N/A	
		Hazard								L	L	M	H	L	M	M	M	M
Grace Woods Senior Living	1166 Benton Rd. Salem, OH	FEMA		X					$897,300		$365,000		$425,000		$39,500		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
The Renaissance at Vista	100 Vista Dr. Lisbon, OH	FEMA		X					$3,536,000		$465,000		$500,000		$42,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Sterling House of Salem	1916 South Lincoln Ave. Salem, OH	FEMA		X					$325,000		$350,000		$435,000		$40,000		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
Whispering Pines Village	937 East Park Ave. Columbiana, OH	FEMA		X					$415,000		$300,000		$395,000		$35,000		N/A	
		Hazard								L	L	M	L	L	M	M	H	M
St. Mary's Alzheimer's Center	1899 Garfield Road Columbiana, OH 44408	FEMA		X					$650,000		$495,000		$465,000		$42,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Adkins Nursing Home	709 Armstrong Ln. East Liverpool, OH	FEMA		X					$315,000		$256,000		$400,000		$35,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Great Trail Care Center	400 Carolyn Center Minerva, OH 44657	FEMA		X					$225,000		$195,000		$365,000		$30,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Holander House	1985 East Pershing Street Salem, OH 44460	FEMA		X					$200,000		$165,000		$370,000		$31,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Twin Oaks Retirement Center	1166 Benton Road Salem, OH 44460	FEMA		X					$600,000		$435,000		$550,000		$42,500		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Covington Skilled Nursing & Rehab Center	100 Covington Drive East Palestine, OH 44413	FEMA		X					$795,000		$495,000		$565,000		$43,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
American Health Care	107 Royal Birkdale Drive Columbiana, OH 44408	FEMA		X					$435,000		$400,000		$415,000		$33,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Harmony Village	901 S Main Street Columbiana, OH 44408	FEMA		X					$275,500		$165,000		$485,000		$36,000		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Courtyard at Lexington	2345 Lexington Ave. Salem, OH 44460	FEMA		X					$595,000		$285,000		$585,000		$43,500		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Century House of Salem	1171 East State Street Salem, OH 44460	FEMA		X					$275,000		$250,000		$480,000		$35,500		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
Columbiana County Mental Health	40722 State Route 154 Lisbon, OH 44432	FEMA		X					$560,000		$325,000		$400,000		$31,000		N/A	
		Hazard								L	L	M	L	L	M	M	H	M

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X			Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
SCHOOLS AND EDUCATIONAL FACILITIES																		
Beaver Local HS	13187 SR 7 Lisbon, OH	FEMA	X						$4,756,100		$295,000		$43,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Beaver Local MS	13052 SR 7 Lisbon, OH	FEMA	X						$2,866,200		$255,000		$32,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Buckeye ES	1200 Buckeye Ave. Salem, OH	FEMA	X						$1,914,500		$195,000		$25,000		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
Calcutta ES	15482 SR 170 Calcutta, OH	FEMA	X						$1,624,700		$165,000		$22,500		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Columbiana Co. Career and Technical Center	9364 SR 45 Lisbon, OH	FEMA	X						$6,888,400		$1,250,000		$280,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Columbiana HS	700 Columbiana-Waterford Rd., Columbiana, OH	FEMA	X						$5,657,000		$355,000		$40,000		$0		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
Crestview ES	3407 Middleton Rd. Columbiana, OH	FEMA	X						$200,000		$185,000		$25,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	M
Crestview MS/HS	44100 Crestview Rd. Columbiana, OH	FEMA	X						$12,341,800		$650,000		$75,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	L
David Anderson Jr/Sr HS	260 West Pine St. Lisbon, OH	FEMA	X						$4,015,300		$565,000		$54,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
DAW MS	929 Center Street Wellsville, OH	FEMA	X						$2,232,400		$245,000		$33,000		$0		N/A	
		Hazard								L	L	L	L	L	M	M	M	L
East ES	1417 Etruria Street East Liverpool, OH	FEMA	X						$1,455,000		$195,000		$26,500		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	M
East Liverpool Jr./Sr. HS	100 Maine Ave. East Liverpool, OH	FEMA	X						$12,683,000		$365,000		$38,000		$0		N/A	
		Hazard								L	L	L	M	M	M	M	M	L
East Palestine ES	195 West Grant Street East Palestine, OH	FEMA	X						$1,365,000		$225,000		$23,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	M
East Palestine MS	320 West Grant Street East Palestine, OH	FEMA	X						$3,450,000		$285,000		$35,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	L
East Palestine HS	360 West Grant Street East Palestine, OH	FEMA	X						$5,000,000		$400,000		$40,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	L
Garfield ES	1600 Lincoln Ave. Wellsville, OH	FEMA	X						$1,383,000		$225,000		$22,500		$0		N/A	
		Hazard								L	L	L	L	L	M	M	M	M
Joshua Dixon ES	333 North Middle St. Columbiana, OH	FEMA	X						$1,622,900		$265,000		$26,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	M
Lacroft ES	2460 Boring Lane East Liverpool, OH	FEMA	X						$4,765,600		$300,000		$35,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	M
Leetonia K-12	450 Walnut Street Leetonia, OH	FEMA	X						$3,650,000		$415,000		$39,500		$0		N/A	
		Hazard								L	L	H	L	M	M	M	H	M
Mckinley ES	441 East Chestnut St. Lisbon, OH	FEMA	X						$2,000,000		$150,000		$25,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
North ES	90 Maine Blvd. East Liverpool, OH	FEMA	X						$2,155,000		$165,000		$28,500		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	M

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X			Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
Reilly ES	491 Reilly Ave. Salem, OH	FEMA	X						$2,566,500		$180,000		$30,000		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
Rogers ES	8056 Sprucevale Rd. Rogers, OH	FEMA	X						$1,714,100		$155,000		$26,500		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Salem Jr./Sr. HS	1200 East Sixth St. Salem, OH	FEMA	X						$8,977,100		$455,000		$60,000		$0		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
South Side MS	720 Columbiana-Waterford Rd., Columbiana, OH	FEMA	X						$4,000,000		$235,000		$33,000		$0		N/A	
		Hazard								M	L	M	L	L	M	M	H	L
Southeast ES	2200 Merle Rd. Salem, OH	FEMA	X						$2,975,700		$195,000		$23,500		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	M
Southern Local K-12	38095 SR 39 Salineville, OH	FEMA	X						$4,650,000		$300,000		$48,500		$0		N/A	
		Hazard								M	L	L	L	L	M	M	M	M
United K-12	8143 SR 9 Hanoverton, OH	FEMA	X						$9,694,000		$495,000		$70,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Wellsville HS	1 Bengal Blvd. Wellsville, OH	FEMA	X						$7,347,800		$325,000		$65,000		$0		N/A	
		Hazard								L	L	L	L	L	M	M	M	L
West Point ES	13360 West Point Rd. Lisbon, OH	FEMA	X						$614,200		$140,000		$31,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	M
Westgate MS	810 West Eighth St. East Liverpool, OH	FEMA	X						$3,695,300		$280,000		$38,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Act 1 Education Center Jr. HS	9955 Union Ridge Rd. Rogers, OH	FEMA	X						$900,100		$165,000		$22,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
American Spirit Academy K-12	46682 Florence St. East Liverpool, OH	FEMA	X						$469,700		$180,000		$20,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	M
Heartland Christian School K-12	28 Pittsburgh St. Columbiana, OH	FEMA	X						$4,950,000		$545,000		$48,500		$0		N/A	
		Hazard								L	L	M	L	L	M	M	H	M
St. Aloysius ES	335 West Fifth St. East Liverpool, OH	FEMA	X						$275,000		$200,000		$29,500		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	M
St. Paul ES	925 East State St. Salem, OH	FEMA	X						$3,000,000		$155,000		$32,500		$0		N/A	
		Hazard								M	L	H	L	L	M	M	M	M

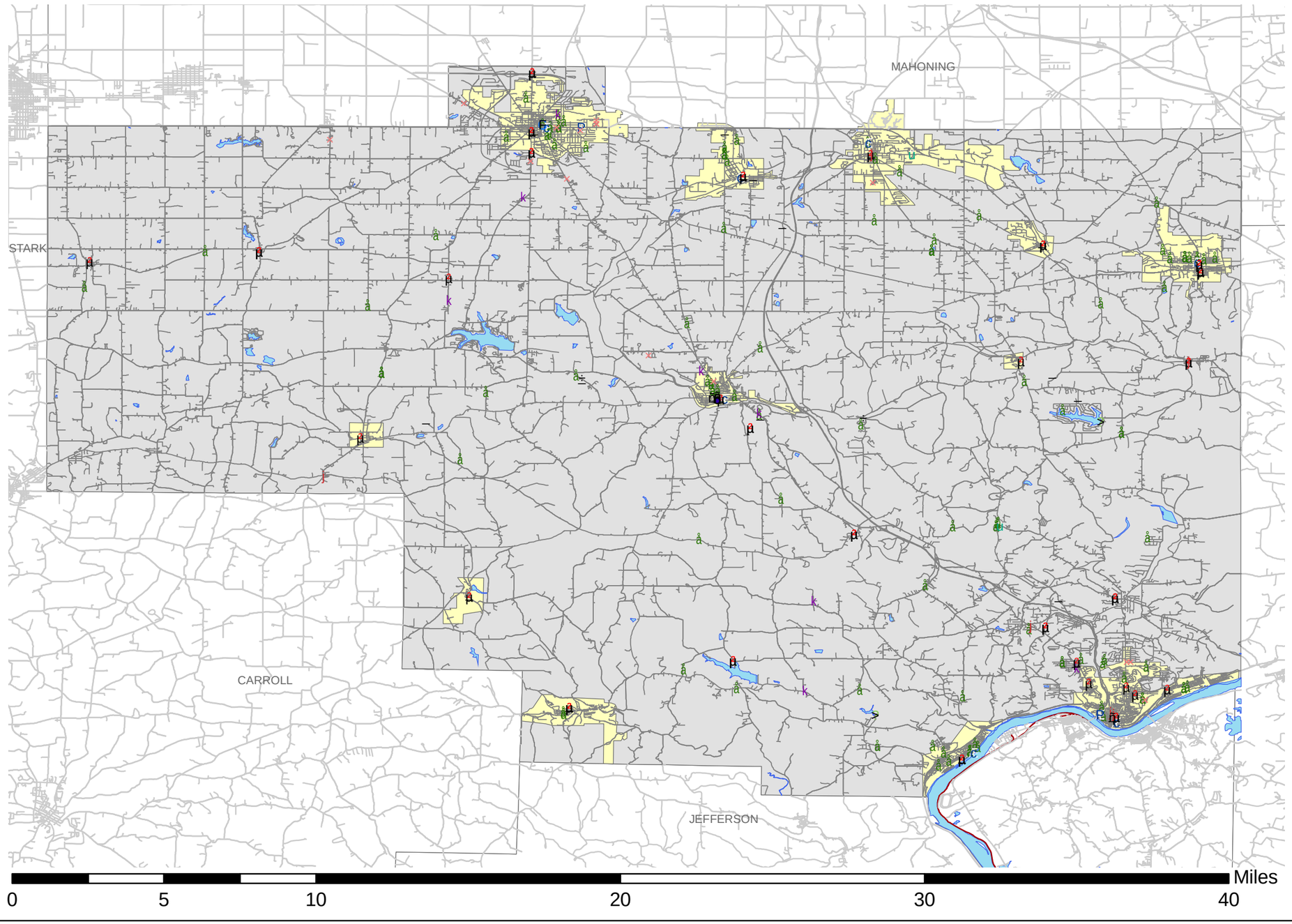
Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X											
HAZARDS										Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
COMMERCIAL AND INDUSTRIAL																		
American Standards Brands	605 South Ellsworth Ave Salem, OH 44460	FEMA			X				$985,000		$425,000		$44,800		$11,200		N/A	
		Hazard								L	L	M	L	M	M	M	M	L
Flex-N-Gate/Ventra Salem	Salem, OH 44460	FEMA			X				$1,795,000		$500,000		$38,000		$9,500		N/A	
		Hazard								L	L	H	L	M	M	M	M	L
Fresh Mark Inc.	1735 South Lincoln Ave. Salem, OH 44460	FEMA			X				$895,000		$350,000		$35,000		$8,000		N/A	
		Hazard								L	M	M	L	L	M	M	M	L
Wal-Mart Stores Inc.	16280 Dresden Ave. East Liverpool, OH 43920	FEMA			X				$6,985,000		$1,650,000		$109,600		$27,400		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Pioneer Pottery Inc	761 Dresden Ave. East Liverpool, OH 43920	FEMA			X				$550,000		$110,000		$30,000		$7,000		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Zarbana Industries	P.O. Box 46 Columbiana, OH 44408	FEMA			X				$455,000		$450,000		$50,000		$13,500		N/A	
		Hazard								L	M	M	L	M	M	M	H	L
Miller Casting	1648 Lower Elkton Road Columbiana, OH 44408	FEMA			X				$750,000		$650,000		$65,000		$14,000		N/A	
		Hazard								M	M	M	L	M	M	M	H	L
Columbiana Foundry Company	Lisbon Road Columbiana, OH 44408	FEMA			X				$400,000		$375,000		$40,000		$10,000		N/A	
		Hazard								M	M	H	L	M	M	M	H	L
POST OFFICES																		
Kensington PO	11011 SR 644 Kensington, OH	FEMA				X			$315,000		$80,000		$1,800		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Summitville PO	15521 SR 644 Summitville, OH	FEMA				X			$215,000		$56,000		$2,100		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Columbiana PO	149 South Main St. Ste. 2 Columbiana, OH	FEMA				X			$500,000		$175,000		$4,800		$0		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
New Waterford PO	3818 West Main St. New Waterford, OH	FEMA				X			$225,000		$65,000		$3,600		$0		N/A	
		Hazard								L	L	M	M	L	M	M	H	L
Calcutta PO	15713 SR 170 East Liverpool, OH	FEMA				X			$175,000		$60,000		$3,000		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Winona PO	32036 Winona Rd. Winona, OH	FEMA				X			$200,000		$70,000		$3,250		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Homeworth PO	4434 Middle St. Homeworth, OH	FEMA				X			$150,000		$55,000		$2,850		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
East Liverpool PO	700 Dresden Ave. East Liverpool, OH	FEMA				X	X		$436,400		$155,000		$5,000		$0		N/A	
		Hazard								L	L	L	M	L	M	M	M	L
East Palestine PO	269 North Market St. East Palestine, OH	FEMA				X			$244,500		$75,000		$3,450		$0		N/A	
		Hazard								M	L	M	M	L	M	M	H	L
East Rochester PO	24781 US 30 East Rochester, OH	FEMA				X			$230,000		$85,000		$3,650		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Hanoverton PO	29959 Market St. Hanoverton, OH	FEMA				X			$300,000		$80,000		$4,000		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Rogers PO	7529 Depot St. Rogers, OH	FEMA				X			$325,000		$75,000		$3,650		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X		Dam Failure		Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
Salem PO	275 Penn Ave. Salem, OH	FEMA				X			$596,600		$195,000		$6,000		$0		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
Salineville PO	37 West Main St. Salineville, OH	FEMA				X			$315,000		$65,000		$3,350		$0		N/A	
		Hazard								M	L	L	L	L	M	M	M	L
Negley PO	7560 Commerce St. Negley, OH	FEMA				X			$295,000		$85,000		$4,250		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
North Georgetown PO	27416 Main St. North Georgetown, OH	FEMA				X			$250,000		$60,000		$3,200		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Leetonia PO	235 Main St. Leetonia, OH	FEMA				X			$134,800		$62,500		$3,300		$0		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
Lisbon PO	7983 Dickey Dr. Lisbon, OH	FEMA				X			$614,300		$250,000		$5,650		$0		N/A	
		Hazard								L	L	M	M	M	M	M	M	L
Elkton PO	42188 SR 154 Elkton, OH	FEMA				X			$210,000		$69,500		$4,150		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Washingtonville PO	195 East Main St. Washingtonville, OH	FEMA				X			$265,000		$80,000		$4,100		$0		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
Wellsville PO	1075 Main St. Wellsville, OH	FEMA				X			$145,600		$67,500		$3,450		$0		N/A	
		Hazard								M	L	L	M	L	M	M	M	L
PUBLIC LIBRARIES																		
Carnegie Public Library	219 East Fourth St. East Liverpool, OH	FEMA				X	X		$442,600		$250,000		$1,600		$800		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Columbiana Public Library	322 North Middle St. Columbiana, OH	FEMA				X			$1,312,500		$355,000		$12,000		$1,250		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
East Palestine Memorial Public Library	309 North Market St. East Palestine, OH	FEMA				X			$826,600		$315,000		$9,500		$1,000		N/A	
		Hazard								L	L	M	M	L	M	M	H	L
Leetonia Community Public Library	181 Walnut St. Leetonia, OH	FEMA				X			$2,122,600		$550,000		$22,000		$2,000		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
Lepper Library	303 East Lincoln Way Lisbon, OH	FEMA				X			$580,000		$275,000		$3,840		$500		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Salem Public Library	821 East State St. Salem, OH	FEMA				X			$1,184,400		$400,000		$13,500		$1,500		N/A	
		Hazard								L	L	H	M	M	M	M	H	L
Wellsville Public Library	115 Ninth St. Wellsville, OH	FEMA				X			$367,900		$220,000		$1,500		$750		N/A	
		Hazard								L	L	L	M	L	M	M	M	L
Residences	Columbiana County	FEMA				X			$550,000		$260,000		$20,000		$1,950		N/A	
		Hazard								M	M	M	L	L	M	M	M	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X			Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
HISTORICAL FACILITIES																		
Hiram Bell Farmstead	43628 State Route 517	FEMA					X		$165,000		$0		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Burchfield Homestead	867 E. 4th Street Salem, OH	FEMA					X		$125,000		$50,000		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	L
Richard L Cawood Residence	2600 St. Clair Ave East Liverpool, OH	FEMA					X		$95,000		$45,000		$0		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Cherry Valley Coke Ovens	Butcher Road Leetonia, OH	FEMA					X		$85,000		$0		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
Church Hill Road Covered Bridge	State Route 154	FEMA					X		$450,000		$0		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Diamond Historic District	Market & E. 6th Street East Liverpool, OH	FEMA					X		$3,000,000		$0		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
East Liverpool Historic District	East Liverpool, OH	FEMA					X		$2,000,000		$0		$0		$0		N/A	
		Hazard								L	L	L	M	M	M	M	M	L
East Liverpool Pottery	2nd and Market Street East Liverpool	FEMA					X		$215,000		$200,000		$0		$0		N/A	
		Hazard								L	L	L	H	M	M	M	M	L
Nicholas Eckis House	High Street Fairfield, OH	FEMA					X		$150,000		$65,000		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Elks Club	139 W. 5th Street East Liverpool, OH	FEMA					X		$135,000		$35,000		$0		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Sandy and Beaver Canal District	Beaver Creek State Forest	FEMA					X		$675,000		$0		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Godwin Knowles House	422 Broadway East Liverpool, OH	FEMA					X		$185,000		$80,000		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Hanna-Kenty House	251 East High Street Lisbon, OH	FEMA					X		$140,000		$70,000		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Hanoverton Canal Town District	U.S. Route 30 Hanoverton, OH	FEMA					X		$1,750,000		$0		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Franklin Harris Farmstead	3525 Depot Road Salem, OH	FEMA					X		$200,000		$65,000		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	L
Daniel Howell Hise House	1100 Franklin Ave. Salem, OH	FEMA					X		$95,000		$45,000		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	L
Hostetter Inn	32901 State Route 172 Lisbon, OH	FEMA					X		$465,000		$140,000		$0		$0		N/A	
		Hazard								L	L	M	L	L	M	M	M	L
Ikirt House	200 6th Street East Liverpool, OH	FEMA					X		$85,000		$35,000		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Homer Laughlin House	414 Broadway East Liverpool, OH	FEMA					X		$110,000		$40,000		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Lisbon Historic District	U.S. Route 30 Lisbon, OH	FEMA					X		$4,000,000		$0		$0		$0		N/A	
		Hazard								L	L	M	M	M	M	M	M	L
Daniel McBean Farmstead	18709 Fife Coal Rd. Wellsville, OH	FEMA					X		$225,000		$80,000		$0		$0		N/A	
		Hazard								L	L	L	M	L	M	M	M	L

Name or Description of Asset	Address and Jurisdictional Location		Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations		Replacement Value ($)		Contents Value ($)		Function Use or Value ($)		Displacement Cost ($)		Occupancy or Capacity (#)	
			X	X	X	X	X			Dam Failure	Drought	Earthquake	Flooding	Hazardous Materials	Thunderstorm/ Hail	Severe Wind/Tornado	Severe Winter Storm	Extreme Heat
HAZARDS																		
Odd Fellows Temple	120 W. 6th Street East Liverpool, OH	FEMA					X		$115,000		$65,000		$0		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L
Mary A. Patterson Memorial	E. 4th Street East Liverpool, OH	FEMA					X		$60,000		$0		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Potters National Bank	Broadway and 4th St. East Liverpool, OH	FEMA					X		$270,000		$110,000		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Salem Downtown Historic District	Salem, OH	FEMA					X		$3,250,000		$0		$0		$0		N/A	
		Hazard								M	L	H	M	M	M	M	H	L
Charles Nelson Schmick House	110 Walnut Street Leetonia, OH	FEMA					X		$90,000		$60,000		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	H	L
John Street House	631 N. Ellsworth Ave. Salem, OH	FEMA					X		$85,000		$45,000		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	L
Teegarden-Centennial Covered Bridge	Salem, OH	FEMA					X		$475,000		$0		$0		$0		N/A	
		Hazard								L	L	H	L	L	M	M	M	L
Cassius Clark Thompson House	305 Walnut Street East Liverpool, OH	FEMA					X		$120,000		$65,250		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
Travelers Hotel	East Liverpool, OH	FEMA					X		$850,000		$250,000		$0		$0		N/A	
		Hazard								L	L	M	M	L	M	M	M	L
YMCA	Washington and 4th St. East Liverpool, OH	FEMA					X		$465,000		$125,000		$0		$0		N/A	
		Hazard								L	L	M	H	L	M	M	M	L

ASSET INVENTORY MAP



Legend

- u Clinics
- Columbiana EOC
- ÷ Corrections
- ñ Courthouses
- > Dams
- j EMS Stations
- Fire Departments
- k Higher Ed
- P Hospitals
- c Libraries
- × Nursing Homes
- Police Departments
- Red Cross
- å Schools

2.4 ESTIMATE LOSSES

§201.6(c)(2)(ii)(B)	[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.

Estimating the losses that may arise from a hazard event both educates local officials as to how to prioritize mitigation projects and speeds up the recovery process. Those community assets at risk of sustaining significant hazard-related losses will likely be higher priorities to protect with mitigation projects. Also, when disaster strikes, loss estimation data can be provided to recovery and damage assessment teams to help in categorizing the losses sustained and assistance needed.

The following figures are *loss **estimates*** and are only intended to guide the development and prioritization of mitigation strategies. These figures should not replace official damage assessments. Further, the figures are subject to change based on inflation, facility upgrades/additions, staff increases/reductions, etc.

METHODOLOGY

Appendix 1 contains loss estimates on a “per-hazard” basis. Loss estimates are depicted in Worksheet #4 from FEMA 386-2. The data from which loss estimates are derived is taken from the specific asset inventory listing. For instance, structural loss is a function of the total replacement value, contents loss a function of the total contents value, and so on. Loss estimates are calculated on an asset-by-asset basis and totaled for each hazard identified in 2.1: Identifying Hazards.

Structural loss is determined by multiplying the structural replacement value of each community asset by an estimated percent damage. The damage estimate is based on historical hazard events (e.g., damage actually sustained by a facility or damage sustained by nearby facilities). The summation of the resulting loss to each structure represents the “worst-case scenario” total structural loss potential for that hazard on a countywide basis.

Contents loss is determined in much the same way as structural loss. For example, the contents value figure for each asset is multiplied by an estimated damage percentage. Again, the resulting losses are totaled for a countywide loss estimate.

Structure use and function loss is the most detailed calculation completed during the loss estimate phase. The average daily operating costs are multiplied by the estimated number of days the facility could be inoperable and added to any costs incurred for relocation, etc. Again, loss figures for each of the community assets are totaled for a countywide, "worst-case" scenario structure use and function loss for each hazard.

The total hazard-related loss for each individual hazard is calculated by simply adding the structural, contents, and structure use/function losses. Worksheet #4 in Appendix 1 provides total hazard-related loss estimates for the entire county (and, if applicable, municipalities) as well as asset-by-asset.

ESTIMATED LOSSES

Figure 2.4 is a summary of the potential, "worst-case" scenario, hazard-related losses countywide.

Summary of Estimated Losses

Hazard	*Structural Loss*	*Contents Loss*	*Functional Loss*	*Total Loss*
Dam Failure	$4,230,320	$3,902,760	$3,285,625	$11,418,705
Drought	$0	$52,823	$633,750	$686,573
Earthquake	$0	$628,212	$0	$628,212
Flooding	$2,977,648	$2,714,492	$1,292,000	$6,984,140
Hazardous Materials	$0	$586,452	$3,434,563	$4,021,015
Severe Thunderstorm/ Hail/Lightning	$668,342	$0	$386,625	$1,054,967
Severe Wind/Tornado	$913,948	$0	$1,546,500	$2,460,448
Severe Winter Storm	$1,635,993	$0	$3,093,000	$4,728,993
Extreme Heat	$0	$0	$732,500	$732,500

Figure 2.4

2.5 ANALYZING DEVELOPMENT TRENDS

§201.6(c)(2)(ii)(C)	[The plan should describe vulnerability in terms of] providing a general discussion of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Careful consideration of land uses and development trends in a whole-of-community approach will assure, as much as possible, that all new development in Columbiana County is properly located, and properly designed with regards to the presence of identified hazards.

Columbiana County has a total population of 107,841 (2010 U.S. Census), and is part of the East Liverpool - Salem, Micropolitan Statistical Area (μSA). Metropolitan cities located within close proximity to Columbiana County include Youngstown, OH (17 miles) and Pittsburgh, PA (50 miles).

In the past, Columbiana County has been the home of several businesses. During the recent history of the county, these businesses have changed. For example, companies are bought and sold; old companies close, leaving empty facilities behind that are filled by new companies etc. For instance, in 2011, a total of 152 new businesses opened while 131 other businesses closed, creating a net formation of 21 new businesses. This net formation brings the total of active businesses to 1,838.

Columbiana County consists of a combination of urban communities located primarily in the northeastern portion of the county, and rural communities to the south and west, and is situated roughly between the Cleveland and Pittsburgh corridors. As such, the county experiences similar development trends as large cities. According to the Economic Development Coordinator with the Columbiana County Planning Commission both residential and commercial development has slowed considerably over the past five (5) years. Some rural areas on the periphery of the county are starting to see "subdivision development". Other land uses in the county consist of the following:

- ***Industrial and commercial areas*** – The majority of the commercial areas can be found in and near the incorporated areas of the county, primarily in the larger cities of East Liverpool and Wellsville, in the southern portion, and Salem and Columbiana which are located in the northern portion of the county. Other commercial and industrial areas are located along US 30 and 62.

- ***Residential areas*** – Located primarily in the northeastern portions of the county in the municipalities. Other residential areas can be found along the major roadways and sparsely in rural areas.
- ***Farmland*** – Agricultural land covers approximately 129,000 acres of the county (a total of 1,030 individual farms). These agricultural areas are spread throughout the county; however, the majority are located in the southern and western portions.
- ***Specialized land use designations*** – Unique features associated with Columbiana County include the Beaver Creek State Park, Columbiana County Fairgrounds, Firestone Park, Firestone Test Facility, Guilford Lake and State Park, Highlandtown Wildlife Area, Leetonia Coke Ovens, the Museum of Ceramics, Sandy and Beaver Canal District, Scenic Vista Park, Sheepskin Hollow State Nature Preserve, Thompson House Museum, Yellow Creek State Forest, and Zeppernick Lake and State Wildlife Area.

The residential areas in the county have experienced a population decrease since this plan was original adopted. As indicated by 2010 U.S. Census estimate data, the total population in 2000 was 112,075 which decreased to 107,841 in 2010, an average of 423 people per year over the 10-year period. According to the Ohio Department of Development, this is a trend that is not expected to continue. As can be seen in the figure to the right, the projected population for the year 2030 is 112,000. The majority of the employment sector in 2010 was comprised of service, transportation and utilities. Residential development is expected to mirror trends in this manufacturing sector.

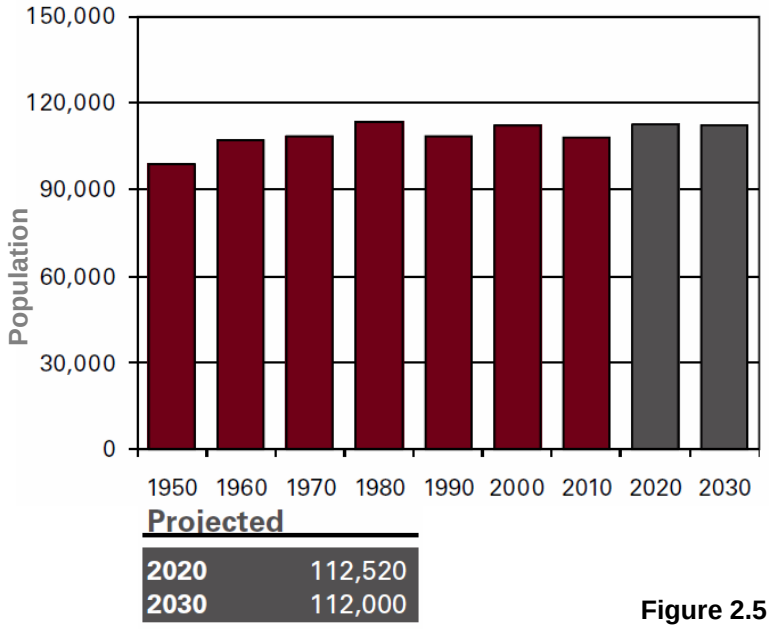


Figure 2.5

According to the Ohio Office of Strategic Research, trends between 2007 and 2011 indicate that new home construction in the county is approximately 12 new buildings per year at an average cost of $139,955. As mentioned above, residential construction in the county has slowed considerably as illustrated in table 2.8. Local officials should continue enforcing existing building codes to reduce the number of residential properties located within known flood zones.

Residential Construction	
Year	**Total Units**
2007	63
2008	52
2009	30
2010	19
2011	12

Table 2.8

Employment in Columbiana County is primarily in the service sector. Farming and light industry are the primary businesses in the southern half and remaining areas of the county. The major employers of the county include American Standard Brands, Columbiana County Government, East Liverpool City Schools, East Liverpool City Hospital, Flex-N-Gate/Ventra Systems, Fresh Mark Inc., Salem City Schools, Salem City Hospital and Wal-Mart Stores Inc.

Because much of the county's development is occurring in the suburban municipalities where existing water and wastewater infrastructures exists, land use decisions and building codes may have to be amended when considering the severity of flooding in these areas. The areas along the Little Beaver Creek, are particularly susceptible to flooding.

According to representatives with the Columbiana County Development and Planning Office the following areas of the county are targeted for development. In St. Clair Township, Township Road 170 is currently being extended to intersect with McGuffey Drive, once completed it is anticipated that several retail businesses (i.e., hotels, department stores, restaurants, etc.) will open on the 270 acre site. The Wellsville Intermodal Park has been influenced by the insurgence of the Marcellus Shale Gas industry, four (4) new businesses have opened, and a large overhead crane will be constructed on the Port of the Ohio River to load and unload barges utilized to transport materials associated with the oil and gas industry. A new plant has also been constructed in Wellsville close to the Intermodal Park, and a large separation plant is being constructed in Hanoverton which is tied to the oil and gas industry. The Salem Industrial Park is also in the process of expansion, and there has been spare residential development in the City of Columbiana.

Future developers should take into consideration the hazards affecting Columbiana County before designing and constructing their sites. Columbiana County

contains areas in the northern portion that are flat and open, which allow winds to reach speeds capable of causing structural damage. Local officials should consider encouraging/requiring residents to safeguard their structures against the potential damage from these wind speeds. Such safeguards could include the use of stronger building materials during initial construction, the planting of trees and other landscaping to serve as a windbreak to help slow wind speeds, etc. Local officials should also monitor future development in areas located downstream of the six (6) Class-I dams located in the county. As is often the case, widespread mitigation can be enhanced through public education. The public should be given advice on how to safe-proof their properties, as well as what actions they can take to avoid "forcing" another hazard onto their neighbors by developing their property. Such actions have the potential to significantly reduce loss.

The Columbiana County Planning Commission is extensively involved in comprehensive land use planning throughout Columbiana County. All of the Township and Municipalities in the county also develop zoning ordinances and comprehensive land use plans. These documents generally outline how these communities will continue to develop into the future. Many communities are working on zoning issues that will both benefit development, and serve a mitigative purpose. According to the Economic Development Coordinator with the Columbiana County Planning Commission there is not a great deal of new development, and limited re-development planned for the future in Columbiana County.

3.0 LOCAL HAZARD MITIGATION GOALS

3.0 LOCAL HAZARD MITIGATION GOALS

§201.6(c)(3)(i)	[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

STAKEHOLDERS (Core Planning Committee)

The Columbiana County Emergency Management Agency (CCEMA) in coordination with the County Commission of Columbiana County compiled a representative group of stakeholders to be known as the Core Planning Committee (CPC) for the implementation and updating of the county's Multi-Jurisdictional All Hazards Mitigation Plan. A listing of these stakeholders can be viewed in the *Description of the Planning Process* which is contained in Section 1 of this plan.

METHODOLOGY

In the fall of 2012, the CCEMA in conjunction with members of the CPC, and with the assistance of a consultant, updated the Columbiana County Hazard Risk Assessment (HRA). The updated HRA includes not only an updated listing of the hazards to which the county is susceptible, but also an analysis of the county's vulnerability to these hazards. Vulnerability was examined on several levels, including economic, environmental, and social. The updated HRA includes an inventory of the county's assets, including critical facilities, economic assets, vulnerable populations, etc., and indicates the potential loss each of the assets could incur as a result of the identified hazards. The updated HRA also includes a brief analysis of development trends in the county. In short, the updated HRA provides a factual, numerical foundation on which to base the Action Plan update.

Using the findings from the updated HRA as a guide the CPC was able to update existing, and identify new goals, objectives and strategies to mitigate the hazard risks identified in the Columbiana County HRA. Goals and objectives were updated and/or developed in a working session with the CPC with a period provided for comment and revision. Once the final goals and objectives were determined, the CPC met again to update and/or develop the mitigation strategies that would aid the county in meeting the goals and objectives identified in the plan. Strategies were selected using the information obtained from the updated HRA, which identified existing programs and shortfalls related to mitigation activities.

These meetings were made known to the general public, neighboring communities, businesses, academia and other relevant private and non-profit organizations via articles in local newspapers. As a result of these meetings and comments received from FEMA Region V on the original mitigation plan, the CCEMA, and several of the stakeholders listed in the planning process section determined the areas of the plan that needed to be updated, and those that did not.

GOALS, OBJECTIVES, AND STRATEGIES

The CCEMA in coordination with the Core Planning Committee (CPC) determined several goals, objectives, and strategies to mitigate the hazard risks identified in the county's updated HRA. These mitigation actions were developed based on projects thought to be most feasible and beneficial to hazard reduction.

These projects are hereby listed with the jurisdictions they will benefit, as well as a timeframe for completion, funding source and cost estimate, and coordinating agency to oversee their implementation. Many of these strategies (such as the development of information displays) also address multiple hazards. For the purposes of this document, each project is listed with the hazard it *primarily* addresses. It is important to note that not all hazards appearing in the updated HRA have a significant number of mitigation strategies suggested. For many hazards, public awareness is the most feasible, cost effective and beneficial strategy.

Goals, objectives, and strategies are only listed in this section as a "quick reference guide" for users of the plan. Strategies – which are the mitigation projects under consideration – are organized both by hazard and jurisdiction. A simple update status statement is also listed for each project. Projects can be classified as: Completed, Deleted, Deferred, Unchanged, or On-Going. Detailed discussions on the implementation and prioritization of mitigation projects, including an explanation of each status indicator, can be found in Section 4.0.

Mitigation strategies fall into several categories. Following, each strategy is listed with the category to which it belongs. The categories of mitigation strategies are:

1. Prevention,
2. Property protection,
3. Natural resource protection,
4. Structural projects,
5. Emergency services, and
6. Public education and awareness.

Goal 1: Reduce the potential for significant damages as a result of dam failures in Columbiana County.

Objective 1.1: Reduce the probability of significant flood damage as a result of a dam failure.

Strategy 1.1.1: Coordinate with the Ohio Department of Natural Resources, Division of Soil & Water – Dam Safety Section, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Columbiana County as a result of a change in circumstances not in existence at the time of the dam's initial classification to ensure adequate safety according to the potential for downstream damage.

Status: NEW STRATEGY N/A

Strategy 1.1.2: During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio.

Status: NEW STRATEGY N/A

Strategy 1.1.3: Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of existing dams in Columbiana County.

Status: NEW STRATEGY N/A

Strategy 1.1.4: Develop a notification system that can be utilized to notify residents and businesses downstream of large dams of actions to take before a dam failure, if lead time exists. (i.e., similar to reverse 911 system).

Status: NEW STRATEGY N/A

Strategy 1.1.5: Work with Class I dam owners to develop Emergency Action Plans (EAPs), to include a detailed assessment of the vulnerability of structures and critical facilities near the hydrological shadow of the dams.

Status: ON-GOING The majority of the Class I dams in the county have developed Emergency Action Plans.

Goal 2: Protect Columbiana County's agricultural assets from the negative effects of drought.

Objective 2.1: Increase public awareness as to the agricultural effects of drought, as well as the ramifications to the public water supply.

Strategy 2.1.1: Develop an informational brochure to distribute to local farmers and residents (i.e., provide information at county fairs or on a web site). Update and continue use of education displays that illustrate natural hazards that the county is susceptible to at special events.

Status: NEW STRATEGY N/A

Strategy 2.1.2: Educate local residents on the benefits of conserving water at all times, not just during a drought. Provide a link on the EMA website where the public can provide comment on natural hazards such as drought.

Status: NEW STRATEGY N/A

Objective 2.2: Develop methods for the procurement of an emergency water supply.

Strategy 2.2.1: Seek funding to purchase backup generators to ensure adequate water supply capacities.

Status: NEW STRATEGY N/A

Strategy 2.2.2: Encourage various water distribution systems to install system interconnects so as to assist each other with water supply during times of drought.

Status: NEW STRATEGY N/A

Goal 3: Reduce the potential effects of earthquakes in Columbiana County.

Objective 3.1: Educate the public as to the potential for earthquakes in Ohio, specifically Columbiana County.

Strategy 3.1.1: Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes (e.g., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders).

Status: NEW STRATEGY N/A

Strategy 3.1.2: Develop a technical assistance information program for homeowners, teaching them how to seismically strengthen their homes.

Status: NEW STRATEGY N/A

Objective 3.2: Lessen the potential for secondary effects, such as a large fire, after an earthquake event in Columbiana County.

Strategy 3.2.1: Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.

Status: NEW STRATEGY N/A

Strategy 3.2.2: Identify and harden critical lifeline systems (i.e., utilities, roads, schools) to meet “Seismic Design Guidelines and Standards for Lifelines”

Status: NEW STRATEGY N/A

Goal 4: Reduce the negative effects of flooding in Columbiana County.

Objective 4.1: Enhance Columbiana County's information resources as they pertain to flooding.

Strategy 4.1.1: Develop GIS capabilities within the Emergency Management Agency through a MOU with the county using non-local funds.

Status: ON-GOING Purchase of computer equipment (both base station and laptops) has been initiated. An agreement between CCEMA and the Auditor GIS staff has been discussed. Mapping layers unique to CCEMA still need to be developed.

Strategy 4.1.2: Develop an educational program on the use of, and need to, update flood hazard maps.

Status: COMPLETED An educational program has been developed. Recently updated all FIRMS through FEMA Pilot Program. Public Officials Meeting held on March 8, 2011.

Strategy 4.1.3: Educate local officials on sources of information that can be used to monitor flooding, storm and other weather information (IFLOWS, U.S.G.S. gage data, etc.)

Status: ON-GOING Local officials are not aware of available resources. There is a need to provide links, could be done via web based system or adding links to web page.

Objective 4.2: Coordinate with local officials to develop requests for specific flood study updates.

Strategy 4.2.1: Coordinate with FEMA's Mapping Needs Update Support System (MNUSS) to assist State and FEMA in prioritizing needs for updating county flood hazard maps.

Status: COMPLETED This strategy has been completed.

Objective 4.3: Develop, implement, or strengthen local regulatory requirements to lessen flood damage.

Strategy 4.3.1: Integrate site specific disaster mitigation issues into storm water planning initiatives.

Status: ON-GOING Through the Phase 2 Program, the County and local communities have prepared storm water management plans and will be updating their drainage criteria. CCEMA will coordinate with the County Engineer to determine opportunities to reduce local flooding risks.

Strategy 4.3.2: Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.

Status: NEW STRATEGY N/A

Strategy 4.3.3: Confirm status of repetitive loss structures and develop community specific plan to mitigate properties to eliminate future risks.

Status: ON-GOING This is an on-going strategy.

Objective 4.4: Offer assistance to homeowners affected by flash flooding.

Strategy 4.4.1: Continue to offer funds and technical assistance to homeowners who need sump pumps or check valves installed near flood hazard areas and other areas experiencing flash flooding.

Status: COMPLETED & ON-GOING These services are currently provided.

Objective 4.5: Reduce flood damage by undertaking structural projects to lessen obstructions to the flow of water.

Strategy 4.5.1: Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.

Status: NEW STRATEGY N/A

Goal 5: Take measures to lessen the probability and severity of hazardous materials incidents in Columbiana County.

Objective 5.1: Conduct a Hazardous Materials Survey or Commodity Flow Study to better understand the nature and extent of the hazardous materials risk throughout the county.

Strategy 5.1.1: Apply for a Hazardous Materials Emergency Preparedness (HMEP) grant from OEMA to finance the development of a Commodity Flow Study to determine what hazardous materials are used, stored, and shipped through the county.

Status: NEW STRATEGY N/A

Objective 5.2: Increase public safety and awareness with regards to hazardous materials incidents.

Strategy 5.2.1: Consider installing Dynamic Message Boards on major roadways that display information concerning transportation related hazmat incidents to motorist.

Status: NEW STRATEGY N/A

Objective 5.3: Ensure adequate training and resources for emergency response organizations and personnel.

Strategy 5.3.1: Develop and exercise site emergency plans and community response plans as required under SARA Title III for fixed and transportation related hazmat incidents.

Status: NEW STRATEGY N/A

Strategy 5.3.2: Train, equip, and prepare covered facilities and local hazardous material emergency response teams.

Status: NEW STRATEGY N/A

Strategy 5.3.3: Provide awareness of, training on, and implementation of radiological emergency procedures to include both primary and secondary Emergency Planning Zones as appropriate in case of an incident at the Beaver Valley Nuclear Power Plant.

Status: NEW STRATEGY N/A

Goal 6: Reduce damages from severe thunderstorms hail and lightning in Columbiana County.

Objective: 6.1: Increase public awareness that a severe thunderstorm is imminent.

Strategy 6.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions. Educate county and local governmental officials on the need to update information regarding non site-specific natural hazards.

Status: COMPLETED & ON-GOING Conducted on an as-needed basis. The project has been completed via the on-going coordination between the CCEMA and the NWS.

Strategy 6.1.2: Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio.

Status: NEW STRATEGY N/A

Strategy 6.1.3: Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.

Status: NEW STRATEGY N/A

Objective 6.2: Decrease the probability of power failures and property damage during and following severe thunderstorms.

Strategy 6.2.1: Consider burying utility lines during new construction or trimming and maintaining trees to prevent limb breakage to safeguard nearby utility lines.

Status: NEW STRATEGY N/A

Strategy 6.2.2: Encourage residents and businesses to install window shutters, laminated glass in window panes, and hail-resistant roof shingles to minimize damage to public and private structures.

Status: NEW STRATEGY N/A

Strategy 6.2.3: Ensure that surge protection, such as surge protectors and grounding (GFCI outlets), has been installed on all critical electronic equipment owned by county government.

Status: NEW STRATEGY N/A

Goal 7: Reduce damage from severe wind and tornadoes in Columbiana County.

Objective 7.1: Increase public awareness that severe wind and tornadoes are imminent.

Strategy 7.1.1: Coordinate with the National Weather Service to warn residents of impending severe winds and possible tornado conditions.

Status: NEW STRATEGY N/A

Strategy 7.1.2: Add additional tornado siren warning system capacity (need for 20 sirens). Update siren system to be used for warnings for all hazards.

Status: ON-GOING Several sirens have been added through donations from the Beaver Valley Power Stations. There is still a need for more sirens throughout the county. Funding available but only as "special project" and requires 50% match.

Strategy 7.1.3: Advise schools on need to update their tornado plans in response to the addition of NOAA all-hazard radios.

Status: COMPLETE NOAA Weather Radios have been placed into all public/private schools, and all schools have since updated their response plans.

Objective 7.2: Minimize future damage from severe wind or tornadoes throughout Columbiana County by increasing control over construction activities.

Strategy 7.2.1: Coordinate with the County Building Inspector to annually assess County building codes to determine possible enhancements for reducing tornado risks that supplement Ohio building code requirements for commercial and apartments with four (4) or more dwellings.

Status: ON-GOING This strategy has been completed and is considered an on-going issue.

Strategy 7.2.2: Purchase mobile 35kw generators or (gen-sets) that can be transported to shelters throughout Columbiana County.

Status: ON-GOING Since 2005 nine generators have been purchased through the State Homeland Security Program for use to support short term shelter operations and power critical infrastructure.

Strategy 7.2.3: Incorporate safe room concepts into buildings through the development of a voluntary program that building owners may opt to participate in.

Status: DELETED It was decided upon by the Core Planning Committee to delete this strategy.

Strategy 7.2.4: Perform an annual update of shelters and re-location facilities for at-risk residents.

Status: ON-GOING The strategy is required to be completed annually.

Goal 8: Reduce the effects of severe winter storms in Columbiana County.

Objective 8.1: Ensure adequate capacities throughout the county to respond to a severe winter storm event.

Strategy 8.1.1: Coordinate with local private contractors and volunteers to develop mutual aid agreements for emergency snow removal.

Status: NEW STRATEGY N/A

Strategy 8.1.2: Reduce transportation system vulnerability by refining vulnerability assessments and Roadway Capital Improvement Plans through the Council of Governments.

Status: COMPLETED This strategy has been completed.

Objective 8.2: Establish heating centers or shelters for vulnerable populations and stranded motorists.

Strategy 8.2.1: Strategically place or identify existing sites that could be used as emergency shelters throughout Columbiana County.

Status: NEW STRATEGY N/A

Strategy 8.2.2: Seek funding to purchase a generator for Columbiana County Career and Technical Center to support primary sheltering operations and health medical operations

Status: ON-GOING Committee is still trying to obtain funding.

Goal 9: Protect Columbiana County's population from heat waves.

Objective: 9.1: Increase public knowledge of protective measures to take during heat waves.

Strategy 9.1.1: Develop an informational brochure to distribute to local residents concerning safety tips for extreme heat.

Status: NEW STRATEGY N/A

Strategy 9.1.2: Complete assessment of the distribution of populations (poor and elderly) vulnerable to cold or heat stress from power or gas outages to determine emergency shelter (i.e., heating and cooling centers) capacity needs.

Status: COMPLETED This project has been completed through the ARC.

Goal 10: Reduce or eliminate the negative effects of various other hazards in Columbiana County.

Objective 10.1: Integrate pre-disaster mitigation plan components into the existing Columbiana County Emergency Operations Plan (EOP) and make stakeholders aware of the addition.

Strategy 10.1.1: Conduct training on changes to the EOP.

Status: COMPLETED This strategy has been completed.

Objective 10.2: Enhance or upgrade the existing communications system used by Columbiana County first responders.

Strategy 10.2.1: Develop and coordinate communication technology to identify tools for pre and post responders, with the help of the Home Builders Association.

Status: DELETED This strategy has been deleted by the Core Planning Committee (CPC).

Objective 10.3: Obtain sound estimates important to obtaining expedient Federal declarations.

Strategy 10.3.1: Develop additional training and update resource materials for completing damage estimates pursuant to Federal Disaster Declarations.

Status: ON-GOING This strategy has been started; however, is still on-going.

Objective 10.4: Identify zoning and other tools that may assist local officials in reducing risks and protect health and safety of residents.

Strategy 10.4.1: Coordinate with those communities in the county that lack zoning, to determine if zoning or other approaches may be useful to reducing natural hazard risks unique to them.

Status: UNCHANGED This strategy has not been started.

CITIES OF COLUMBIANA COUNTY

COLUMBIANA

Goal 1A: Reduce the negative effects of flooding in Columbiana

Objective 1A.1: Take actions over and above minimum National Flood Insurance Program (NFIP) requirements with the goal of further reducing flood damages in Columbiana City.

Strategy 1A.1.1: Participate in the Community Rating System (CRS).

Status: ON-GOING This strategy has been initiated; however, has not been completed.

EAST LIVERPOOL

Goal 1B: Reduce the potential for property damage as a result of flooding in East Liverpool.

Objective 1B.1: Reduce the number of structures and critical infrastructure located in the 100-year floodplain.

Strategy 1B.1.1: Consider elevating critical flood-prone structures above the 100-year flood level.

Status: ON-GOING Very few structures have been elevated.

Strategy 1B.1.2: Consider conducting acquisition and relocations projects in East Liverpool.

Status: NEW STRATEGY N/A

SALEM

Goal 1C: Reduce property damage as a result of flash flooding in portions of Salem.

Objective 1C.1: Decrease the rapid accumulation of storm water runoff in the urbanized areas of the City of Salem.

Strategy 1C.1.1: Coordinate with property owners to decrease the amount of impermeable ground coverage in upland drainage areas to allow more water to be absorbed into the ground.

Status: UNCHANGED This strategy has not been initiated.

VILLAGES OF COLUMBIANA COUNTY

EAST PALESTINE

Goal 1D: Reduce the negative effect of flooding in East Palestine.

Objective 1D.1: Ensure that the residents of East Palestine can recovery from flooding that does occur.

Strategy 1D.1.1: Encourage the residents of East Palestine to maintain required flood insurance.

Status: ON-GOING There are still residents that do not have flood insurance.

Strategy 1D.1.2: Encourage residents to adhere to current floodplain regulations in effect.

Status: ON-GOING N/A

Strategy 1D.1.3: Establish a more robust storm water utility for East Palestine.

Status: ON-GOING Seeking funding.

Goal 2D: Provide a plan of action for an incident at the East Palestine Reservoir.

Objective 2D.1: Ensure that a plan is in place for an incident at the East Palestine Reservoir.

Strategy 2D.1.1: Develop an Emergency Action Plan for East Palestine

Status: COMPLETED This strategy has been completed.

HANOVERTON

Goal 1E: Reduce the potential for injuries and property damage as a result of severe winter storms.

Objective 1E.1: Reduce the amount of blowing and drifting snow over the roadways of Hanoverton Village.

Strategy 1E.1.1: Consider constructing snow fences or planting rows of trees to serve as living snow fences to limit blowing and drifting snow over critical roadways.

Status: UNCHANGED This strategy has not been started.

Strategy 1E.1.2: Add additional warning systems to provide direct warnings to residents.

Status: COMPLETED This strategy has been completed.

LEETONIA

Goal 1F: Reduce the potential for the occurrence of a hazmat incident in Leetonia.

Objective 1F.1: Reduce the potential for a transportation related hazmat incident in portions of Leetonia.

Strategy 1F.1.1: Improve the design, routing, and traffic control at problem roadway areas.

Status: NEW STRATEGY N/A

LISBON

Goal 1G: Provide advanced flood warnings to businesses and residents of Lisbon.

Objective 1G.1: Enhance warnings of impending flood events and the after effects those flood events could create.

Strategy 1G.1.1: Increase the coverage and use of NOAA Weather Radios.

Status: NEW STRATEGY N/A

Strategy 1G.1.2: Monitor water levels with stream gauges and/or trained monitors.

Status: NEW STRATEGY N/A

NEW WATERFORD

Goal 1H: Reduce the potential for property damage as a result of flooding in New Waterford.

Objective 1H.1: Reduce the number of structures and critical infrastructure located in the 100 year floodplain.

Strategy 1H.1.1: Consider elevating critical flood-prone structures above the 100 year flood level, and/or conducting acquisition/relocation projects where and as needed.

Status: ON-GOING A few structures have been elevated; no acquisition or relocation has yet to be conducted.

Strategy 1H.1.2: Control and secure debris, yard items, or stored objects (including oil, gasoline, and propane tanks, and paint and chemical barrels) in floodplains that may be swept away, damaged, or pose a hazard when flooding occurs.

Status: NEW STRATEGY N/A

ROGERS

Goal 1I: Reduce the potential for flooding in the Village of Rogers.

Objective 1I.1: Reduce flood damage by preserving the natural course of the waterways that run through the Village of Rogers.

Strategy 1I.1.1: Clean and maintain Little Bull Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.

Status: UNCHANGED This strategy has not yet been started.

SALINEVILLE

Goal 1J: Reduce the potential for the occurrence of a hazmat incident in Salineville.

Objective 1J.1: Reduce the potential for a transportation related hazmat incident in portions of Salineville.

Strategy 1J.1.1: Coordinate with the railroad company to periodically inspect and improve designs at problem railway/roadway intersections.

Status: NEW STRATEGY N/A

SUMMITVILLE

Goal 1K: Reduce the potential for flooding in the Village of Summitville.

Objective 1K.1: Reduce flood damage by preserving the natural course of the waterways running through Summitville.

Strategy 1K.1.1: Clean and maintain Brush Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.

Status: UNCHANGED This strategy has not been started.

WASHINGTONVILLE

Goal 1L: Reduce the potential for damage as a result of an earthquake in Washingtonville.

Objective 1L.1: Decrease the probability of contents damage and personal injury as a result of earthquakes.

Strategy 1L.1.1: Encourage businesses and residents to utilize safe interior designs and furniture arrangements (i.e., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders)

Status: NEW STRATEGY N/A

WELLSVILLE

Goal 1M: Reduce the potential for significant flood damage as a result of a failure to the Wellsville Reservoir Dam.

Objective 1M.1: Decrease the amount of exposure to significant flooding.

Strategy 1M.1.1: Regulate development in the dam's hydraulic shadow (i.e., where flooding would occur if there was a severe dam failure).

Status: NEW STRATEGY N/A

4.0 PROJECT IMPLEMENTATION

4.1 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

§201.6(c)(3)(ii)	[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

This portion of the plan builds on the strategies list presented in Section 3.0. Whereas Section 3.0 simply lists Columbiana County's mitigation goals, objectives, and strategies, this section analyzes those strategies as projects and discusses how they should be implemented. Each strategy is listed along with a timeframe, primary coordinator, support agencies, potential funding source (and cost estimate), and its current status. Strategies are also categorized by six (6) different types of mitigation projects. (*NOTE: "Strategies" are considered mitigation "projects".)

1. Prevention,
2. Property protection,
3. Natural resource protection,
4. Structural projects,
5. Emergency services, and
6. Public education and awareness.

It is important to note that the cost estimates are tentative and meant as a starting point for research on project feasibility. More specifically, these cost estimates are only ranges of probable project costs; all figures are approximations. At the time the implementation of any strategy is considered, a full cost estimate should be sought prior to securing funding. The Benefit-Cost Review was emphasized in the prioritization process. Mitigation actions were evaluated by their pros and cons, which are represented as costs and benefits.

Finally, as a navigational note, this section only contains *current* mitigation projects (organized by jurisdiction). If the status indicator in Section 3.0 classified as project as "Completed", "Deleted", or "Deferred", it will *not* be listed below (unless the Hazard Mitigation Core Planning Committee chose to re-list the project because of a future benefit). As a result, the strategy numbers may not run consecutively (e.g., Strategy X.1.5 may follow Strategy X.1.3).

COLUMBIANA COUNTY

Strategy 1.1.1: Coordinate with the Ohio Department of Natural Resources, Division of Soil & Water – Dam Safety Section, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Columbiana County as a result of a change in circumstances not in existence at the time of the dam's initial classification to ensure adequate safety according to the potential for downstream damage.

Timeframe: As needed

Funding (*Cost Estimate*)**:** ODNR quite possibly has items such as this budgeted as this project would fall under the responsibilities of ODNR personnel. (*N/A*)

Primary Coordinator: ODNR

Support Agency: Dam Owner

Mitigation Type: Prevention

Status Description: This is a new strategy.

Strategy 1.1.2: During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio.

Timeframe: During new dam construction

Funding (*Cost Estimate*)**:** Local Funding (*Up to $50,000 to $75,000 if a consultant is used.*)

Primary Coordinator: Dam Owner

Support Agency: ODNR

Mitigation Type: Prevention

Status Description: This is a new strategy.

Strategy 1.1.3: Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of existing dams in Columbiana County.

Timeframe: Annually (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** No funding should be required per ODNR's normal operating budget. (*N/A*)

Primary Coordinator: Affected Jurisdiction

Support Agency: Dam Owner, ODNR

Mitigation Type: Prevention

Status Description: This is a new strategy.

Strategy 1.1.4: Develop a notification system that can be utilized to notify residents and businesses downstream of large dams of actions to take before a dam failure, if lead time exists. (i.e., similar to reverse 911 system).

Timeframe: 3 years (January 1, 2014 to December 31, 2016)

Funding (*Cost Estimate*)**:** HMGP, PDM, ODNR (*Up to $25,000 to $100,000 depending on the sophistication of the notification system.*)

Primary Coordinator: ODNR, Dam Owner

Support Agency: Notification System Designer

Mitigation Type: Public Education & Awareness

Status Description: This is a new strategy.

Strategy 1.1.5: Work with Class I dam owners to develop Emergency Action Plans, to include a detailed assessment of the vulnerability of structures and critical facilities near the hydrological shadow of the dams.

Timeframe: Update every five (5) years. (January 1, 2014 to December 31, 2018)

Funding (*Cost Estimate*)**:** Local funding, (*Up to $45,000 for all dams.*)

Primary Coordinator: Dam Owners

Support Agency: CCEMA, ODNR

Mitigation Type: Emergency Services

Status Description: On-going. The majority of the Class I dams in the county have developed Emergency Action Plans.

Strategy 2.1.1: Develop an informational brochure to distribute to local farmers and residents (i.e., provide information at county fairs or on a web site). Update and continue use of educational displays that illustrate natural hazards that the county is susceptible to at special events.

Timeframe: Annually (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** Local funding, PDM *(Up to $3,000 for publication and distribution of informative materials.*)

Primary Coordinator: CCEMA

Support Agency: Local water distribution systems, Agricultural Assets, LEPC

Mitigation Type: Public Education & Awareness

Status Description: This is a new strategy.

Strategy 2.1.2: Educate local residents on the benefits of conserving water at all times, not just during a drought. Provide a link on the EMA website where the public can provide comment on the natural hazards such as drought.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): Local funding (*Up to $5,000 per year.*)
Primary Coordinator: CCEMA
Support Agency: Local water distribution companies.
Mitigation Type: Public Education and Awareness.
Status Description: This is a new strategy.

Strategy 2.2.1: Seek funding to purchase backup generators to ensure adequate water supply capacities.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): PDM, Local Funding (*Up to $50,000.*)
Primary Coordinator: CCEMA
Support Agency: Local water distribution companies.
Mitigation Type: Prevention
Status Description: This is a new strategy.

Strategy 2.2.2: Encourage various water distribution systems to install system interconnects so as to assist each other with water supply during times of drought.

Timeframe: 3 years (January 1, 2014 to December 31, 2016)
Funding (*Cost Estimate*): Infrastructure & Job Development Council (IJDC), Small Cities Block Grant (SCBG), United State Department of Agriculture (USDA), Rural Development (RD) (*Up to $100,000 to 400,000.*)
Primary Coordinator: Water Distribution Systems
Support Agency: Various Engineering Firms and Contractors.
Mitigation Type: Prevention, Structural Project
Status Description: This is a new strategy.

Strategy 3.1.1: Develop an informational brochure explaining the potential for earthquake, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes (e.g., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders.

Timeframe: Annually (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** PDM, Local Funding (*Up to $3,000 for publication and distribution of informative materials.*)

Primary Coordinator: CCEMA

Support Agency: State of Ohio

Mitigation Type: Public Education and Awareness

Status Description: This is a new strategy.

Strategy 3.1.2: Develop a technical assistance information program for homeowners, teaching them how to seismically strengthen their homes.

Timeframe: Annually (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** No additional funding necessary. (*N/A*)

Primary Coordinator: CCEMA

Support Agency: State of Ohio

Mitigation Type: Public Education and Awareness

Status Description: This is a new strategy.

Strategy 3.2.1: Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding (*Cost Estimate*)**:** Infrastructure & Job Development Council (IJDC), Small Cities Block Grant (SCBG), PDM (*Up to $150,000 to $300,000 to purchase and install*.)

Primary Coordinator: Local Gas Providers

Support Agency: Sensory system vendors.

Mitigation Type: Structural Project, Prevention

Status Description: This is a new strategy.

Strategy 3.2.2: Identify and harden critical lifeline systems (i.e., utilities, roads, schools, etc.) to meet "Seismic Design Guidelines and Standards for Lifelines".

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding (*Cost Estimate*)**:** Infrastructure & Job Development Council (IJDC), Small Cities Block Grant (SCBG), PDM (*Up to $250,000 per structure*.)

Primary Coordinator: Critical Lifeline System Owners

Support Agency: Columbiana County Engineers Office

Mitigation Type: Structural Project, Property Protection

Status Description: This is a new strategy.

Strategy 4.1.1: Develop GIS capabilities within the Emergency Management Agency through a MOU with the county using non-local funds.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** Local Funding (*Up to $50,000.*)

Primary Coordinator: County Commission

Support Agency: CCEMA

Mitigation Type: Emergency Services

Status Description: On-going. Purchase of computer equipment (both base station and laptops) has been initiated. An agreement between CCEMA and the Auditor GIS staff has been discussed. Mapping layers unique to CCEMA still need to be developed.

Strategy 4.1.3: Educate local officials on sources of information that can be used to monitor flooding, storm and other weather information (i.e., IFLOWS, U.S.G.S. gage data, etc.).

Timeframe: 1 Year (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** Local funding, (*Up to $3,200*.)

Primary Coordinator: CCEMA

Support Agency: Local Officials

Mitigation Type: Public Education & Awareness.

Status Description: On-going. Local officials are not aware of available resources. There is a need to provide links, could be done via web based system or adding links to county web page.

Strategy 4.3.1: Integrate site specific disaster mitigation issues into storm water planning initiatives.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): CDBG, HMGP, (*Up to $60,000*.)
Primary Coordinator: County Floodplain Administrator
Support Agency: CCEMA
Mitigation Type: Emergency Services, Structural Project
Status Description: On-going. Through the Phase 2 Program, the county and local communities have prepared storm water management plans and will be updating their drainage criteria. CCEMA will coordinate with the County Engineer to determine opportunities to reduce local flooding risks.

Strategy 4.3.2: Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.

Timeframe: 6 months (January 1, 2014 to June 30, 2014)
Funding (*Cost Estimate*): Participating in the program requires no funding. (*N/A*)
Primary Coordinator: CCEMA
Support Agency: County Commission
Mitigation Type: Public Education and Awareness
Status Description: This is a new strategy.

Strategy 4.3.3: Confirm status of repetitive loss structures and develop community specific plan to flood proof, relocate, or buyout to eliminate future risks.

Timeframe: 2 years (January 1, 2014 to December 31, 2016)
Funding (*Cost Estimate*): Determine strategy to establish costs. (*N/A*)
Primary Coordinator: Municipal Officials
Support Agency: CCEMA
Mitigation Type: Prevention
Status Description: On-going. Status of repetitive loss structures could not be determined based on available data.

Strategy 4.4.1: Continue to offer funds and technical assistance to homeowners who need sump pumps or check valves installed near flood hazard areas and other areas experiencing flash flooding.

Timeframe: Annually (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): Strategy is subject to availability of local funding. (*N/A*)
Primary Coordinator: CCEMA
Support Agency: County Engineer, Homeowners
Mitigation Type: Property protection
Status Description: Completed and on-going. These services are currently provided.

Strategy 4.5.1: Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)
Funding (*Cost Estimate*): CDBG, HMGP, PDM (*Up to $250,000.*)
Primary Coordinator: County Commission
Support Agency: Affected Jurisdictions, County Engineer
Mitigation Type: Structural Project, Prevention
Status Description: This is a new strategy.

Strategy 5.1.1: Apply for a Hazardous Materials Emergency Preparedness (HMEP) grant from OEMA to finance the development of a Commodity Flow Study to determine what hazardous materials are used, stored, and shipped through the county.

Timeframe: 2 years (January 1, 2014 to December 31, 2016)
Funding (*Cost Estimate*): HMEP (*Up to $5,000 to $8,000 depending on transportation modes monitored*.)
Primary Coordinator: Columbiana County LEPC
Support Agency: Municipal Officials
Mitigation Type: Emergency Services, Public Education and Awareness
Status Description: This is a new strategy.

Strategy 5.2.1: Consider installing Dynamic Message Boards on major roadways that displays information concerning transportation related hazmat incidents to motorist.

Timeframe: 3 years (January 1, 2014 to December 31, 2016)

Funding (*Cost Estimate*)**:** CDBG, HMGP, USDOT (*Up to $10,000.*)

Primary Coordinator: ODOT

Support Agency: Dynamic Message Board Vendors

Mitigation Type: Structural Project, Public Education and Awareness

Status Description: This is a new strategy.

Strategy 5.3.1: Develop and exercise site emergency plans and community response plans as required under SARA Title III for fixed and transportation related hazmat incident.

Timeframe: Bi-Annually (January 1, 2014 to December 31, 2015)

Funding (*Cost Estimate*)**:** HMEP (*Up to $8,000 to $10,000 if a consulting firm is utilized to design and facilitate the exercise*.)

Primary Coordinator: Columbiana County LEPC, CCEMA

Support Agency: Ohio EPA

Mitigation Type: Emergency Services

Status Description: This is a new strategy.

Strategy 5.3.2: Train, equip, and prepare covered facilities and local hazardous material emergency response teams.

Timeframe: As needed.

Funding (*Cost Estimate*)**:** Local Funding, HMEP, PDM (*Up to $8,000 to &75,000, depending on equipment purchased*.)

Primary Coordinator: Columbiana County LEPC, County Commission

Support Agency: Response Teams

Mitigation Type: Emergency Services

Status Description: This is a new strategy.

Strategy 5.3.3: Provide awareness of, training on, and implementation of radiological emergency procedures to include both primary and secondary Emergency Planning Zones as appropriate in case of an incident at the Beaver Valley Nuclear Power Plant.

Timeframe: Annually (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*): Local Funding, PDM, HMEP (*Up to $10,000 depending on level of training provided*.)

Primary Coordinator: Beaver Valley Nuclear Power Plant

Support Agency: NRC

Mitigation Type: Emergency Services

Status Description: This is a new strategy.

Strategy 6.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions. Educate county and local governmental officials on the need to update information regarding non site-specific natural hazards.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*): No additional funding necessary.

Primary Coordinator: CCEMA

Support Agency: NWS

Mitigation Type: Public Education and Awareness

Status Description: Completed and On-going. Conducted on an as-needed basis. The project has been completed via the on-going coordination between the CCEMA and the NWS.

Strategy 6.1.2: Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio.

Timeframe: 2 years (January 1, 2014 to December 31, 2016)

Funding (*Cost Estimate*): Local funding (*Up to $50 to $70 per radio.*)

Primary Coordinator: CCEMA

Support Agency: Municipal Officials

Mitigation Type: Public Education & Awareness

Status Description: This is a new strategy.

Strategy 6.1.3: Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.

Timeframe: Annually (January 1, 2014 to December 31, 2014)

Funding (*Cost Estimate*)**:** Coordination should require no additional funding, especially since the EAS is already operational. (*N/A*)

Primary Coordinator: CCEMA and local law enforcement agencies

Support Agency: Affected jurisdictions.

Mitigation Type: Public Education & Awareness

Status Description: This is a new strategy.

Strategy 6.2.1: Consider burying utility lines during new construction or trimming and maintaining trees to prevent limb breakage to safeguard nearby utility lines.

Timeframe: During new construction

Funding (*Cost Estimate*)**:** CDBG, HMGP, (*Up to $250,000 to $500,000.*)

Primary Coordinator: County Commission

Support Agency: Municipal Officials

Mitigation Type: Prevention

Status Description: This is a new strategy.

Strategy 6.2.2: Encourage residents and businesses to install window shutters, laminated glass in window panes, and hail-resistant roof shingles to minimize damage to public and private structures.

Timeframe: 4 years (January 1, 2014 to December 31, 2017)

Funding (*Cost Estimate*)**:** No additional funding necessary. (*N/A*)

Primary Coordinator: County Commission, Homeowners Association

Support Agency: Local businesses and residents

Mitigation Type: Property Protection

Status Description: This is a new strategy.

Strategy 6.2.3: Ensure that surge protection, such as surge protectors and grounding (GFCI outlets), has been installed on all critical electronic equipment owned by county government.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): No additional funding necessary. (*N/A*)
Primary Coordinator: County Commission
Support Agency: N/A
Mitigation Type: Prevention, Property Protection
Status Description: This is a new strategy.

Strategy 7.1.1: Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

Timeframe: 6 months
Funding (*Cost Estimate*): No additional funding is needed. (*N/A*)
Primary Coordinator: NWS
Support Agency: CCEMA
Mitigation Type: Emergency Services, Public Education and Awareness
Status Description: This is a new strategy.

Strategy 7.1.2: Add additional tornado siren warning system capacity (need for 20 sirens). Update siren system to be used for warnings for all hazards.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)
Funding (*Cost Estimate*): Funding available but only as "special project" and requires 50% match.
Primary Coordinator: CCEMA
Support Agency: County Commission
Mitigation Type: Emergency Services
Status Description: On-going. There is still a need for more sirens throughout the county.

Strategy 7.2.1: Coordinate with the County Building Inspector to annually assess county building codes to determine possible enhancements for reducing tornado risks that supplement Ohio Building Code requirements for commercial and apartments with four (4) or more dwellings.

Timeframe: Annually (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): Local funding (*Up to $4,000.*)
Primary Coordinator: County Building Inspector, Home Builders Association
Support Agency: CCEMA
Mitigation Type: Property Protection
Status Description: On-going. This strategy has been completed and is considered an on-going issue.

Strategy 7.2.2: Purchase mobile 35kw generators or (gen-sets) that can be transported to shelters throughout Columbiana County.

Timeframe: 2 years (January 1, 2014 to December 31, 2015)
Funding (*Cost Estimate*): PDM, HMGP, Local Funding (*Up to $10,000 to $15,000 per generator.*)
Primary Coordinator: Columbiana County Commission
Support Agency: CCEMA
Mitigation Type: Prevention
Status Description: On-going. Since 2005 nine generators have been purchased through the State Homeland Security Program for use to support short term shelter operations and power critical infrastructure.

Strategy 7.2.4: Perform an annual update of shelters and re-location facilities for at-risk residents.

Timeframe: Annually (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): Cost paid through in-kind services.
Primary Coordinator: County Planning Commission
Support Agency: American Red Cross
Mitigation Type: Emergency Services
Status Description: On-going. The strategy is required to be completed annually.

Strategy 8.1.1: Coordinate with local private contractors and volunteers to develop mutual aid agreements for emergency snow removal.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): No additional funding necessary. (*N/A*)
Primary Coordinator: Contractors, County Commission
Mitigation Type: Emergency Services
Status Description: This is a new strategy.

Strategy 8.2.1: Strategically place or identify existing sites that could be used as emergency shelters throughout Columbiana County.

Timeframe: 2 years (January 1, 2014 to December 31, 2016)
Funding (*Cost Estimate*): No additional funding necessary. (*N/A*)
Primary Coordinator: American Red Cross
Support Agency: CCEMA
Mitigation Type: Emergency Services
Status Description: This is a new strategy.

Strategy 8.2.2: Seek funding to purchase a generator for Columbiana County Career and Technical Center to support primary sheltering operations and health medical operations.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)
Funding (*Cost Estimate*): Local funding, PDM (*Up to $15,000 to $20,000.*)
Primary Coordinator: CCEMA
Support Agency: Columbiana County Career and Technical Center
Mitigation Type: Prevention
Status Description: On-going. Committee is still trying to obtain funding.

Strategy 9.1.1: Develop an informational brochure to distribute to local residents concerning safety tips for extreme heat.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding (*Cost Estimate*): Local funding (*Up to $1,000 to $3,000.*)
Primary Coordinator: Columbiana County Health Department
Support Agency: CCEMA
Mitigation Type: Public Education and Awareness
Status Description: This is a new strategy.

Strategy 10.3.1: Develop additional training and update resource materials for completing damage estimates pursuant to Federal Disaster Declarations.

Timeframe: 1 year (January 1, 2014 to December 31, 2014)
Funding *(Cost Estimate):* Local funding, PDM (*Up to $8,000 to $12,000 for resource materials.*)
Primary Coordinator: CCEMA
Support Agency: N/A
Mitigation Type: Emergency Services
Status Description: On-going. This strategy has been started; however, is still on-going.

Strategy 10.4.1: Coordinate with those communities in the county that lack zoning, to determine if zoning or other approaches may be useful to reducing natural hazard risks unique to them.

Timeframe: 3 years (January 1, 2014 to December 31, 2016)
Funding *(Cost Estimate):* No additional funding necessary. (*N/A*)
Primary Coordinator: CCEMA
Support Agency: City and Village Governments
Mitigation Type: Property Protection
Status Description: On-going.

CITY OF COLUMBIANA

Strategy 1A.1.1: Participate in the Community Rating System (CRS).

Timeframe: 2 years (January 1, 2014 to December 31, 2016)

Funding *(Cost Estimate):* No additional funding necessary. (*N/A*)

Primary Coordinator: City Council

Support Agency: Floodplain Coordinator, NWS

Mitigation Type: Emergency Services

Status Description: On-going. This strategy has been initiated; however, has not been completed.

CITY OF EASTLIVERPOOL

Strategy 1B.1.1: Consider elevating critical flood-prone structures above the 100-year flood level.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding *(Cost Estimate):* HMGP (*Small structures may range from $50,000 to $75,000, while larger structures may range from $80,000 to $300,000.*)

Primary Coordinator: City Council

Support Agency: Floodplain Coordinator

Mitigation Type: Prevention, Structural Project

Status Description: On-going, a few structures have been elevated.

Strategy 1B.1.2: Consider conducting acquisition and relocation projects in East Liverpool.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding (*Cost Estimate*)**:** PDM, HMGP (*Up to $95,000 to $150,000.*)

Primary Coordinator: Floodplain Coordinator

Support Agency: Property Owner, Municipal Officials.

Mitigation Type: Prevention

Status Description: This is a new strategy.

CITY OF SALEM

Strategy 1C.1.1: Coordinate with property owners to decrease the amount of impermeable ground coverage in upland drainage areas to allow more water to be absorbed into the ground.

Timeframe: 5 years (January 1, 2014 to December 2018.)
Funding *(Cost Estimate):* Local Funding, CDBG (*Up to $25,000 to $50,000.*)
Primary Coordinator: City Engineer
Support Agency: Property Owners
Mitigation Type: Natural Resource Protection
Status Description: Unchanged. This strategy has not been initiated.

VILLAGE OF EAST PALESTINE

Strategy 1D.1.1: Encourage the residents of East Palestine to maintain required flood insurance.

Timeframe: On-going
Funding *(Cost Estimate):* No additional funding necessary. (*N/A*)
Primary Coordinator: Village Council
Support Agency: Property owners
Mitigation Type: Property Protection
Status Description: On-going. There are still residents that do not have flood insurance.

Strategy 1D.1.2: Encourage residents to adhere to current floodplain regulations in effect.

Timeframe: On-going
Funding (*Cost Estimate*)**:** No additional funding necessary.
Primary Coordinator: Village Council
Support Agency: Property owners
Mitigation Type: Property Protection
Status Description: On-going.

Strategy 1D.1.3: Establish a more robust storm water utility for East Palestine.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding (*Cost Estimate*)**:** CDBG, PDM, HMGP (*Up to $500,000 to $1,000,000.*)

Primary Coordinator: Village Council

Support Agency: Engineering Department

Mitigation Type: Prevention, Structural Project

Status Description: On-going. Seeking funding.

VILLAGE OF HANOVERTON

Strategy 1E.1.1: Consider constructing snow fences or planting rows of trees to serve as living snow fences to limit blowing and drifting snow over critical roadways.

Timeframe: 3 years (January 1, 2014 to December 31, 2016)

Funding *(Cost Estimate):* ODOT, Local funding, (*Up to $10,000 for professional landscaping; however, township road crews may be able to accomplish this strategy for only the cost of materials.*)

Primary Coordinator: Village Council

Support Agency: ODOT

Mitigation Type: Prevention, Structural Project

Status Description: Unchanged. This strategy has not been started.

VILLAGE OF LEETONIA

Strategy 1F.1.1: Improve the design, routing, and traffic control at problem roadway areas.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding *(Cost Estimate):* PDM, ODOT (*Up to $500,000.*)

Primary Coordinator: ODOT

Support Agency: Village Council

Mitigation Type: Prevention, Structural Project

Status Description: This is a new strategy.

VILLAGE OF LISBON

Strategy 1G.1.1: Increase the coverage and use of NOAA Weather Radios.

Timeframe: 2 years (January 1, 2014 to December 31, 2015)

Funding *(Cost Estimate):* Local funding, (*Up to $50 to $70 per radio.*)

Primary Coordinator: Village Council

Support Agency: Critical Facilities

Mitigation Type: Public Education and Awareness

Status Description: This is a new strategy.

Strategy 1G.1.2: Monitor water levels with stream gauges and/or trained monitors.

Timeframe: 3 years (January 1, 2014 to December 31, 2016)

Funding (*Cost Estimate*)**:** HMGP, PDM, USGS (*Up to $10,000 per gauge installed.*)

Primary Coordinator: Village Council

Support Agency: USGS

Mitigation Type: Public Education and Awareness

Status Description: This is a new strategy.

VILLAGE OF NEW WATERFORD

Strategy 1H.1.1: Consider elevating critical flood-prone structures above the 100-year flood level, and/or conducting acquisition/relocation projects where and as needed.

Timeframe: 5 years (January 1, 2014 to December 31, 2018)

Funding *(Cost Estimate):* HMGP (*Small structures may range from $50,000 to $75,000, while larger structures may range from $80,000 to $300,000.*)

Primary Coordinator: Village Council

Support Agency: Floodplain Coordinator

Mitigation Type: Prevention, Structural Project

Status Description: On-going. A few structures have been elevated; no acquisition or relocation has yet to be conducted.

Strategy 1H.1.2: Control and secure debris, yard items, or stored objects (including oil, gasoline, and propane tanks, and paint and chemical barrels) in floodplains that may be swept away, damaged, or pose a hazard when flooding occurs.

Timeframe: 2 years (January 1, 2014 to December 31, 2015)

Funding (*Cost Estimate*): No additional funding necessary. (*N/A*)

Primary Coordinator: Village Council

Support Agency: Property owners

Mitigation Type: Prevention

Status Description: This is a new strategy.

VILLAGE OF ROGERS

Strategy 1I.1.1: Clean and maintain Little Bull Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.

Timeframe: 4 years (January 1, 2014 to December 31, 2017)

Funding *(Cost Estimate):* USACOE, Local Funding (*Small sections of streams could range from $50,000 to $100,000.*)

Primary Coordinator: USACOE

Support Agency: Village Council

Mitigation Type: Prevention

Status Description: Unchanged. This strategy has not yet been started.

VILLAGE OF SALINEVILLE

Strategy 1J.1.1: Coordinate with the railroad company to periodically inspect and improve designs at problem railway/roadway intersections.

Timeframe: 3 years (January 1, 2014 to December 31, 2016)

Funding *(Cost Estimate):* PDM, HMGP, ODOT (*Up to $550,000 to $750,000*.)

Primary Coordinator: Railroad & ODOT

Support Agency: N/A

Mitigation Type: Structural Project, Prevention

Status Description: This is a new strategy.

VILLAGE OF SUMMITVILLE

Strategy 1K.1.1: Clean and maintain Brush Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.

Timeframe: 4 years (January 1, 2014 to December 31, 2017)

Funding *(Cost Estimate):* USACOE, Local funding (*Small sections of streams could range from $50,000 to $100,000.*)

Primary Coordinator: USACOE

Support Agency: Village Council

Mitigation Type: Prevention

Status Description: Unchanged. This strategy has not been started.

VILLAGE OF WASHINGTONVILLE

Strategy 1L.1.1: Encourage businesses and residents to utilize safe interior designs and furniture arrangements (i.e., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders).

Timeframe: 1 year (January 1, 2014 to December 31, 2014)

Funding *(Cost Estimate):* No additional funding necessary. (*N/A*)

Primary Coordinator: Village Council

Support Agency: Business and property owners

Mitigation Type: Property protection

Status Description: This is a new strategy.

VILLAGE OF WELLSVILLE

Strategy 1M.1.1: Regulate development in the dam's hydraulic shadow (i.e., where flooding would occur if there was a severe dam failure.

Timeframe: During new development

Funding *(Cost Estimate):* No additional funding necessary. (*N/A*)

Primary Coordinator: Village Council

Support Agency: N/A

Mitigation Type: Prevention

Status Description: This is a new strategy.

4.2 IMPLEMENTATION OF MITIGATION ACTIONS

§201.6(c)(3)(iii)	[The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This section identifies the priority for implementing the projects identified in Sections 3.0 and 4.1. Each current project is listed with a "primary coordinator" in Section 4.1 that should be responsible for the overall implementation of the project.

Project (i.e., strategy) prioritization occurred in three (3) phases. First, the Columbiana County Core Planning Committee (CPC) ranked the nine (9) hazards considered by this plan, with "1" being the one to which they felt the county was most vulnerable and "9" being the hazard to which they felt the county to be least vulnerable.

Second, the CPC ranked the projects under each hazard by priority. Projects receiving a rank of "1" were considered to be the highest priority project *for that particular hazard*. The following criteria (roughly corresponding to the STAPLEE method) were used as considerations when prioritizing projects.

- **Social Impacts**: Consider whether the public would support implementation of the project. If so, priority likely rises.
- **Technical Feasibility**: Consider whether the project can be done and if it will yield the intended outcomes. If yes, priority would likely rise.
- **Administrative Requirements**: Consider the staffing, funding, and maintenance requirements of the project. If current capabilities can successfully manage and sustain the project, priority would be strengthened.
- **Political Impacts**: Consider the acceptability of the project from the political frame. If it is likely to cause political upheaval, it would receive a lower priority.
- **Legal Ramifications**: Consider whether the project can be lawfully implemented. If not, the project cannot be listed.
- **Environmental Impacts**: Consider whether there would be negative consequences to environmental assets should the project be implemented. If assets are impact, priority would be likely to fall.
- **Economic Impacts/Cost Benefit**: A brief "benefit cost review" per *FEMA Publication 386-5: Using Benefit Cost Review in Mitigation Planning* was

conducted for each project to determine the "pros" and "cons" of each project as it related to project prioritization. Maximizing the use of available funds would positively affect a project's priority.

Finally, to generate a complete, prioritized project list, the prioritized list of projects corresponding to the highest ranked hazard (i.e., the one to which the CPC felt the county was most vulnerable) was listed, followed by the prioritized list of projects corresponding to the second-highest ranked hazard, and so on. The CPC felt that organizing the priorities in this manner allowed for the greatest flexibility when implementing mitigation projects (yet still maintained compliance with state and federal prioritization requirements). *NOTE: Municipal priorities are not categorized by hazards because of the smaller number of projects under municipal coordination.

COLUMBIANACOUNTY

PRIORITY HAZARD 1: FLOODING			
Project Number	*Mitigation Project*	*Hazard Priority*	*Overall Priority*
4.3.2	Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.	**1**	**1**
4.1.1	Develop GIS capabilities within the Emergency Management Agency through a MOU with the county using non-local funds.	**2**	**2**
4.1.3	Educate local officials on sources of information that can be used to monitor flooding, storm and other weather information (i.e., IFLOWS, USGS gage data, etc.).	**3**	**3**
4.4.1	Continue to offer funds and technical assistance to homeowners who need sump pumps or check valves installed near flood hazard areas and other areas experiencing flash flooding.	**4**	**4**
4.3.1	Integrate site specific disaster mitigation issues into storm water planning initiatives.	**5**	**5**
4.5.1	Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.	**6**	**6**
4.3.3	Confirm status of repetitive loss structures and develop community specific plan to flood proof, relocate, or buyout to eliminate future risks.	**7**	**7**

Table 4.1

PRIORITY HAZARD 2: SEVERE WIND / TORNADO			
Project Number	*Mitigation Project*	*Hazard Priority*	*Overall Priority*
7.1.1	Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.	**1**	**8**
7.2.4	Perform an annual update of shelters and re-location facilities for at-risk residents.	**2**	**9**
7.2.2	Purchase mobile 35kw generators or (gen-sets) that can be transported to shelters throughout Columbiana County.	**3**	**10**
7.2.1	Coordinate with the County Building Inspector to annually assess county building codes to determine possible enhancements for reducing tornado risks that supplement Ohio Building Code requirements for commercial and apartments with four (4) or more dwellings.	**4**	**11**
7.1.2	Add additional tornado siren warning system capacity (need for 20 sirens). Update siren system to be used for warnings for all hazards.	**5**	**12**
PRIORITY HAZARD 3: SEVERE WINTER STORM			
Project Number	*Project Number*	*Project Number*	*Project Number*
8.1.1	Coordinate with local private contractors and volunteers to develop mutual aid agreements for emergency snow removal.	**1**	**13**
8.2.1	Strategically place or identify existing sites that could be used as emergency shelters throughout Columbiana County.	**2**	**14**
8.2.2	Seek funding to purchase a generator for Columbiana County Career and Technical Center to support primary sheltering operations and health medical operations.	**3**	**15**

Table 4.1 continued

PRIORITY HAZARD 4: DAM FAILURE			
Project Number	*Mitigation Project*	*Hazard Priority*	*Overall Priority*
1.1.3	Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of existing dams in Columbiana County.	**1**	**16**
1.1.1	Coordinate with the Ohio Department of Natural Resources, Division of Soil & Water – Dam Safety Section, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Columbiana County as a result of a change in circumstances not in existence at the time of the dam's initial classification to ensure adequate safety according to the potential for downstream damage.	**2**	**17**
1.1.2	During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio.	**3**	**18**
1.1.5	Work with Class I dam owners to develop Emergency Action Plans, to include a detailed assessment of the vulnerability of structures and critical facilities near the hydrological shadow of the dams.	**4**	**19**
1.1.4	Develop a notification system that can be utilized to notify residents and businesses downstream of large dams of actions to take before a dam failure, if lead time exists. (i.e., similar to reverse 911 system).	**5**	**20**
PRIORITY HAZARD 5: HAZARDOUS MATERIALS INCIDENT			
Project Number	*Project Number*	*Project Number*	*Project Number*
5.3.3	Provide awareness of, training on, and implementation of radiological emergency procedures to include both primary and secondary Emergency Planning Zones as appropriate in case of an incident at the Beaver Valley Nuclear Power Plant.	**1**	**21**
5.1.1	Apply for a Hazardous Materials Emergency Preparedness (HMEP) grant from OEMA to finance the development of a Commodity Flow Study to determine what hazardous materials are used, stored, and shipped through the county.	**2**	**22**
5.3.1	Develop and exercise site emergency plans and community response plans as required under SARA Title III for fixed and transportation related hazmat incidents.	**3**	**23**
5.3.2	Train, equip, and prepare covered facilities and local hazardous material emergency response teams.	**4**	**24**
5.2.1	Consider installing Dynamic Message Boards on major roadways that displays information concerning transportation related hazmat incidents to motorists.	**5**	**25**

Table 4.1 continued

PRIORITY HAZARD 6: DROUGHT			
Project Number	*Project Number*	*Project Number*	*Project Number*
2.1.1	Develop an informational brochure to distribute to local farmers and residents (i.e., provide information at county fairs or on a web site). Update and continue use of educational displays that illustrate natural hazards that the county is susceptible to at special events.	**1**	**26**
2.1.2	Educate local residents on the benefits of conserving water at all times, not just during a drought. Provide a link on the EMA website where the public can provide comment on the natural hazards such as drought.	**2**	**27**
2.2.1	Seek funding to purchase backup generators to ensure adequate water supply capacities.	**3**	**28**
2.2.2	Encourage various water distribution systems to install system interconnects so as to assist each other with water supply during times of drought.	**4**	**29**
PRIORITY HAZARD 7: SEVERE THUNDERSTORM / HAIL / LIGHTNING			
Project Number	*Project Number*	*Project Number*	*Project Number*
6.1.1	Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions. Educate county and local governmental officials on the need to update information regarding non site-specific natural hazards.	**1**	**30**
6.1.3	Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.	**2**	**31**
6.2.3	Ensure that surge protection, such as surge protectors and grounding (GFCI outlets), has been installed on all critical electronic equipment owned by county government.	**3**	**32**
6.1.2	Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio.	**4**	**33**
6.2.2	Encourage residents and businesses to install window shutters, laminated glass in window panes, and hail-resistant roof shingles to minimize damage to public and private structures.	**5**	**34**
6.2.1	Consider burying utility lines during new construction or trimming and maintaining trees to prevent limb breakage to safeguard nearby utility lines.	**6**	**35**

Table 4.1 continued

PRIORITY HAZARD 8: EARTHQUAKE			
Project Number	*Project Number*	*Project Number*	*Project Number*
3.1.2	Develop a technical assistance information program for homeowners, teaching them how to seismically strengthen their homes.	**1**	**36**
3.1.1	Develop an informational brochure explaining the potential for earthquake, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes (e.g., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders.	**2**	**37**
3.2.1	Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.	**3**	**38**
3.2.2	Identify and harden critical lifeline systems (i.e., utilities, roads, schools, etc.) to meet "Seismic Design Guidelines and Standards for Lifelines".	**4**	**39**
PRIORITY HAZARD 9: EXTREME HEAT			
Project Number	*Project Number*	*Project Number*	*Project Number*
9.1.1	Develop an informational brochure to distribute to local residents concerning safety tips for extreme heat.	**1**	**40**
PRIORITY HAZARD 10: MISCELLANEOUS HAZARDS			
Project Number	*Project Number*	*Project Number*	*Project Number*
10.3.1	Develop additional training and update resource materials for completing damage estimates pursuant to Federal Disaster Declarations.	**1**	**41**
10.4.1	Coordinate with those communities in the county that lack zoning, to determine if zoning or other approaches may be useful to reducing natural hazards risks unique to them.	**2**	**42**

Table 4.1 continued

CITY OF COLUMBIANA

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1A.1.1	Participate in the Community Rating System (CRS).	**1**

Table 4.2

CITY OF EAST LIVERPOOL

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1.B.1.1	Consider elevating critical flood-prone structures above the 100-year flood level.	**1**
1B.1.2	Consider conducting acquisition and relocation projects in East Liverpool.	**2**

Table 4.3

CITY OF SALEM

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1.C.1.1	Coordinate with property owners to decrease the amount of impermeable ground coverage in upland drainage areas to allow more water to be absorbed into the ground.	**1**

Table 4.4

VILLAGE OF EAST PALESTINE

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1D.1.2	Encourage residents to adhere to current floodplain regulations in effect.	**1**
1D.1.1	Encourage the residents of East Palestine to maintain required flood insurance.	**2**
1D.1.3	Establish a more robust storm water utility for East Palestine.	**3**

Table 4.5

VILLAGE OF HANOVERTON

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1E.1.1	Consider constructing snow fences or planting rows of trees to serve as living snow fences to limit blowing and drifting snow over critical roadways.	**1**

Table 4.6

VILLAGE OF LEETONIA

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1F.1.1	Improve the design, routing, and traffic control at problem roadway areas.	**1**

Table 4.7

VILLAGE OF LISBON

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1G.1.1	Increase the coverage and use of NOAA Weather Radios.	**1**
1G.1.2	Monitor water levels with stream gauges and/or trained monitors.	**2**

Table 4.8

VILLAGE OF NEW WATERFORD

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1H.1.2	Control and secure debris, yard items, or stored objects (including oil, gasoline, and propane tanks, and paint and chemical barrels) in floodplains that may be swept away, damaged, or pose a hazard when flooding occurs.	**1**
1H.1.1	Consider elevating critical flood-prone structures above the 100-year flood level, and/or conducting acquisition/relocation projects where and as needed.	**2**

Table 4.9

VILLAGE OF ROGERS

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1I.1.1	Clean and maintain Little Bull Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.	**1**

Table 4.10

VILLAGE OF SALINEVILLE

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1J.1.1	Coordinate with the railroad company to periodically inspect and improve designs at problem railway/roadway intersections.	**1**

Table 4.11

VILLAGE OF SUMMITVILLE

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1K.1.1	Clean and maintain Brush Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.	**1**

Table 4.12

VILLAGE OF WASHINGTONVILLE

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1L.1.1	Encourage businesses and residents to utilize safe interior designs and furniture arrangements (i.e., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders).	**1**

Table 4.13

VILLAGE OF WELLSVILLE

HAZARD PROJECTS		
Project Number	*Mitigation Project*	*Priority*
1M.1.1	Regulate development in the dam's hydraulic shadow (i.e., where flooding would occur if there was a severe dam failure.	**1**

Table 4.14

5.0 PLAN MAINTENANCE PROCESS

5.0 PLAN MAINTENANCE PROCESS

§201.6(c)(4)(i)	[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
§201.6(c)(4)(ii)	[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
§201.6(c)(4)(iii)	[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

5.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

The Columbiana County Emergency Management Agency (CCEMA), Core Planning Committee (CPC), and jurisdictions adopting this plan have established a method for the systematic and periodic review of this document. The CCEMA and CPC will monitor the performance of the plan in several ways, such as analyzing social, technical, administrative, economic, and environmental criteria. Participating jurisdictions will also evaluate mitigation strategies as the chance to implement them arises. As part of the completion of the plan update, copies of the plan will be provided to all adjacent counties.

The CCEMA and CPC have decided to formally update this plan at five (5) year intervals, regardless of the number of hazard events that occur during that period. As a result of this update, the plan will be resubmitted in 2018, 2023, 2028, etc.

The CCEMA will serve as the coordinator of the updates. As such, the CCEMA will contact participating jurisdictions to schedule meetings, facilitate virtual or other discussions, obtain lists of completed projects, collected updated asset inventory data, etc. It is also significant to note that a number of meetings may be held as, and if, mitigation strategies are implemented, but such meetings would only anecdotally discuss this document (to ensure that projects to be implemented are included within). Further, such sections as 2.0: Hazard Risk Assessment (HRA) may be reviewed and utilized for other planning processes, as it contains a comprehensive overview of hazard risks in Columbiana County at a macro level.

The formal updating process will consist of a series of meetings (either face-to-face or virtual) to determine the plan's effectiveness at determining hazard susceptibility areas. The effectiveness of any implemented mitigation strategies should also be

determined. Successful, implemented strategies can then be removed from the plan. Finally, the CPC should discuss new mitigation strategies, quite possibly based on recent hazard events.

As mentioned above, the CPC will monitor the performance of the plan based on several criteria. For instance, the committee should consider revising mitigation strategies if it appears that the plan is failing according to one (1) of the following measures (again, roughly corresponding to the STAPLEE method).

- ***Social:*** Has the public perceived that the project has positively lessened hazard-related losses? Has implementing the project adversely affected any segment of the population?
- ***Technical:*** Are the mitigation strategies proving to be technically feasible? Are the mitigation strategies eliminating problems rather than creating new, different problems?
- ***Administrative/Legal:*** Do the mitigation strategies conform to local, state, and federal policies as they are implemented?
- ***Economic:*** Has the cost/benefit ratio of implementing the project been acceptable? Has implementing a project adversely affected a particular segment of the local economy?
- ***Environmental:*** Does implementing mitigation strategies create any adverse environmental conditions? Do mitigation strategies represent sound environmental practices?

Other measures may be used to guide the discussions on the primary measures listed above. These measures include the following.

- ***Ease of Implementation:*** How smoothly has implementing the project (or similar types of projects) been? Have programs been readily available to assist in funding the implementation of the project (or similar types of projects)?
- ***Cost Effectiveness:*** Have sufficient funding sources been available to implement the project at a cost manageable by the local government? Have the costs of implementing the project been significantly less than the cumulative future costs potentially incurred by an un-corrected situation?
- ***Political Impacts:*** Has implementing a particular project (or type of project) been delayed due to the political consequences of its implementation?

- ***Overall Positive Impacts:*** Have local leaders generally agreed that implementing a particular project was beneficial to the community?

To date, local policies have not hindered hazard mitigation efforts. The jurisdictions participating in this planning process have used a variety of funding to complete mitigation projects in the past, including the Hazard Mitigation Grant Program (HMGP), Homeland Security Grant Program (HSGP), Emergency Management Performance Grant (EMPG), Community Development Block Grant (CDBG), and local funding. Local government policies and programs have supported the use of this funding and, thus, the implementation of mitigation projects. Further, all participating government jurisdictions have demonstrated a capability to successfully implement and administer mitigation projects.

The only administrative issue that has hampered the implementation of mitigation projects has been confusion as to the specific function of this document. CPC participation during the original plan development (and the updating process) was excellent; however, many of the specific departments within the participating jurisdictions' structure have been generally unaware of the existence of this document and how it can be used to leverage funding for mitigation projects. As such, educational strategies aimed at publicizing this plan with local governmental structures were included during the update.

The monitoring of this plan also includes methods for ensuring that projects are successfully implemented and contribute to the achievement of the mitigation goals outlined in Section 3.0. All of the individual projects listed in this plan are accompanied by a series of potential funding sources. Many of these funding sources require stringent project administration tasks (including performance measures and close-out procedures), all of which would be followed by the jurisdiction implementing a project. Adherence to these requirements will ensure the successful implementation of projects funded by such programs. For projects funded locally, existing purchasing policies will be followed, including competitive bidding, maintenance of invoice copies, regular departmental budget reviews, etc. All files associated with purchasing at the local level are maintained. This procedure has been successful while implementing mitigation projects since the original development of this plan and will continue to be followed.

5.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

The members of the CPC are leaders within the communities and agencies that they represent. They are often involved in the overall community, economic development, and capital improvements planning efforts of their jurisdictions. As members of the mitigation planning team, these individuals will carry mitigation concepts into other planning areas.

Additionally, hazard mitigation is a component of a number of other planning processes undertaken throughout the county. For example, the CCEMA incorporates mitigation principles into its emergency operations planning in an effort to predetermine the hazards to which responders may respond. The CCEMA's operations plan works to primarily address the negative effects of natural, technological, and man-made hazards. Columbiana County and its municipalities currently use their building regulations, health codes, subdivision regulations, and zoning resolutions, when applicable to help protect life and property and guide development. This plan includes steps to include hazard mitigation strategies into the operations of these existing programs. Of particular significance will be conformance with National Flood Insurance Program (NFIP) regulations in developing areas in the county. Limited growth is expected to occur in an around several areas with known flood hazard areas (i.e., Wellsville and East Liverpool in particular). Conformance with minimum NFIP requirements is expected to minimize future flood risks in these areas. The county has made progress in updating flood hazard maps and expects to initiate an education program to advise local decision makers about the status of flood hazard maps in their communities. Also, the County Engineer's Office is expected to review and update county drainage criteria to provide enhanced storm water runoff management to reduce the risks associated with flash flooding.

The emergency response agencies are heavily involved in emergency planning at the local level, to include the identification and implementation of mitigation strategies. Such officials as fire chiefs and police chiefs have become just as involved on the CPC as elected officials. As such, these individuals are integrating, where applicable, the four (4) phases of emergency management – the first of which is mitigation – into the development of their agency-specific Standard Operating Guidelines (SOGs).

Additionally, as county government departments, the CCEMA and the Columbiana County Planning Commission maintain frequent contact. Many of the discussions between the agencies focus on the services that can be provided to areas that are targeted for development; however, the CCEMA is consulted as to what hazards

could affect an area that is developable. The comprehensive plans for Columbiana County communities that had been completed since the original adoption of this plan were reviewed as part of the updating process; such a practice will be continued in subsequent updates. As such, local officials can be made aware of the hazards to which targeted development areas may be susceptible.

Columbiana County is a proactive county in terms of government, development, etc. Throughout the course of updating this plan and its risk assessment, such agencies as the Columbiana County Engineer's Office, Columbiana County Auditor's Office, Columbiana County Planning Commission, etc. were contacted to ensure that the mitigation plan would integrate seamlessly into their existing planning efforts.

5.3 CONTINUED PUBLIC INVOLVEMENT

The CCEMA and CPC understand that the general public must be involved in the planning process as well as the update processes scheduled every five (5) years. As such, the CPC will ensure public involvement through invitations to future public and/or CPC meetings, distributing questionnaires, etc. The plan includes activities that will lead to the development of public information sources and opportunities to solicit and react to public comments. In fact, several of the mitigation goals include activities designed to inform and educate the public and garner public comments and ongoing support for plan implementation. Further, as the plan is re-adopted, the public will be given the chance to comment on the document that is to be adopted *prior* to its actual adoption.

The CCEMA, at a minimum, will maintain file copies, and make the plan available on the CCEMA website for review and perusal at any time. The CCEMA intends to log all comments received regarding the mitigation plan. Members of the public are invited to contact the CCEMA with comments regarding hazard events, etc. Local officials are also invited to review the plan's effectiveness at determining hazard susceptibility based on data from hazard events as they occur.

6.0 APPENDICES

APPENDIX 1: HAZARD PROFILES, LOSS CALCULATIONS, AND MAPPING

This appendix contains hazard-specific information created as a result of the comprehensive Hazard Risk Assessment (HRA) that was completed as part of this project. The appendix is organized alphabetically by hazard name. Each hazard-labeled tab contains a detailed hazard profile, matrices to calculate loss estimations, and mapping that graphically depicts low, moderate, and high susceptibility areas for the hazard in question.

Loss estimates were calculated for all jurisdictions. In some instances, however, a municipal jurisdiction could be more or less susceptible than the balance of the county to a particular hazard. Where this was the case, a separate map and a summary of losses (Worksheet #3a. from the FEMA guide 386-2) were created for that specific jurisdiction.

As a navigational note for the electronic copy of the plan, Worksheet #3a is listed outside of any hazard folders. It is a single file that contains multiple worksheets organized by hazard name. A master copy of Worksheet #4 is also listed outside of all folders. It contains all assets and values but no damage percentages.

2.2 PROFILING HAZARDS

2.2.1. Dam Failure

A dam is a barrier built across a waterway to control the flow or raise the level of water. A dam failure occurs when the barrier constructed across the waterway fails or otherwise does not obstruct or restrain the flow of water, which can rapidly result in a large area of completely inundated land.

INTRODUCTION

Several methods of research identified dam failure as a hazard in Columbiana County, including discussions with local representatives. General information on dam failures was obtained from the following sources:

- Local media research,
- Ohio Department of Natural Resources (ODNR), Division of Soil & Water Resources – Dam Safety,
- US Army Corps of Engineers – Pittsburgh District,
- Association of State Dam Safety,
- National Dam Inventory, and
- Internet research.

There are approximately 80,000 dams in the United States, the majority of which are privately owned. State and local authorities, public utilities, and federal agencies own others. Dams are an integral part of our nations' infrastructure, equal in importance to bridges, roads, and airports. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation, and save lives by preventing or reducing floods.

Period of Occurrence:	At any time.
Number of Events to Date:	0
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection.
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities.
Cause Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	30 days or more.

Figure 2.1a

Dams are man-made structures designed to obstruct or restrain waters that may cause flooding downstream. These structures are generally made with concrete or earthen materials. The failure of these dams, although a man-made structure, could result in the natural event of flooding.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Columbiana County has a low to moderate dam failure risk even though there are no recorded instances of a dam failure historically. The risk of dam failure is site-specific and targeted to particular areas within the county including, the Village of Wellsville, Community of Guilford, Community of Negley, State Route 172, US Route 30, and County Route 412.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.1b

HAZARD IDENTIFICATION

There are a total of 137 dams in Columbiana County, according to the Ohio Department of Natural Resources (ODNR), Division of Soil & Water Resources – Dam Safety. Of those dams six (6) are considered Class I, 21 Class II, 15 Class III, 21 Class IV, 58 exempt, 11 unclassified, and five (5) have been abandon. Dams are classified as defined under section §1501:21-13-01 of the Ohio Administrative Code by two (2) conditions: height and storage (as illustrated in the height and storage charts, Table 2.1a below). According to the Association of State Dam Safety the number of unsafe dams in the United States has raised by 33 percent (33%) since 1998, the number of high-hazard dams has also increased from 9,281 to 11,300 in 2012.

The height of a dam is defined as the vertical dimension measured from the natural streambed at the downstream toe of a dam to the low point along the top of the dam. The storage volume of a dam is defined as the total volume impounded when the pool level is at the top of the dam immediately before it is overtopped. According

HEIGHT OF DAM	
Class I	Greater than 60 ft.
Class II	Greater than 40 ft.
Class III	Greater than 25 ft.
Class IV	Less than or equal to 24 ft.

STORAGE VOLUME	
Class I	Greater than 5,000 ac-ft.
Class II	Greater than 500 ac-ft.
Class III	Greater than 50 ac-ft.
Class IV	Less than or equal to 50 ac-ft.

Table 2.1a

to the ODNR, the damage predicted by a dam failure coincides with the class of the dam.

The table below lists the Class I dams that are located within Columbiana County. Also listed in the table are the types of each dam (i.e., earthen fill, concrete, etc.), the downstream areas that would be effect in the event of a dam failure, and the owners of each dam.

Class I Dams in Columbiana County			
Name of Dam	**Type**	**Stream / Downstream Area**	**Owner**
Buckeye Water District/Wellsville Reservoir	Earth fill	Little Yellow Creek / Village of Wellsville	Buckeye Water District
*Guilford Lake Dam	Earth fill	West Fork Little Beaver Creek / Community of Guilford Lake, State Route 172 and US Route 30	ODNR, Division of Parks & Recreation
*Highlandtown Lake Dam	Earth fill	Little Yellow Creek / State Route 39, Wellsville Reservoir, northern portion of Wellsville	ODNR, Division of Wildlife
Lake Tomahawk Dam	Earth fill	Rough Run / Community of Negley	Lake Tomahawk Property Owners Assn.
Salem Reservoir South Embankment	Earth fill	Cold Run / State Route 172 & County Route 412	City of Salem
Wellsville Reservoir Dam	Earth fill	Yellow Creek / northern portion of Wellsville, Forbes Rd., McKee Rd., SR 7	Village of Wellsville

***Table 2.1b Source: ODNR November, 2011**

As can be seen in Table 2.1b above the majority of the dams in Columbiana County are of earthen fill construction. There are three (3) types of failures of earthen dams: overtopping, seepage, and structural failure. Overtopping failures result from the erosive action of water on the embankment. Erosion is due to uncontrolled flow of water over, around, and adjacent to the dam. Earthen embankments are not designed to be overtopped and therefore are particularly susceptible to erosion. Once erosion has begun during overtopping, it is almost impossible to stop.

All earthen dams have seepage resulting from water percolating slowly through the dam and its foundation. Seepage must, however, be controlled in both velocity and quantity. If uncontrolled, it can progressively erode soil from the embankment or its foundation, resulting in the rapid failure of the dam. Erosion of the soil begins at the downstream side of the embankment, either in the dam proper or the foundation, progressively works toward the reservoir, and eventually develops a “pipe” or direct

conduit into the reservoir. Seepage can cause slope failure by creating high pressures in the soil pores or by saturating the slope.

Structural failures can occur in either the embankment or the appurtenances. Structural failure of a spillway, lake drain, or other appurtenance may lead to failure of the embankment. Cracking, settlement, and slides are the more common signs of structural failure of embankments. Large cracks in an appurtenance or the embankment, major settlement, and major slides will require emergency measures to ensure safety, especially if the problems occur suddenly.

The three (3) types of failures previously described are often interrelated in a complex manner. For example, uncontrolled seepage may weaken the soil and lead to a structural failure. A structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may result in structural failure, and so on.

Minor defects such as cracks in the embankment may be the first visual sign of a major problem, which could lead to failure of the structure. Someone experienced in dam design and construction should evaluate the seriousness of all deficiencies as soon as they are detected.

HISTORY OF EVENTS

Hundreds of dam failures have occurred throughout U.S. History. These failures have caused immense property and environmental damages and have taken thousands of lives. As the nation's dam's age and population increases, the potential for deadly dam failures grows. No one knows precisely how many dam failures have occurred in the U.S., but they have been documented in every state. Several research methods were utilized in an attempt to identify any past occurrences of dam failures in Columbiana County. Table 2.1c below contains information regarding incidents that have occurred involving dams in Columbiana County, this information was provided by the US Army Corps of Engineers and National Performance of Dam Program.

Dam Name	Hazard Potential	Nearest City	Incident Date	Incident Type	Dam Failure
Lake Cha-vel Dam	Significant	Glenmoor	5/7/2001	Inadequate spillway capacity	No
Lower Wallace Lake Dam	Significant	Negley	6/12/2001	Inadequate spillway capacity	No
Lake Tomahawk Dam	High	Fredricktown	10/26/1999	Inadequate spillway capacity	No
Beaver Lake Dam	Significant	Poland	10/26/1999	Inadequate spillway capacity	No
Werner/Duncan Lake Dam	Significant	East Palestine	5/17/2001	Concrete Deterioration	No
Lake PNA Dam	Significant	North Georgetown	8/10/2000	Inadequate spillway capacity	No
Rayls Lake Dam	Significant	Glenmoor	5/17/2001	Inadequate spillway capacity	No
Woodland Lake Dam	Significant	Homeworth	7/21/1998	Concrete Deterioration	No
Spring Valley Park Lake Dam	Significant	West Point	9/5/1991	Inadequate spillway capacity	No
Summitville Lake Dam	Significant	Summitville	3/19/1996	Inadequate spillway capacity	No

Source: National Inventory of Dams, US Army Corps of Engineers and National Performance of Dam Program, Standford University.

Table 2.1c

The map below is based on a (non-comprehensive) list of dam and levee failures compiled by the Association of State Dam Safety Officials (ASDSO). The map demonstrates that dam failures are not particularly common but they do continue to occur.

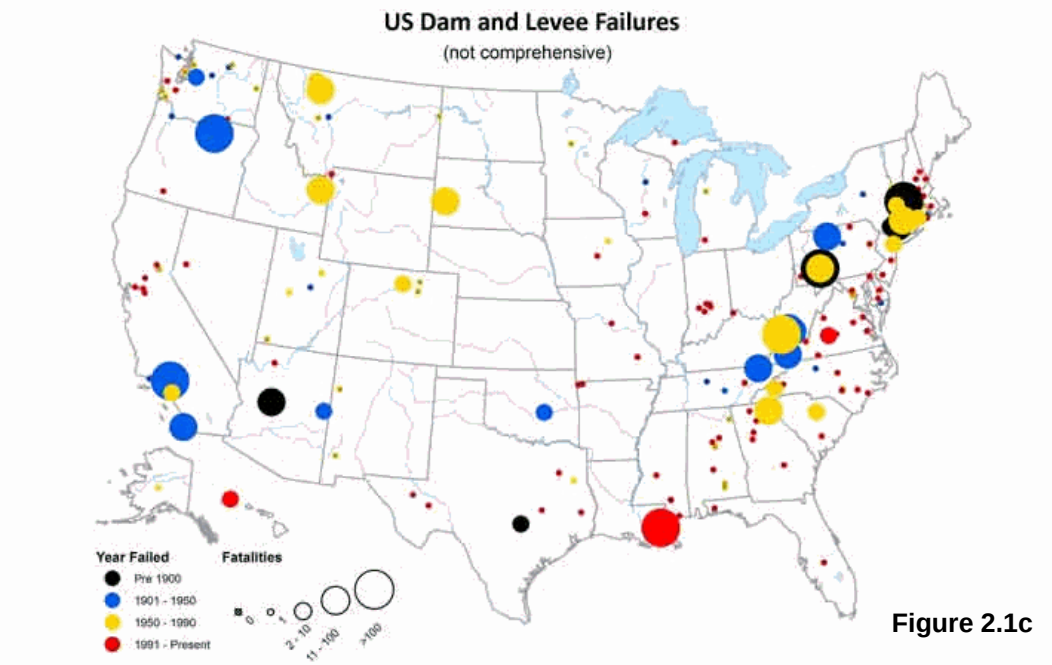


Figure 2.1c

Map courtesy of James S. Halgren, Office of Hydrologic Development, National Weather Service, National Oceanic and Atmospheric Administration

HAZARD IMPACTS

The potential downstream hazards are defined as the resultant downstream damage should the dam fail, including probable future development. The potential downstream hazards are broken into four (4) classes, which coincide with the class of dam defined by height and storage as discussed above.

POTENTIAL DOWNSTREAM HAZARDS	
Class I	Probable loss of life, structural damage to high value property (i.e., homes, industries, major public utilities).
Class II	Flood water damage to 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, blocked roads, damaged crops and livestock.
Class IV	Losses restricted mainly to the dam.

Table 2.1d

Uncontrolled floodwaters are one of the most powerful and destructive forces in nature. Dams that are not designed to withstand major storms or are in a state of disrepair may be destroyed, increasing flood damage downstream. The potential for damage due to dam failure is increasing along with the increased amount of residential and commercial development within the hydraulic shadow of dams. In many cases, existing dams will need to be modified as they age to keep downstream areas safe from catastrophic flooding.

Columbiana County contains several Class I dams that could present the possibility of significant flood damage to the residents and businesses located near or downstream from the dams. In many cases, the dams are less than five (5) miles away from the nearest community. The Buckeye Water District/Wellsville Reservoir is located just to the north and west of the Village of Wellsville, and the Lake Tomahawk Dam would have an impact on the Community of Negley. Several segments of key transportation infrastructure could also be affected by a failure of any one (1) of the five (5) class I dams including US Route 30, and State Routes 39 and 172.

PAST MITIGATION EFFORTS

In March and April of 2011 Columbiana County hosted a series of presentations sponsored by the Ohio Department of Natural Resources. On February 15, 2011 a leadership meeting to organize participation in Dam Safety was held in Lisbon between representatives of the ODNR, EMA, and the Columbiana County Soil and Water Conservation District. On March 25, 2011 a meeting for public officials was held. During the meeting discussions were held regarding Ohio Dam Safety laws, liability, roles and

responsibilities, Emergency Action Plans (EAPs), and operations, maintenance and inspections. On April 7, 2011 a public meeting was held for Class I, II, III dam owners. ODNR covered different areas which were applicable to dam owners.

The Dam Safety and Security Act of 2002, which was signed into law on December 2, 2002, addresses safety and security for dams through the coordination by the Federal Emergency Management Agency (FEMA) of federal programs and initiatives for dams and the transfer of federal best practices in dam security to the states.

HAZARD MAPPING

See the Columbiana County Dam Failure Map for a graphical representation of the hazard areas with regard to dam failure. The areas shaded in red represent “high hazard areas”.

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	47,088	235	0.50%	$3,767,040,000	$14,100,000	0.37%	107,841	538	0.50%
Commercial	1,578	16	1%	$631,200,000	$4,800,000	1%	17,469	176	1%
Industrial	444	4	1%	$222,000,000	$1,500,000	1%	6,505	56	1%
Agricultural	4,120	206	5%	$721,000,000	$27,037,500	4%	3,090	309	10%
Religious/Non-Profit	103	0	0%	$20,600,000	$0	0%	4,120	0	0%
Government	45	0	0%	$18,000,000	$0	0%	1,350	0	0%
Education	46	0	0%	$17,250,000	$0	0%	18,276	0	0%
Utilities	20	1	5%	$30,000,000	$750,000	3%	60	3	5%
Total	**53,444**	**462**	**0.86%**	**$5,427,090,000**	**$48,187,500**	**0.89%**	**158,711**	**1,082**	**0.68%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?		X
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Dam Failure

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Columbiana County Courthouse	$1,850,000	X	0%	=	$0	$700,000	X	0%	=	$0
Columbiana City Hall	$1,250,000	X	5%	=	$62,500	$400,000	X	8%	=	$32,000
East Liverpool City Hall	$650,000	X	0%	=	$0	$325,000	X	0%	=	$0
East Palestine Village Offices	$425,000	X	0%	=	$0	$275,000	X	0%	=	$0
Hanoverton Village Offices	$375,000	X	0%	=	$0	$225,000	X	0%	=	$0
Salem City Hall	$976,800	X	5%	=	$48,840	$390,000	X	8%	=	$31,200
Salineville Village Offices	$311,900	X	0%	=	$0	$190,000	X	0%	=	$0
Wellsville Village Offices	$518,100	X	5%	=	$25,905	$300,000	X	8%	=	$24,000
Leetonia Village Offices	$335,000	X	0%	=	$0	$90,000	X	0%	=	$0
Lisbon Village Offices	$979,500	X	0%	=	$0	$395,000	X	0%	=	$0
New Waterford Village Offices	$265,000	X	0%	=	$0	$75,000	X	0%	=	$0
Washingtonville Village Offices	$250,000	X	0%	=	$0	$55,000	X	0%	=	$0
Elkrun Township Hall	$145,000	X	0%	=	$0	$70,000	X	0%	=	$0
Fairfield Township Hall	$360,000	X	0%	=	$0	$220,000	X	0%	=	$0
Madison Township Hall	$245,000	X	0%	=	$0	$165,000	X	0%	=	$0
Salem Township Hall	$310,000	X	0%	=	$0	$200,000	X	0%	=	$0
Bridges	$115,000,000	X	0%	=	$0	$0	X	0%	=	$0
Highways	$1,525,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$85,000,000	X	0%	=	$0	$0	X	0%	=	$0
Columbiana County Airport	$679,200	X	0%	=	$0	$203,760	X	0%	=	$0
Columbiana County Port Authority	$595,000	X	5%	=	$29,750	$148,750	X	8%	=	$11,900
East Liverpool Water Works	$1,895,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
East Palestine Sewer and Water	$3,165,000	X	5%	=	$158,250	$3,500,000	X	8%	=	$280,000
Leetonia Water Board	$1,750,000	X	5%	=	$87,500	$2,110,000	X	8%	=	$168,800
Salem Sewage Plant	$7,450,000	X	2%	=	$149,000	$6,250,000	X	5%	=	$312,500
Salineville Water Plant	$2,450,000	X	2%	=	$49,000	$3,000,000	X	5%	=	$150,000

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Washingtonville Water and Sewer	$9,355,000	X	0%	=	$0	$10,000,000	X	0%	=	$0
Wellsville Filtration Plant	$985,000	X	5%	=	$49,250	$1,255,000	X	8%	=	$100,400
Wellsville Sewage Disposal	$1,553,000	X	0%	=	$0	$2,875,000	X	0%	=	$0
Buckeye Water District	$3,650,000	X	5%	=	$182,500	$4,250,000	X	8%	=	$340,000
Columbiana City Water Works/Sewer Dept.	$2,655,000	X	5%	=	$132,750	$3,150,000	X	8%	=	$252,000
Leetonia Sewage Plant	$3,950,000	X	5%	=	$197,500	$4,550,000	X	8%	=	$364,000
Lisbon Village Water Dept.	$1,875,000	X	0%	=	$0	$2,000,000	X	0%	=	$0
New Waterford Water / Waste Water Plant	$2,455,000	X	0%	=	$0	$3,655,000	X	0%	=	$0
Salineville Sewer Plant	$5,650,000	X	2%	=	$113,000	$5,000,000	X	5%	=	$250,000
Columbiana County Sheriff	$350,000	X	0%	=	$0	$625,000	X	0%	=	$0
Columbiana County EMA	$565,000	X	0%	=	$0	$200,000	X	0%	=	$0
Columbiana County 911 Ctr.	$265,000	X	0%	=	$0	$635,000	X	0%	=	$0
Columbiana PD	$225,000	X	5%	=	$11,250	$325,000	X	8%	=	$26,000
East Liverpool PD	$215,000	X	0%	=	$0	$289,000	X	0%	=	$0
East Palestine PD	$210,000	X	5%	=	$10,500	$198,000	X	8%	=	$15,840
Leetonia PD	$235,000	X	0%	=	$0	$105,000	X	0%	=	$0
Lisbon PD	$979,500	X	0%	=	$0	$320,000	X	0%	=	$0
Liverpool Township PD	$200,000	X	0%	=	$0	$165,000	X	0%	=	$0
New Waterford PD	$310,000	X	0%	=	$0	$175,000	X	0%	=	$0
Ohio State Highway Patrol	$865,000	X	0%	=	$0	$455,000	X	0%	=	$0
Perry Township PD	$309,900	X	5%	=	$15,495	$170,000	X	8%	=	$13,600
Salem PD	$395,000	X	5%	=	$19,750	$265,000	X	8%	=	$21,200
Salineville PD	$311,900	X	5%	=	$15,595	$250,000	X	8%	=	$20,000
St. Clair Township PD	$295,000	X	0%	=	$0	$175,000	X	0%	=	$0
Washingtonville PD	$235,000	X	0%	=	$0	$145,000	X	0%	=	$0
Wellsville PD	$518,100	X	5%	=	$25,905	$325,000	X	8%	=	$26,000
Calcutta FD	$170,000	X	0%	=	$0	$645,000	X	0%	=	$0
Columbiana FD	$426,700	X	5%	=	$21,335	$890,000	X	8%	=	$71,200
East Liverpool FD	$135,300	X	0%	=	$0	$465,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
East Palestine FD	$192,300	X	5%	=	$9,615	$385,000	X	8%	=	$30,800
Franklin Township VFD	$95,850	X	0%	=	$0	$245,000	X	0%	=	$0
Hanoverton VFD	$235,450	X	0%	=	$0	$300,000	X	0%	=	$0
Guilford Lake FD	$195,000	X	0%	=	$0	$345,000	X	0%	=	$0
Highlandtown VFD	$104,900	X	5%	=	$5,245	$295,000	X	8%	=	$23,600
Homeworth VFD	$113,900	X	0%	=	$0	$310,000	X	0%	=	$0
Leetonia FD/EMS	$124,500	X	0%	=	$0	$565,000	X	0%	=	$0
Lisbon FD	$325,000	X	0%	=	$0	$610,000	X	0%	=	$0
Dixonville FD	$84,500	X	0%	=	$0	$285,000	X	0%	=	$0
Lacroft VFD	$149,300	X	0%	=	$0	$365,000	X	0%	=	$0
Negley VFD/EMS	$110,200	X	0%	=	$0	$410,000	X	0%	=	$0
New Waterford FD	$150,900	X	0%	=	$0	$425,000	X	0%	=	$0
North Georgetown VFD	$100,100	X	0%	=	$0	$315,000	X	0%	=	$0
Perry Township VFD	$309,900	X	5%	=	$15,495	$565,000	X	8%	=	$45,200
Rogers Village FD	$161,000	X	0%	=	$0	$435,650	X	0%	=	$0
Salem FD	$215,500	X	5%	=	$10,775	$565,000	X	8%	=	$45,200
Salineville VFD	$311,900	X	0%	=	$0	$325,000	X	0%	=	$0
Wellsville VFD	$143,600	X	5%	=	$7,180	$415,000	X	8%	=	$33,200
West Point FD	$200,000	X	0%	=	$0	$365,000	X	0%	=	$0
Winona FD	$172,500	X	0%	=	$0	$375,000	X	0%	=	$0
Glenmoor VFD	$752,000	X	0%	=	$0	$650,000	X	0%	=	$0
Air Evac Lifeteam 81	$86,600	X	0%	=	$0	$0	X	0%	=	$0
EMT Ambulance	$112,200	X	5%	=	$5,610	$240,000	X	8%	=	$19,200
Lifeteam EMS Inc.	$135,000	X	0%	=	$0	$220,000	X	0%	=	$0
KLG Ambulance / MICU	$76,500	X	5%	=	$3,825	$182,000	X	8%	=	$14,560
North Star Critical Care	$84,900	X	0%	=	$0	$175,000	X	0%	=	$0
Maple-Cotton Funeral Home and EMS	$165,000	X	0%	=	$0	$200,000	X	0%	=	$0
Tri-County Ambulance	$118,600	X	0%	=	$0	$190,000	X	0%	=	$0
Columbiana EMS	$426,800	X	5%	=	$21,340	$350,000	X	8%	=	$28,000
Leetonia EMS	$185,000	X	0%	=	$0	$265,000	X	0%	=	$0
New Waterford EMS	$175,000	X	0%	=	$0	$215,000	X	0%	=	$0
East Palestine EMS	$265,000	X	5%	=	$13,250	$300,000	X	8%	=	$24,000
East Liverpool City Hospital	$16,750,000	X	0%	=	$0	$8,000,000	X	0%	=	$0
Salem Community Hospital	$17,250,000	X	0%	=	$0	$8,350,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Parkside Healthcare Center	$2,172,700	X	5%	=	$108,635	$410,000	X	8%	=	$32,800
Vista Center	$3,536,000	X	0%	=	$0	$475,000	X	0%	=	$0
Blossom Nursing and Rehab. Center	$1,650,000	X	0%	=	$0	$215,000	X	0%	=	$0
Calcutta Healthcare Center	$4,947,200	X	0%	=	$0	$500,000	X	0%	=	$0
East Liverpool Convalescent Center	$539,600	X	0%	=	$0	$275,000	X	0%	=	$0
Nentwick Convalescent Home	$2,109,100	X	0%	=	$0	$315,000	X	0%	=	$0
Essex of Salem #1	$1,768,800	X	0%	=	$0	$500,000	X	0%	=	$0
Essex of Salem #2	$1,882,800	X	0%	=	$0	$465,000	X	0%	=	$0
Essex of Salem #3	$1,569,900	X	0%	=	$0	$395,000	X	0%	=	$0
Pleasant view North Retirement	$1,243,300	X	0%	=	$0	$380,000	X	0%	=	$0
Salem Care Center	$1,443,900	X	0%	=	$0	$350,000	X	0%	=	$0
Assisted Living Ministry Services	$212,800	X	0%	=	$0	$185,000	X	0%	=	$0
Crossroads at Beaver Creek	$3,450,000	X	0%	=	$0	$550,000	X	0%	=	$0
Grace Woods Senior Living	$897,300	X	0%	=	$0	$365,000	X	0%	=	$0
The Renaissance at Vista	$3,536,000	X	0%	=	$0	$465,000	X	0%	=	$0
Sterling House of Salem	$325,000	X	0%	=	$0	$350,000	X	0%	=	$0
Whispering Pines Village	$415,000	X	0%	=	$0	$300,000	X	0%	=	$0
St. Mary's Alzheimer's Center	$650,000	X	0%	=	$0	$495,000	X	0%	=	$0
Adkins Nursing Home	$315,000	X	0%	=	$0	$256,000	X	0%	=	$0
Great Trail Care Center	$225,000	X	0%	=	$0	$195,000	X	0%	=	$0
Holander House	$200,000	X	0%	=	$0	$165,000	X	0%	=	$0
Twin Oaks Retirement Center	$600,000	X	0%	=	$0	$435,000	X	0%	=	$0
Covington Skilled Nursing & Rehab Ctr.	$795,000	X	0%	=	$0	$495,000	X	0%	=	$0
American Health Care	$435,000	X	0%	=	$0	$400,000	X	0%	=	$0
Harmony Village	$275,500	X	0%	=	$0	$165,000	X	0%	=	$0
Courtyard at Lexington	$595,000	X	0%	=	$0	$285,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Century House of Salem	$275,000	X	0%	=	$0	$250,000	X	0%	=	$0
Columbiana County Mental Health	$560,000	X	0%	=	$0	$325,000	X	0%	=	$0
Beaver Local HS	$4,756,100	X	0%	=	$0	$295,000	X	0%	=	$0
Beaver Local MS	$2,866,200	X	0%	=	$0	$255,000	X	0%	=	$0
Buckeye ES	$1,914,500	X	0%	=	$0	$195,000	X	0%	=	$0
Calcutta ES	$1,624,700	X	0%	=	$0	$165,000	X	0%	=	$0
Columbiana Co. Career and Technical Ctr.	$6,888,400	X	0%	=	$0	$1,250,000	X	0%	=	$0
Columbiana HS	$5,657,000	X	0%	=	$0	$355,000	X	0%	=	$0
Crestview ES	$200,000	X	0%	=	$0	$185,000	X	0%	=	$0
Crestview MS/HS	$12,341,800	X	0%	=	$0	$650,000	X	0%	=	$0
David Anderson Jr/Sr HS	$4,015,300	X	0%	=	$0	$565,000	X	0%	=	$0
DAW MS	$2,232,400	X	0%	=	$0	$245,000	X	0%	=	$0
East ES	$1,455,000	X	0%	=	$0	$195,000	X	0%	=	$0
East Liverpool Jr./Sr. HS	$12,683,000	X	0%	=	$0	$365,000	X	0%	=	$0
East Palestine ES	$1,365,000	X	0%	=	$0	$225,000	X	0%	=	$0
East Palestine MS	$3,450,000	X	0%	=	$0	$285,000	X	0%	=	$0
East Palestine HS	$5,000,000	X	0%	=	$0	$400,000	X	0%	=	$0
Garfield ES	$1,383,000	X	0%	=	$0	$225,000	X	0%	=	$0
Joshua Dixon ES	$1,622,900	X	0%	=	$0	$265,000	X	0%	=	$0
Lacroft ES	$4,765,600	X	0%	=	$0	$300,000	X	0%	=	$0
Leetonia K-12	$3,650,000	X	0%	=	$0	$415,000	X	0%	=	$0
Mckinley ES	$2,000,000	X	0%	=	$0	$150,000	X	0%	=	$0
North ES	$2,155,000	X	0%	=	$0	$165,000	X	0%	=	$0
Reilly ES	$2,566,500	X	0%	=	$0	$180,000	X	0%	=	$0
Rogers ES	$1,714,100	X	0%	=	$0	$155,000	X	0%	=	$0
Salem Jr./Sr. HS	$8,977,100	X	0%	=	$0	$455,000	X	0%	=	$0
South Side MS	$4,000,000	X	5%	=	$200,000	$235,000	X	8%	=	$18,800
Southeast ES	$2,975,700	X	0%	=	$0	$195,000	X	0%	=	$0
Southern Local K-12	$4,650,000	X	5%	=	$232,500	$300,000	X	8%	=	$24,000
United K-12	$9,694,000	X	0%	=	$0	$495,000	X	0%	=	$0
Wellsville HS	$7,347,800	X	0%	=	$0	$325,000	X	0%	=	$0
West Point ES	$614,200	X	0%	=	$0	$140,000	X	0%	=	$0
Westgate MS	$3,695,300	X	0%	=	$0	$280,000	X	0%	=	$0
Act 1 Education Ctr. Jr. HS	$900,100	X	0%	=	$0	$165,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
American Spirit Academy K-12	$469,700	X	0%	=	$0	$180,000	X	0%	=	$0
Heartland Christian School K-12	$4,950,000	X	0%	=	$0	$545,000	X	0%	=	$0
St. Aloysius ES	$275,000	X	0%	=	$0	$200,000	X	0%	=	$0
St. Paul ES	$3,000,000	X	5%	=	$150,000	$155,000	X	8%	=	$12,400
American Standards Brands	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Flex-N-Gate/Ventra Salem	$1,795,000	X	0%	=	$0	$500,000	X	0%	=	$0
Fresh Mark Inc.	$895,000	X	0%	=	$0	$350,000	X	0%	=	$0
Wal-Mart Stores Inc.	$6,985,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
Pioneer Pottery Inc	$550,000	X	0%	=	$0	$110,000	X	0%	=	$0
Zarbana Industries	$455,000	X	0%	=	$0	$450,000	X	0%	=	$0
Miller Casting	$750,000	X	5%	=	$37,500	$650,000	X	8%	=	$52,000
Columbiana Foundry Company	$400,000	X	5%	=	$20,000	$375,000	X	8%	=	$30,000
Kensington PO	$315,000	X	0%	=	$0	$80,000	X	0%	=	$0
Summitville PO	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Columbiana PO	$500,000	X	0%	=	$0	$175,000	X	0%	=	$0
New Waterford PO	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Calcutta PO	$175,000	X	0%	=	$0	$60,000	X	0%	=	$0
Winona PO	$200,000	X	0%	=	$0	$70,000	X	0%	=	$0
Homeworth PO	$150,000	X	0%	=	$0	$55,000	X	0%	=	$0
East Liverpool PO	$436,400	X	0%	=	$0	$155,000	X	0%	=	$0
East Palestine PO	$244,500	X	5%	=	$12,225	$75,000	X	8%	=	$6,000
East Rochester PO	$230,000	X	0%	=	$0	$85,000	X	0%	=	$0
Hanoverton PO	$300,000	X	0%	=	$0	$80,000	X	0%	=	$0
Rogers PO	$325,000	X	0%	=	$0	$75,000	X	0%	=	$0
Salem PO	$596,600	X	0%	=	$0	$195,000	X	0%	=	$0
Salineville PO	$315,000	X	5%	=	$15,750	$65,000	X	8%	=	$5,200
Negley PO	$295,000	X	0%	=	$0	$85,000	X	0%	=	$0
North Georgetown PO	$250,000	X	0%	=	$0	$60,000	X	0%	=	$0
Leetonia PO	$134,800	X	0%	=	$0	$62,500	X	0%	=	$0
Lisbon PO	$614,300	X	0%	=	$0	$250,000	X	0%	=	$0
Elkton PO	$210,000	X	0%	=	$0	$69,500	X	0%	=	$0
Washingtonville PO	$265,000	X	0%	=	$0	$80,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Wellsville PO	$145,600	X	5%	=	$7,280	$67,500	X	8%	=	$5,400
Carnegie Public Library	$442,600	X	0%	=	$0	$250,000	X	0%	=	$0
Columbiana Public Library	$1,312,500	X	0%	=	$0	$355,000	X	0%	=	$0
East Palestine Memorial Public Library	$826,600	X	0%	=	$0	$315,000	X	0%	=	$0
Leetonia Community Public Library	$2,122,600	X	0%	=	$0	$550,000	X	0%	=	$0
Lepper Library	$580,000	X	0%	=	$0	$275,000	X	0%	=	$0
Salem Public Library	$1,184,400	X	0%	=	$0	$400,000	X	0%	=	$0
Wellsville Public Library	$367,900	X	0%	=	$0	$220,000	X	0%	=	$0
Hiram Bell Farmstead	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Burchfield Homestead	$125,000	X	0%	=	$0	$50,000	X	0%	=	$0
Richard L Cawood Residence	$95,000	X	0%	=	$0	$45,000	X	0%	=	$0
Cherry Valley Coke Ovens	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Church Hill Road Covered Bridge	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Diamond Historic District	$3,000,000	X	0%	=	$0	$0	X	0%	=	$0
East Liverpool Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
East Liverpool Pottery	$215,000	X	0%	=	$0	$200,000	X	0%	=	$0
Nicholas Eckis House	$150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Elks Club	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Sandy and Beaver Canal District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Godwin Knowles House	$185,000	X	0%	=	$0	$80,000	X	0%	=	$0
Hanna-Kenty House	$140,000	X	0%	=	$0	$70,000	X	0%	=	$0
Hanoverton Canal Town District	$1,750,000	X	0%	=	$0	$0	X	0%	=	$0
Franklin Harris Farmstead	$200,000	X	0%	=	$0	$65,000	X	0%	=	$0
Daniel Howell Hise House	$95,000	X	0%	=	$0	$45,000	X	0%	=	$0
Hostetter Inn	$465,000	X	0%	=	$0	$140,000	X	0%	=	$0
Ikirt House	$85,000	X	0%	=	$0	$35,000	X	0%	=	$0
Homer Laughlin House	$110,000	X	0%	=	$0	$40,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Lisbon Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Daniel McBean Farmstead	$225,000	X	0%	=	$0	$80,000	X	0%	=	$0
Odd Fellows Temple	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Mary A. Patterson Memorial	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Potters National Bank	$270,000	X	0%	=	$0	$110,000	X	0%	=	$0
Salem Downtown Historic District	$3,250,000	X	2%	=	$65,000	$0	X	0%	=	$0
Charles Nelson Schmick House	$90,000	X	0%	=	$0	$60,000	X	0%	=	$0
John Street House	$85,000	X	0%	=	$0	$45,000	X	0%	=	$0
Teegarden-Centennial Covered Bridge	$475,000	X	0%	=	$0	$0	X	0%	=	$0
Cassius Clark Thompson House	$120,000	X	0%	=	$0	$65,250	X	0%	=	$0
Travelers Hotel	$850,000	X	0%	=	$0	$250,000	X	0%	=	$0
YMCA	$465,000	X	0%	=	$0	$125,000	X	0%	=	$0
Residential	$3,767,040,000	X	0.05%	=	$1,883,520	$1,883,520,000	X	0.05%	=	$941,760
			Total Loss to Structure		**$4,230,320**			**Total Loss to Contents**		**$3,902,760**

Hazard: Dam Failure

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Columbiana County Courthouse	$550,000	X	0	+	$5,000	X	0	=	$0	$0
Columbiana City Hall	$275,000	X	0	+	$4,200	X	0	=	$0	$94,500
East Liverpool City Hall	$250,000	X	0	+	$3,250	X	0	=	$0	$0
East Palestine Village Offices	$220,000	X	0	+	$3,000	X	0	=	$0	$0
Hanoverton Village Offices	$155,000	X	0	+	$2,100	X	0	=	$0	$0
Salem City Hall	$280,000	X	0	+	$3,400	X	0	=	$0	$80,040
Salineville Village Offices	$150,000	X	0	+	$1,500	X	0	=	$0	$0
Wellsville Village Offices	$165,000	X	0	+	$1,000	X	0	=	$0	$49,905
Leetonia Village Offices	$110,000	X	0	+	$1,000	X	0	=	$0	$0
Lisbon Village Offices	$290,000	X	0	+	$1,100	X	0	=	$0	$0
New Waterford Village Offices	$100,000	X	0	+	$1,000	X	0	=	$0	$0
Washingtonville Village Offices	$90,000	X	0	+	$1,000	X	0	=	$0	$0
Elkrun Township Hall	$95,000	X	0	+	$1,000	X	0	=	$0	$0
Fairfield Township Hall	$140,000	X	0	+	$1,000	X	0	=	$0	$0
Madison Township Hall	$125,000	X	0	+	$1,000	X	0	=	$0	$0
Salem Township Hall	$125,000	X	0	+	$1,000	X	0	=	$0	$0
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Highways	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Columbiana County Airport	$0	X	0	+	$0	X	0	=	$0	$0
Columbiana County Port Authority	$0	X	0.5	+	$0	X	0	=	$0	$41,650
East Liverpool Water Works	$1,000,000	X	0	+	$30,000	X	0	=	$0	$0
East Palestine Sewer and Water	$750,000	X	0.2	+	$20,000	X	0	=	$150,000	$588,250
Leetonia Water Board	$375,000	X	0.2	+	$35,000	X	0	=	$75,000	$331,300
Salem Sewage Plant	$12,000,000	X	0	+	$800,000	X	0	=	$0	$461,500
Salineville Water Plant	$410,000	X	0.5	+	$12,000	X	0	=	$205,000	$404,000

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Washingtonville Water and Sewer	$13,450,000	X	0	+	$95,000	X	0	=	$0	$0
Wellsville Filtration Plant	$280,000	X	0.2	+	$9,000	X	0	=	$56,000	$205,650
Wellsville Sewage Disposal	$750,000	X	0	+	$18,000	X	0	=	$0	$0
Buckeye Water District	$2,350,000	X	0.2	+	$40,000	X	0	=	$470,000	$992,500
Columbiana City Water Works/Sewer Dept.	$1,675,000	X	0.2	+	$35,000	X	0	=	$335,000	$719,750
Leetonia Sewage Plant	$6,000,000	X	0	+	$65,000	X	0	=	$0	$561,500
Lisbon Village Water Dept.	$3,250,000	X	0	+	$48,000	X	0	=	$0	$0
New Waterford Water / Waste Water Plant	$3,000,000	X	0	+	$45,000	X	0	=	$0	$0
Salineville Sewer Plant	$8,650,000	X	0.2	+	$75,000	X	0	=	$1,730,000	$2,093,000
Columbiana County Sheriff	$14,400	X	0	+	$2,000	X	0	=	$0	$0
Columbiana County EMA	$2,200	X	0	+	$0	X	0	=	$0	$0
Columbiana County 911 Ctr.	$10,000	X	0	+	$0	X	0	=	$0	$0
Columbiana PD	$5,500	X	0	+	$0	X	0	=	$0	$37,250
East Liverpool PD	$3,000	X	0	+	$0	X	0	=	$0	$0
East Palestine PD	$2,600	X	0	+	$0	X	0	=	$0	$26,340
Leetonia PD	$7,000	X	0	+	$0	X	0	=	$0	$0
Lisbon PD	$6,000	X	0	+	$0	X	0	=	$0	$0
Liverpool Township PD	$3,200	X	0	+	$0	X	0	=	$0	$0
New Waterford PD	$4,000	X	0	+	$0	X	0	=	$0	$0
Ohio State Highway Patrol	$80,000	X	0	+	$0	X	0	=	$0	$0
Perry Township PD	$2,500	X	0	+	$0	X	0	=	$0	$29,095
Salem PD	$8,000	X	0	+	$0	X	0	=	$0	$40,950
Salineville PD	$9,000	X	0	+	$0	X	0	=	$0	$35,595
St. Clair Township PD	$5,500	X	0	+	$0	X	0	=	$0	$0
Washingtonville PD	$3,500	X	0	+	$0	X	0	=	$0	$0
Wellsville PD	$10,000	X	0	+	$0	X	0	=	$0	$51,905
Calcutta FD	$4,800	X	0	+	$0	X	0	=	$0	$0
Columbiana FD	$6,000	X	0	+	$0	X	0	=	$0	$92,535
East Liverpool FD	$4,200	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
East Palestine FD	$3,800	X	0	+	$0	X	0	=	$0	$40,415
Franklin Township VFD	$3,000	X	0	+	$0	X	0	=	$0	$0
Hanoverton VFD	$4,500	X	0	+	$0	X	0	=	$0	$0
Guilford Lake FD	$6,000	X	0	+	$0	X	0	=	$0	$0
Highlandtown VFD	$4,800	X	0	+	$0	X	0	=	$0	$28,845
Homeworth VFD	$5,000	X	0	+	$0	X	0	=	$0	$0
Leetonia FD/EMS	$7,000	X	0	+	$0	X	0	=	$0	$0
Lisbon FD	$10,000	X	0	+	$0	X	0	=	$0	$0
Dixonville FD	$3,500	X	0	+	$0	X	0	=	$0	$0
Lacroft VFD	$4,500	X	0	+	$0	X	0	=	$0	$0
Negley VFD/EMS	$3,900	X	0	+	$0	X	0	=	$0	$0
New Waterford FD	$4,600	X	0	+	$0	X	0	=	$0	$0
North Georgetown VFD	$5,550	X	0	+	$0	X	0	=	$0	$0
Perry Township VFD	$8,000	X	0	+	$0	X	0	=	$0	$60,695
Rogers Village FD	$6,500	X	0	+	$0	X	0	=	$0	$0
Salem FD	$10,000	X	0	+	$0	X	0	=	$0	$55,975
Salineville VFD	$5,100	X	0	+	$0	X	0	=	$0	$0
Wellsville VFD	$4,600	X	0	+	$0	X	0	=	$0	$40,380
West Point FD	$4,800	X	0	+	$0	X	0	=	$0	$0
Winona FD	$5,000	X	0	+	$0	X	0	=	$0	$0
Glenmoor VFD	$12,000	X	0	+	$0	X	0	=	$0	$0
Air Evac Lifeteam 81	$100,000	X	0	+	$0	X	0	=	$0	$0
EMT Ambulance	$6,500	X	0	+	$0	X	0	=	$0	$24,810
Lifeteam EMS Inc.	$7,000	X	0	+	$0	X	0	=	$0	$0
KLG Ambulance / MICU	$5,800	X	0	+	$0	X	0	=	$0	$18,385
North Star Critical Care	$4,000	X	0	+	$0	X	0	=	$0	$0
Maple-Cotton Funeral Home and EMS	$3,200	X	0	+	$0	X	0	=	$0	$0
Tri-County Ambulance	$3,500	X	0	+	$0	X	0	=	$0	$0
Columbiana EMS	$8,000	X	0	+	$0	X	0	=	$0	$49,340
Leetonia EMS	$4,300	X	0	+	$0	X	0	=	$0	$0
New Waterford EMS	$4,000	X	0	+	$0	X	0	=	$0	$0
East Palestine EMS	$6,000	X	0	+	$0	X	0	=	$0	$37,250
East Liverpool City Hospital	$750,000	X	0	+	$104,000	X	0	=	$0	$0
Salem Community Hospital	$800,000	X	0	+	$120,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Parkside Healthcare Center	$300,000	X	0.5	+	$30,000	X	0	=	$150,000	$291,435
Vista Center	$350,000	X	0	+	$35,000	X	0	=	$0	$0
Blossom Nursing and Rehab. Center	$300,000	X	0	+	$30,000	X	0	=	$0	$0
Calcutta Healthcare Center	$375,000	X	0	+	$40,000	X	0	=	$0	$0
East Liverpool Convalescent Center	$300,000	X	0	+	$30,000	X	0	=	$0	$0
Nentwick Convalescent Home	$425,000	X	0	+	$36,000	X	0	=	$0	$0
Essex of Salem #1	$450,000	X	0	+	$40,000	X	0	=	$0	$0
Essex of Salem #2	$425,000	X	0	+	$37,000	X	0	=	$0	$0
Essex of Salem #3	$375,000	X	0	+	$31,000	X	0	=	$0	$0
Pleasant view North Retirement	$415,000	X	0	+	$33,000	X	0	=	$0	$0
Salem Care Center	$400,000	X	0	+	$37,500	X	0	=	$0	$0
Assisted Living Ministry Services	$365,000	X	0	+	$34,000	X	0	=	$0	$0
Crossroads at Beaver Creek	$650,000	X	0	+	$43,000	X	0	=	$0	$0
Grace Woods Senior Living	$425,000	X	0	+	$39,500	X	0	=	$0	$0
The Renaissance at Vista	$500,000	X	0	+	$42,000	X	0	=	$0	$0
Sterling House of Salem	$435,000	X	0	+	$40,000	X	0	=	$0	$0
Whispering Pines Village	$395,000	X	0	+	$35,000	X	0	=	$0	$0
St. Mary's Alzheimer's Center	$465,000	X	0	+	$42,000	X	0	=	$0	$0
Adkins Nursing Home	$400,000	X	0	+	$35,000	X	0	=	$0	$0
Great Trail Care Center	$365,000	X	0	+	$30,000	X	0	=	$0	$0
Holander House	$370,000	X	0	+	$31,000	X	0	=	$0	$0
Twin Oaks Retirement Center	$550,000	X	0	+	$42,500	X	0	=	$0	$0
Covington Skilled Nursing & Rehab Ctr.	$565,000	X	0	+	$43,000	X	0	=	$0	$0
American Health Care	$415,000	X	0	+	$33,000	X	0	=	$0	$0
Harmony Village	$485,000	X	0	+	$36,000	X	0	=	$0	$0

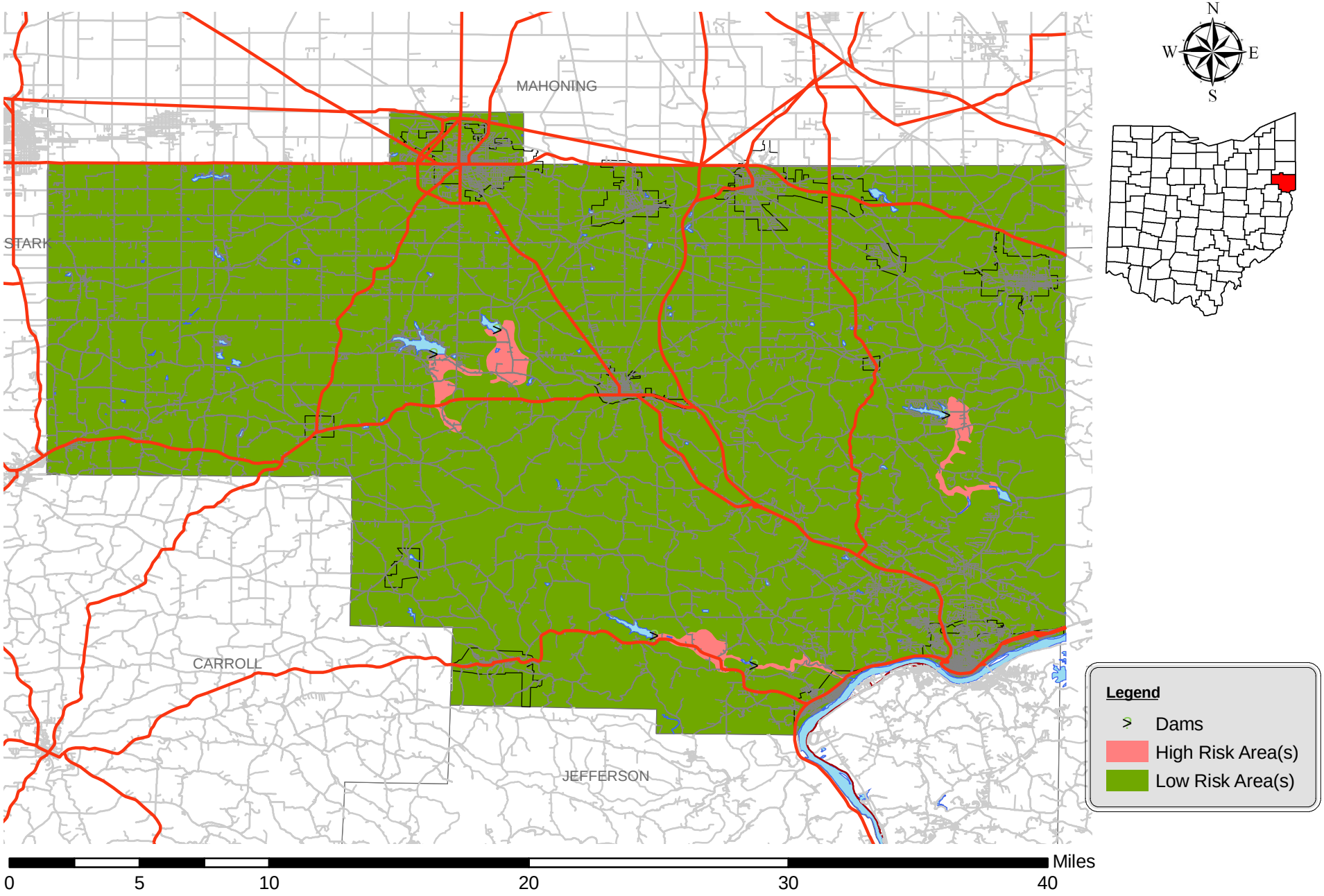
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Courtyard at Lexington	$585,000	X	0	+	$43,500	X	0	=	$0	$0
Century House of Salem	$480,000	X	0	+	$35,500	X	0	=	$0	$0
Columbiana County Mental Health	$400,000	X	0	+	$31,000	X	0	=	$0	$0
Beaver Local HS	$43,000	X	0	+	$0	X	0	=	$0	$0
Beaver Local MS	$32,000	X	0	+	$0	X	0	=	$0	$0
Buckeye ES	$25,000	X	0	+	$0	X	0	=	$0	$0
Calcutta ES	$22,500	X	0	+	$0	X	0	=	$0	$0
Columbiana Co. Career and Technical Ctr.	$280,000	X	0	+	$0	X	0	=	$0	$0
Columbiana HS	$40,000	X	0	+	$0	X	0	=	$0	$0
Crestview ES	$25,000	X	0	+	$0	X	0	=	$0	$0
Crestview MS/HS	$75,000	X	0	+	$0	X	0	=	$0	$0
David Anderson Jr/Sr HS	$54,000	X	0	+	$0	X	0	=	$0	$0
DAW MS	$33,000	X	0	+	$0	X	0	=	$0	$0
East ES	$26,500	X	0	+	$0	X	0	=	$0	$0
East Liverpool Jr./Sr. HS	$38,000	X	0	+	$0	X	0	=	$0	$0
East Palestine ES	$23,000	X	0	+	$0	X	0	=	$0	$0
East Palestine MS	$35,000	X	0	+	$0	X	0	=	$0	$0
East Palestine HS	$40,000	X	0	+	$0	X	0	=	$0	$0
Garfield ES	$22,500	X	0	+	$0	X	0	=	$0	$0
Joshua Dixon ES	$26,000	X	0	+	$0	X	0	=	$0	$0
Lacroft ES	$35,000	X	0	+	$0	X	0	=	$0	$0
Leetonia K-12	$39,500	X	0	+	$0	X	0	=	$0	$0
Mckinley ES	$25,000	X	0	+	$0	X	0	=	$0	$0
North ES	$28,500	X	0	+	$0	X	0	=	$0	$0
Reilly ES	$30,000	X	0	+	$0	X	0	=	$0	$0
Rogers ES	$26,500	X	0	+	$0	X	0	=	$0	$0
Salem Jr./Sr. HS	$60,000	X	0	+	$0	X	0	=	$0	$0
South Side MS	$33,000	X	0.5	+	$0	X	0	=	$16,500	$235,300
Southeast ES	$23,500	X	0	+	$0	X	0	=	$0	$0
Southern Local K-12	$48,500	X	0.5	+	$0	X	0	=	$24,250	$280,750
United K-12	$70,000	X	0	+	$0	X	0	=	$0	$0
Wellsville HS	$65,000	X	0	+	$0	X	0	=	$0	$0
West Point ES	$31,000	X	0	+	$0	X	0	=	$0	$0
Westgate MS	$38,000	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Act 1 Education Ctr. Jr. HS	$22,000	X	0	+	$0	X	0	=	$0	$0
American Spirit Academy K-12	$20,000	X	0	+	$0	X	0	=	$0	$0
Heartland Christian School K-12	$48,500	X	0	+	$0	X	0	=	$0	$0
St. Aloysius ES	$29,500	X	0	+	$0	X	0	=	$0	$0
St. Paul ES	$32,500	X	0.5	+	$0	X	0	=	$16,250	$178,650
American Standards Brands	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Flex-N-Gate/Ventra Salem	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Fresh Mark Inc.	$35,000	X	0	+	$8,000	X	0	=	$0	$0
Wal-Mart Stores Inc.	$109,600	X	0	+	$27,400	X	0	=	$0	$0
Pioneer Pottery Inc	$30,000	X	0	+	$7,000	X	0	=	$0	$0
Zarbana Industries	$50,000	X	0	+	$13,500	X	0	=	$0	$0
Miller Casting	$65,000	X	0.5	+	$14,000	X	0	=	$32,500	$122,000
Columbiana Foundry Company	$40,000	X	0.5	+	$10,000	X	0	=	$20,000	$70,000
Kensington PO	$1,800	X	0	+	$0	X	0	=	$0	$0
Summitville PO	$2,100	X	0	+	$0	X	0	=	$0	$0
Columbiana PO	$4,800	X	0	+	$0	X	0	=	$0	$0
New Waterford PO	$3,600	X	0	+	$0	X	0	=	$0	$0
Calcutta PO	$3,000	X	0	+	$0	X	0	=	$0	$0
Winona PO	$3,250	X	0	+	$0	X	0	=	$0	$0
Homeworth PO	$2,850	X	0	+	$0	X	0	=	$0	$0
East Liverpool PO	$5,000	X	0	+	$0	X	0	=	$0	$0
East Palestine PO	$3,450	X	0.5	+	$0	X	0	=	$1,725	$19,950
East Rochester PO	$3,650	X	0	+	$0	X	0	=	$0	$0
Hanoverton PO	$4,000	X	0	+	$0	X	0	=	$0	$0
Rogers PO	$3,650	X	0	+	$0	X	0	=	$0	$0
Salem PO	$6,000	X	0	+	$0	X	0	=	$0	$0
Salineville PO	$3,350	X	0.5	+	$0	X	0	=	$1,675	$22,625
Negley PO	$4,250	X	0	+	$0	X	0	=	$0	$0
North Georgetown PO	$3,200	X	0	+	$0	X	0	=	$0	$0
Leetonia PO	$3,300	X	0	+	$0	X	0	=	$0	$0
Lisbon PO	$5,650	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Elkton PO	$4,150	X	0	+	$0	X	0	=	$0	$0
Washingtonville PO	$4,100	X	0	+	$0	X	0	=	$0	$0
Wellsville PO	$3,450	X	0.5	+	$0	X	0	=	$1,725	$14,405
Carnegie Public Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Columbiana Public	$12,000	X	0	+	$1,250	X	0	=	$0	$0
East Palestine Memorial Public Library	$9,500	X	0	+	$1,000	X	0	=	$0	$0
Leetonia Community Public Library	$22,000	X	0	+	$2,000	X	0	=	$0	$0
Lepper Library	$3,840	X	0	+	$500	X	0	=	$0	$0
Salem Public Library	$13,500	X	0	+	$1,500	X	0	=	$0	$0
Wellsville Public Library	$1,500	X	0	+	$750	X	0	=	$0	$0
Hiram Bell Farmstead	$0	X	0	+	$0	X	0	=	$0	$0
Burchfield Homestead	$0	X	0	+	$0	X	0	=	$0	$0
Richard L Cawood Residence	$0	X	0	+	$0	X	0	=	$0	$0
Cherry Valley Coke Ovens	$0	X	0	+	$0	X	0	=	$0	$0
Church Hill Road Covered Bridge	$0	X	0	+	$0	X	0	=	$0	$0
Diamond Historic District	$0	X	0	+	$0	X	0	=	$0	$0
East Liverpool Historic District	$0	X	0	+	$0	X	0	=	$0	$0
East Liverpool Pottery	$0	X	0	+	$0	X	0	=	$0	$0
Nicholas Eckis House	$0	X	0	+	$0	X	0	=	$0	$0
Elks Club	$0	X	0	+	$0	X	0	=	$0	$0
Sandy and Beaver Canal District	$0	X	0	+	$0	X	0	=	$0	$0
Godwin Knowles House	$0	X	0	+	$0	X	0	=	$0	$0
Hanna-Kenty House	$0	X	0	+	$0	X	0	=	$0	$0
Hanoverton Canal Town District	$0	X	0	+	$0	X	0	=	$0	$0
Franklin Harris Farmstead	$0	X	0	+	$0	X	0	=	$0	$0
Daniel Howell Hise House	$0	X	0	+	$0	X	0	=	$0	$0
Hostetter Inn	$0	X	0	+	$0	X	0	=	$0	$0
Ikirt House	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Homer Laughlin House	$0	X	0	+	$0	X	0	=	$0	$0
Lisbon Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Daniel McBean Farmstead	$0	X	0	+	$0	X	0	=	$0	$0
Odd Fellows Temple	$0	X	0	+	$0	X	0	=	$0	$0
Mary A. Patterson Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Potters National Bank	$0	X	0	+	$0	X	0	=	$0	$0
Salem Downtown Historic District	$0	X	0	+	$0	X	0	=	$0	$65,000
Charles Nelson Schmick House	$0	X	0	+	$0	X	0	=	$0	$0
John Street House	$0	X	0	+	$0	X	0	=	$0	$0
Teegarden-Centennial Covered Bridge	$0	X	0	+	$0	X	0	=	$0	$0
Cassius Clark Thompson House	$0	X	0	+	$0	X	0	=	$0	$0
Travelers Hotel	$0	X	0	+	$0	X	0	=	$0	$0
YMCA	$0	X	0	+	$0	X	0	=	$0	$0
Residential	$0	X	0	+	$0	X	0	=	$0	$2,825,280
							Total Loss to Structure Use & Function		**$3,285,625**	**$11,418,705**

HAZARD MAPPING: DAM FAILURE (Countywide)



2.2 PROFILING HAZARDS

2.2.2. Drought

Drought is an extended period of deficient rainfall relative to the statistical mean for a region.

INTRODUCTION

Several methods of research identified drought as a hazard in Columbiana County, including discussions with local representatives. Drought information was also obtained from the following sources.

- Local media research,
- ODNR, Division of Soil & Water Resources,
- Palmer Drought Severity Index (PDSI),
- National Climatic Data Center (NCDC) Event Records,
- United States Geological Survey (USGS), and
- National Drought Mitigation Center.

Period of Occurrence:	Summer months or extended periods with no precipitation.
Number of Events to Date (1995 – 2011):	4
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent.
Warning Time:	Weeks.
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None.
Potential Facility Shutdown:	None.

Figure 2.2a

Drought is defined as a period of abnormally dry weather, which persists long enough to produce a serious hydrological imbalance. Drought is a relative term and is used in relation to who or what is being affected by the lack of moisture. Drought can be a result of multiple causes including global weather patterns that produce persistent, upper-level high-pressure systems with warm dry air resulting in less precipitation. Droughts can be categorized into three (3) types, each one affecting the other.

- ***Agricultural Drought*** – Moisture deficiency seriously injurious to crops, livestock, or other agricultural commodities. Parched crops may wither and die. Pastures may become insufficient to support livestock. Effects of agricultural droughts are difficult to measure because there are many other variables that may impact production during the same growing season.
- ***Hydrological Drought*** – Reduction in stream flow, lake and reservoir levels, depletion of soil moisture, and a lowering of the ground water table. Consequently, there is a decrease in groundwater discharge to streams and lakes. A prolonged hydrological drought will affect the water supply.
- ***Mathematical Drought*** – Computation in which rainfall deficiencies are expressed.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Columbiana County has a low to moderate drought risk even though there are limited recorded instances of drought historically. The risk of drought is not targeted to any particular areas within the county.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.2b

HAZARD IDENTIFICATION

Drought is clearly a hazard for which occurrence cannot be reliably predicted in the long term. Extended, widespread droughts are fairly infrequent; however, brief local droughts are common and can be severe. An average of approximately 38 inches of precipitation falls on Columbiana County annually. The average precipitation is three (3) inches per month, with January and February (2.3 inches) typically being the driest, and July (4.2 inches) the wettest. However, there can be extreme variations in some years and in certain months within a year. Such seasonal and yearly extremes may have serious consequences. The drought of 1930-36 was the most severe that has been recorded in Ohio. Precipitation totals for 1930 and 1934 were the smallest since the earliest statewide records began in 1883.

The Palmer Drought Severity Index (PDSI) is a widely used measure of drought in the United States to track moisture conditions. The PDSI is defined as "an interval of time, generally in months or years in duration, during which the actual moisture supply at a given place rather consistently falls short of the climatically expected or climatically appropriate moisture supply". The range of PDSI is from –6.0 (extremely dry) to +6.0 (excessively wet), with the central half (-3.0 to +3.0) representing the normal or near normal conditions. According to the 2006 Annual *Palmer Drought Severity Index* (Figure 2.2c) which is the most recent available, Columbiana County's precipitation levels were near normal over the course of the entire year.

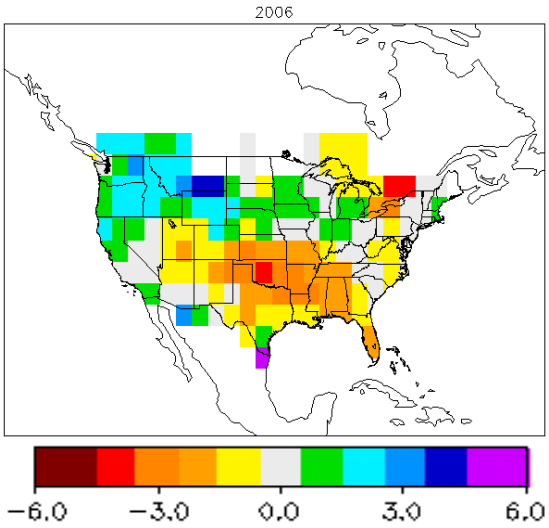


Figure 2.2c

Columbiana County's aquifers are varied and influenced by the glacial deposits of the area, providing a range of yields. The highest yielding aquifers can be found in the valley areas near East Palestine and along the Ohio River. Sustained yields as much as several hundred gallons per minute (gpm) can be found in these deposits, this is sufficient for municipal and industrial use. Yields of 25 to 100 gpm are found in smaller deposits of sand, clay, gravel and silt under the valleys in northern Knox Township, from Leetonia to Columbiana, and around the areas of Lisbon, Minerva and Salem. Much of the northern part of the county has thick deposits overlying sandstone and shale bedrock that have wells that yield from 10 to 25 gpm, sufficient for domestic and farm use. In the central parts of the county, where the glacial cover is thinner, well typically yield up to 10 gpm which is adequate for domestic use.

Columbiana County's agricultural sector, which makes up approximately 28 percent (28%) of the total land cover, is extremely susceptible to drought and could potentially suffer significant economic losses. According to the *Palmer Drought Severity Index* for a period between 1985 and 1995, Ohio counties spend 0-5% of the summer and autumn months under drought conditions. According to the National Climatic Data Center (NCDC) Event Record Database, Columbiana County has experienced four (4) significant droughts over the past 15 years. According to an Event Record dated September 1999, drought conditions that began in June continued across most of

northern Ohio during September, with several areas reporting the driest September on record. Losses from reduced crop yields were estimated at $200 million for northern Ohio alone. Local media also reports severe drought conditions for the region in June of 2012.

HISTORY OF EVENTS

Every few years Northeastern Ohio experiences drought conditions with an inherent impact of moderate on the Palmer Drought Severity index. The region does have some drought protection from the presence of Lake Erie. In the last century there have been a number of drought episodes, including several that have lasted for more than a single season (see Table 2.2a below).

Year	Conditions	Causes
9/1995	Precipitation averaged less than 50% of normal.	Hot dry summer weather.
8/1996	Crop losses predicted at 10% to 30%, with 25% less than normal precipitation for the month.	Persistent high pressure.
7/1997	Long-term severe drought conditions diminish crop yields.	Lower than normal precipitation.
9/1999	Communities institute water use restrictions.	Persisted drought conditions.

Table 2.2a

1988-1989 North American Drought

The drought of the late 1989s followed a milder drought in the Southeastern United States and California the year before. This drought spread from the Mid-Atlantic, Southeast, Midwest, Northern Great Plains and Western United States. It was widespread, unusually intense and accompanied by heat waves which killed around 4,800 to 17,000 people across the United States and also killed livestock across the county. One particular reason that the Drought of 1989 became very damaging was farmers might have farmed on land which was marginally arable. Another reason was pumping groundwater near the depletion mark. The Drought of 1989 destroyed crops almost nationwide, residents' lawns went brown and water restrictions were declared in many cities. This drought was very catastrophic for multiple reasons; it continued across the Midwest States and North Plains States during 1989, not officially ending until 1990.

2012 North American Drought

The 2012-2013 North American Drought is an expansion of the 2012-2012 United States drought which began in the spring of 2012, when the lack of snow in the United States caused very little melt water to absorb into the soil. The drought includes most of the US and included Ohio.

Among several counties, Columbiana County was designated with moderate drought conditions by mid-June. It has been equaled to similar effects as droughts in the 1930s and 1950s but it has not yet been in place as long. However, the drought has inflicted, and is expected to continue to inflict, catastrophic economic ramifications. In most measures, the drought has exceeded the 1988-1989 North American Drought, which is the most recent comparable drought.

On July 30, 2012, the Governor of Ohio sent a memorandum to the USDA Ohio State Executive Director requesting primary county natural disaster designations for eligible counties due to agricultural losses caused by drought and additional disasters during the 2012 crop year. The USDA reviewed the Loss Assessment Reports and determined that there were sufficient production losses in 85 counties to warrant a Secretarial disaster designation. On September 5, 2012, Columbiana County was one of those designated counties.

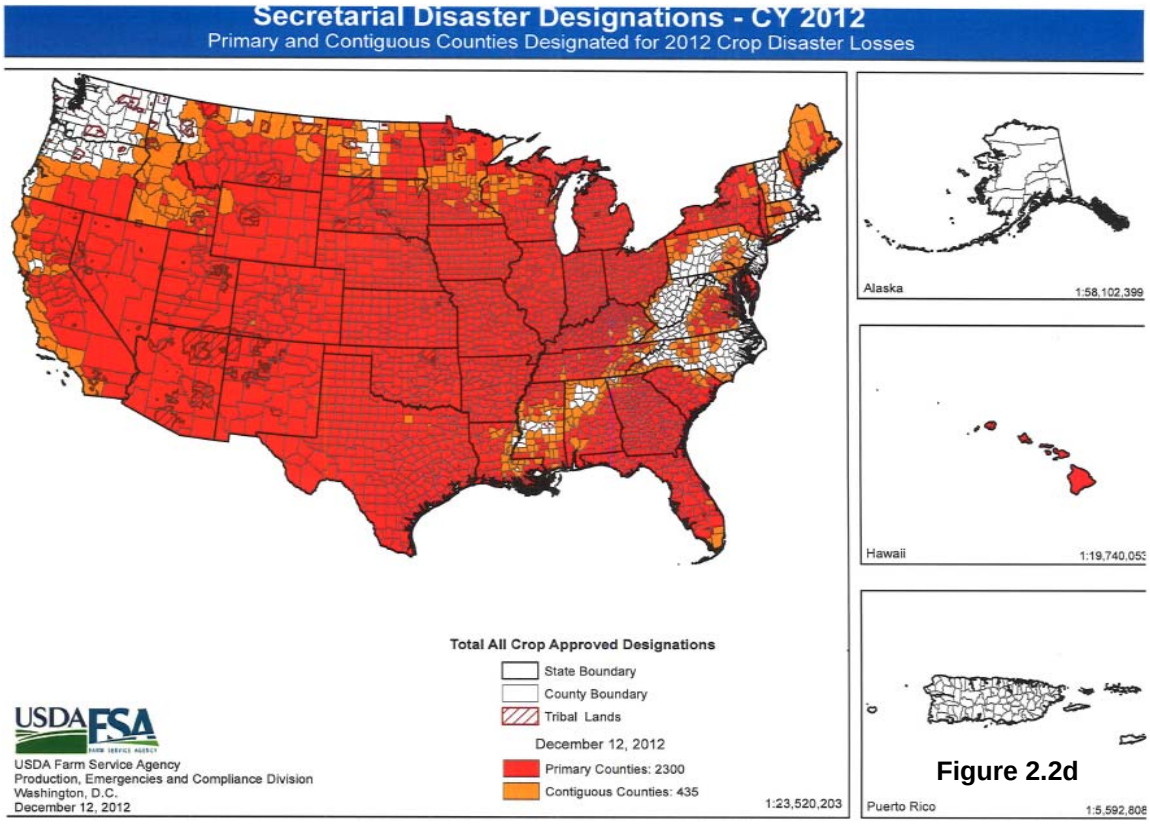


Figure 2.2d

HAZARD IMPACTS

Drought conditions often affect farmers (both commercial farmers and personal farmers) and the local water supply (wells often run dry, rivers run low forcing public water supplies to decrease). Columbiana County's agricultural sector is extremely susceptible to drought and could suffer significant economic losses as agriculture has long been an important component of the Columbiana County economy. Additionally there may be impacts to Columbiana County industry, including a negative impact on the capabilities of firefighters in the area, as water shortages may result in reduced water flow and pressure available to combat wild land and structural fires that may take place in the region.

Water is a resource often taken for granted. In recent years, water availability and quality have become important public concerns in Columbiana County. Sixty - five percent (65%) of the overall population of Columbiana County depend on surface water for their water supply. Approximately forty - two percent (42%) of the population obtains their water from private wells. Based on an estimated usage of 75 gallons per person per day, 3,364,200 gallons per day (gpd) from private wells are used. Additional private water uses include livestock use (696,900 gpd), mostly from ground-water supplies. The remaining households use public-water systems, as identified in Table 2.2b below.

Water use in Columbiana County[1]				
Public Water System	**Population Served**	**Primary Water Source**	**Water Usage (GPD)[2]**	**Treatment Plant Capacity (GPD)**
Salem	18,752	Surface Water	2,097,000	4,500,000
East Liverpool	14,200	Surface Water	3,840,000	4,500,000
East Palestine	5,168	Ground Water	685,000	600,000
Columbiana Village	5,100	Ground Water	561,000	1,000,000
Wellsville	4,570	Surface Water	830,000	2,000,000
Lisbon	4,427	Ground Water	405,000	1,500,000
Columbiana Co. Water District #2	3,950	Surface Water	270,000	0[3]
Leetonia	2,070	Ground Water	163,000	445,000
New Waterford	1,300	Ground Water	256,000	N/A[4]
Salineville	975	Surface Water	118,000	250,000
Washingtonville	890	Surface Water	72,000	0[5]
Tomahawk Util.	369	Ground Water	40,000	72,000
Winona	141	Ground Water	18,000	N/A[4]
Other[6]	1221	Ground Water	141,900	N/A[4]

Table 2.2b

[1] Estimates from Ohio EPA 1996
[2] GPD = Gallons Per Day
[3] Purchases water from East Liverpool.
[4] Treatment plant capacity not available
[5] Purchases water from Salem
[6] Includes mobile home parks and homeowners associations; treatment plant capacity figure not available.

According to the USDA crop production was down in 2012 due to drought conditions. Despite getting off to a very favorable start, U.S. growers spent the summer of 2012 battling historic drought conditions in much of the Midwest. As a result, corn and soybean production, both key US crops, were significantly down in 2012, according to the *Crop Production 2012 Annual Summary* released by the US Department of Agriculture's National Agricultural Statistics Services (NASS).

US corn growers produced 10.8 billion bushels, 13 percent (13%) below the 2011 crop. The corn yield in 2012 was estimated at 123.4 bushels per acre, down from 147.2 yield in 2011. Historic drought conditions in most of the corn-growing states caused the corn crop conditions to decline rapidly. As of July, only 24% of the corn acreage was rated good to excellent, compared to 62% rated in these two (2) categories at the same time in 2011. Grain production decreased by 432,000 bushels and shrank by 11.4 bushels per acre. Soybean production followed, diminishing by 8,000 bushels from the previous year and a decrease of four (4) bushels per acre. Winter wheat fell by 1,970 acres harvested and production declined by 34,000 bushels. Production of other crops declined as well. As an example, US production of all dry hay is estimated at 120 million tons, this is the lowest level since 1964.

PAST MITIGATION EFFORTS

Efforts to mitigate the effects of drought conditions in Columbiana County include consistent vigilance of forecasted conditions like the prevalence of rainfall, the development and distribution of public awareness materials concerning natural hazard risks, displaying drought information at public events.

HAZARD MAPPING

See the Columbiana County Drought Map for a graphical representation of the hazard areas with regard to drought. The green areas represent "low hazard areas," the yellow areas represent "moderate hazard areas," the orange areas represent "high hazard areas," and the red areas represent "extreme high hazard areas."

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	47,088	0	0%	$3,767,040,000	$0	0%	107,841	21,568	20%
Commercial	1,578	0	0%	$631,200,000	$0	0%	17,469	1,747	10%
Industrial	444	0	0%	$222,000,000	$0	0%	6,505	651	10%
Agricultural	4,120	0	0%	$721,000,000	$1,750,000	0.24%	3,090	618	20%
Religious/Non-Profit	103	0	0%	$20,600,000	$0	0%	4,120	206	5%
Government	45	0	0%	$18,000,000	$0	0%	1,350	68	5%
Education	46	0	0%	$17,250,000	$0	0%	18,276	914	5%
Utilities	20	0	0%	$30,000,000	$0	0%	60	0	0%
Total	**53,444**	**0**	**0%**	**$5,427,090,000**	**$1,750,000**	**0.03%**	**158,711**	**25,772**	**16%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?		X
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Drought

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Columbiana County Courthouse	$1,850,000	X	0%	=	$0	$700,000	X	0%	=	$0
Columbiana City Hall	$1,250,000	X	0%	=	$0	$400,000	X	0%	=	$0
East Liverpool City Hall	$650,000	X	0%	=	$0	$325,000	X	0%	=	$0
East Palestine Village Offices	$425,000	X	0%	=	$0	$275,000	X	0%	=	$0
Hanoverton Village Offices	$375,000	X	0%	=	$0	$225,000	X	0%	=	$0
Salem City Hall	$976,800	X	0%	=	$0	$390,000	X	0%	=	$0
Salineville Village Offices	$311,900	X	0%	=	$0	$190,000	X	0%	=	$0
Wellsville Village Offices	$518,100	X	0%	=	$0	$300,000	X	0%	=	$0
Leetonia Village Offices	$335,000	X	0%	=	$0	$90,000	X	0%	=	$0
Lisbon Village Offices	$979,500	X	0%	=	$0	$395,000	X	0%	=	$0
New Waterford Village Offices	$265,000	X	0%	=	$0	$75,000	X	0%	=	$0
Washingtonville Village Offices	$250,000	X	0%	=	$0	$55,000	X	0%	=	$0
Elkrun Township Hall	$145,000	X	0%	=	$0	$70,000	X	0%	=	$0
Fairfield Township Hall	$360,000	X	0%	=	$0	$220,000	X	0%	=	$0
Madison Township Hall	$245,000	X	0%	=	$0	$165,000	X	0%	=	$0
Salem Township Hall	$310,000	X	0%	=	$0	$200,000	X	0%	=	$0
Bridges	$115,000,000	X	0%	=	$0	$0	X	0%	=	$0
Highways	$1,525,000,000	X	0%	=	$0	$0	X	0%	=	$0
Railroads	$85,000,000	X	0%	=	$0	$0	X	0%	=	$0
Columbiana County Airport	$679,200	X	0%	=	$0	$203,760	X	0%	=	$0
Columbiana County Port Authority	$595,000	X	0%	=	$0	$148,750	X	0%	=	$0
East Liverpool Water Works	$1,895,000	X	0%	=	$0	$3,550,000	X	0.15%	=	$5,325
East Palestine Sewer and Water	$3,165,000	X	0%	=	$0	$3,500,000	X	0.15%	=	$5,250
Leetonia Water Board	$1,750,000	X	0%	=	$0	$2,110,000	X	0.15%	=	$3,165
Salem Sewage Plant	$7,450,000	X	0%	=	$0	$6,250,000	X	0%	=	$0
Salineville Water Plant	$2,450,000	X	0%	=	$0	$3,000,000	X	0.15%	=	$4,500

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Washingtonville Water and Sewer	$9,355,000	X	0%	=	$0	$10,000,000	X	0.15%	=	$15,000
Wellsville Filtration Plant	$985,000	X	0%	=	$0	$1,255,000	X	0%	=	$0
Wellsville Sewage Disposal	$1,553,000	X	0%	=	$0	$2,875,000	X	0%	=	$0
Buckeye Water District	$3,650,000	X	0%	=	$0	$4,250,000	X	0.15%	=	$6,375
Columbiana City Water Works/Sewer Dept.	$2,655,000	X	0%	=	$0	$3,150,000	X	0.15%	=	$4,725
Leetonia Sewage Plant	$3,950,000	X	0%	=	$0	$4,550,000	X	0%	=	$0
Lisbon Village Water Dept.	$1,875,000	X	0%	=	$0	$2,000,000	X	0.15%	=	$3,000
New Waterford Water / Waste Water Plant	$2,455,000	X	0%	=	$0	$3,655,000	X	0.15%	=	$5,483
Salineville Sewer Plant	$5,650,000	X	0%	=	$0	$5,000,000	X	0%	=	$0
Columbiana County Sheriff	$350,000	X	0%	=	$0	$625,000	X	0%	=	$0
Columbiana County EMA	$565,000	X	0%	=	$0	$200,000	X	0%	=	$0
Columbiana County 911 Ctr.	$265,000	X	0%	=	$0	$635,000	X	0%	=	$0
Columbiana PD	$225,000	X	0%	=	$0	$325,000	X	0%	=	$0
East Liverpool PD	$215,000	X	0%	=	$0	$289,000	X	0%	=	$0
East Palestine PD	$210,000	X	0%	=	$0	$198,000	X	0%	=	$0
Leetonia PD	$235,000	X	0%	=	$0	$105,000	X	0%	=	$0
Lisbon PD	$979,500	X	0%	=	$0	$320,000	X	0%	=	$0
Liverpool Township PD	$200,000	X	0%	=	$0	$165,000	X	0%	=	$0
New Waterford PD	$310,000	X	0%	=	$0	$175,000	X	0%	=	$0
Ohio State Highway Patrol	$865,000	X	0%	=	$0	$455,000	X	0%	=	$0
Perry Township PD	$309,900	X	0%	=	$0	$170,000	X	0%	=	$0
Salem PD	$395,000	X	0%	=	$0	$265,000	X	0%	=	$0
Salineville PD	$311,900	X	0%	=	$0	$250,000	X	0%	=	$0
St. Clair Township PD	$295,000	X	0%	=	$0	$175,000	X	0%	=	$0
Washingtonville PD	$235,000	X	0%	=	$0	$145,000	X	0%	=	$0
Wellsville PD	$518,100	X	0%	=	$0	$325,000	X	0%	=	$0
Calcutta FD	$170,000	X	0%	=	$0	$645,000	X	0%	=	$0
Columbiana FD	$426,700	X	0%	=	$0	$890,000	X	0%	=	$0
East Liverpool FD	$135,300	X	0%	=	$0	$465,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
East Palestine FD	$192,300	X	0%	=	$0	$385,000	X	0%	=	$0
Franklin Township VFD	$95,850	X	0%	=	$0	$245,000	X	0%	=	$0
Hanoverton VFD	$235,450	X	0%	=	$0	$300,000	X	0%	=	$0
Guilford Lake FD	$195,000	X	0%	=	$0	$345,000	X	0%	=	$0
Highlandtown VFD	$104,900	X	0%	=	$0	$295,000	X	0%	=	$0
Homeworth VFD	$113,900	X	0%	=	$0	$310,000	X	0%	=	$0
Leetonia FD/EMS	$124,500	X	0%	=	$0	$565,000	X	0%	=	$0
Lisbon FD	$325,000	X	0%	=	$0	$610,000	X	0%	=	$0
Dixonville FD	$84,500	X	0%	=	$0	$285,000	X	0%	=	$0
Lacroft VFD	$149,300	X	0%	=	$0	$365,000	X	0%	=	$0
Negley VFD/EMS	$110,200	X	0%	=	$0	$410,000	X	0%	=	$0
New Waterford FD	$150,900	X	0%	=	$0	$425,000	X	0%	=	$0
North Georgetown VFD	$100,100	X	0%	=	$0	$315,000	X	0%	=	$0
Perry Township VFD	$309,900	X	0%	=	$0	$565,000	X	0%	=	$0
Rogers Village FD	$161,000	X	0%	=	$0	$435,650	X	0%	=	$0
Salem FD	$215,500	X	0%	=	$0	$565,000	X	0%	=	$0
Salineville VFD	$311,900	X	0%	=	$0	$325,000	X	0%	=	$0
Wellsville VFD	$143,600	X	0%	=	$0	$415,000	X	0%	=	$0
West Point FD	$200,000	X	0%	=	$0	$365,000	X	0%	=	$0
Winona FD	$172,500	X	0%	=	$0	$375,000	X	0%	=	$0
Glenmoor VFD	$752,000	X	0%	=	$0	$650,000	X	0%	=	$0
Air Evac Lifeteam 81	$86,600	X	0%	=	$0	$0	X	0%	=	$0
EMT Ambulance	$112,200	X	0%	=	$0	$240,000	X	0%	=	$0
Lifeteam EMS Inc.	$135,000	X	0%	=	$0	$220,000	X	0%	=	$0
KLG Ambulance / MICU	$76,500	X	0%	=	$0	$182,000	X	0%	=	$0
North Star Critical Care	$84,900	X	0%	=	$0	$175,000	X	0%	=	$0
Maple-Cotton Funeral Home and EMS	$165,000	X	0%	=	$0	$200,000	X	0%	=	$0
Tri-County Ambulance	$118,600	X	0%	=	$0	$190,000	X	0%	=	$0
Columbiana EMS	$426,800	X	0%	=	$0	$350,000	X	0%	=	$0
Leetonia EMS	$185,000	X	0%	=	$0	$265,000	X	0%	=	$0
New Waterford EMS	$175,000	X	0%	=	$0	$215,000	X	0%	=	$0
East Palestine EMS	$265,000	X	0%	=	$0	$300,000	X	0%	=	$0
East Liverpool City Hospital	$16,750,000	X	0%	=	$0	$8,000,000	X	0%	=	$0
Salem Community Hospital	$17,250,000	X	0%	=	$0	$8,350,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Parkside Healthcare Center	$2,172,700	X	0%	=	$0	$410,000	X	0%	=	$0
Vista Center	$3,536,000	X	0%	=	$0	$475,000	X	0%	=	$0
Blossom Nursing and Rehab. Center	$1,650,000	X	0%	=	$0	$215,000	X	0%	=	$0
Calcutta Healthcare Center	$4,947,200	X	0%	=	$0	$500,000	X	0%	=	$0
East Liverpool Convalescent Center	$539,600	X	0%	=	$0	$275,000	X	0%	=	$0
Nentwick Convalescent Home	$2,109,100	X	0%	=	$0	$315,000	X	0%	=	$0
Essex of Salem #1	$1,768,800	X	0%	=	$0	$500,000	X	0%	=	$0
Essex of Salem #2	$1,882,800	X	0%	=	$0	$465,000	X	0%	=	$0
Essex of Salem #3	$1,569,900	X	0%	=	$0	$395,000	X	0%	=	$0
Pleasant view North Retirement	$1,243,300	X	0%	=	$0	$380,000	X	0%	=	$0
Salem Care Center	$1,443,900	X	0%	=	$0	$350,000	X	0%	=	$0
Assisted Living Ministry Services	$212,800	X	0%	=	$0	$185,000	X	0%	=	$0
Crossroads at Beaver Creek	$3,450,000	X	0%	=	$0	$550,000	X	0%	=	$0
Grace Woods Senior Living	$897,300	X	0%	=	$0	$365,000	X	0%	=	$0
The Renaissance at Vista	$3,536,000	X	0%	=	$0	$465,000	X	0%	=	$0
Sterling House of Salem	$325,000	X	0%	=	$0	$350,000	X	0%	=	$0
Whispering Pines Village	$415,000	X	0%	=	$0	$300,000	X	0%	=	$0
St. Mary's Alzheimer's Center	$650,000	X	0%	=	$0	$495,000	X	0%	=	$0
Adkins Nursing Home	$315,000	X	0%	=	$0	$256,000	X	0%	=	$0
Great Trail Care Center	$225,000	X	0%	=	$0	$195,000	X	0%	=	$0
Holander House	$200,000	X	0%	=	$0	$165,000	X	0%	=	$0
Twin Oaks Retirement Center	$600,000	X	0%	=	$0	$435,000	X	0%	=	$0
Covington Skilled Nursing & Rehab Ctr.	$795,000	X	0%	=	$0	$495,000	X	0%	=	$0
American Health Care	$435,000	X	0%	=	$0	$400,000	X	0%	=	$0
Harmony Village	$275,500	X	0%	=	$0	$165,000	X	0%	=	$0
Courtyard at Lexington	$595,000	X	0%	=	$0	$285,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Century House of Salem	$275,000	X	0%	=	$0	$250,000	X	0%	=	$0
Columbiana County Mental Health	$560,000	X	0%	=	$0	$325,000	X	0%	=	$0
Beaver Local HS	$4,756,100	X	0%	=	$0	$295,000	X	0%	=	$0
Beaver Local MS	$2,866,200	X	0%	=	$0	$255,000	X	0%	=	$0
Buckeye ES	$1,914,500	X	0%	=	$0	$195,000	X	0%	=	$0
Calcutta ES	$1,624,700	X	0%	=	$0	$165,000	X	0%	=	$0
Columbiana Co. Career and Technical Ctr.	$6,888,400	X	0%	=	$0	$1,250,000	X	0%	=	$0
Columbiana HS	$5,657,000	X	0%	=	$0	$355,000	X	0%	=	$0
Crestview ES	$200,000	X	0%	=	$0	$185,000	X	0%	=	$0
Crestview MS/HS	$12,341,800	X	0%	=	$0	$650,000	X	0%	=	$0
David Anderson Jr/Sr HS	$4,015,300	X	0%	=	$0	$565,000	X	0%	=	$0
DAW MS	$2,232,400	X	0%	=	$0	$245,000	X	0%	=	$0
East ES	$1,455,000	X	0%	=	$0	$195,000	X	0%	=	$0
East Liverpool Jr./Sr. HS	$12,683,000	X	0%	=	$0	$365,000	X	0%	=	$0
East Palestine ES	$1,365,000	X	0%	=	$0	$225,000	X	0%	=	$0
East Palestine MS	$3,450,000	X	0%	=	$0	$285,000	X	0%	=	$0
East Palestine HS	$5,000,000	X	0%	=	$0	$400,000	X	0%	=	$0
Garfield ES	$1,383,000	X	0%	=	$0	$225,000	X	0%	=	$0
Joshua Dixon ES	$1,622,900	X	0%	=	$0	$265,000	X	0%	=	$0
Lacroft ES	$4,765,600	X	0%	=	$0	$300,000	X	0%	=	$0
Leetonia K-12	$3,650,000	X	0%	=	$0	$415,000	X	0%	=	$0
Mckinley ES	$2,000,000	X	0%	=	$0	$150,000	X	0%	=	$0
North ES	$2,155,000	X	0%	=	$0	$165,000	X	0%	=	$0
Reilly ES	$2,566,500	X	0%	=	$0	$180,000	X	0%	=	$0
Rogers ES	$1,714,100	X	0%	=	$0	$155,000	X	0%	=	$0
Salem Jr./Sr. HS	$8,977,100	X	0%	=	$0	$455,000	X	0%	=	$0
South Side MS	$4,000,000	X	0%	=	$0	$235,000	X	0%	=	$0
Southeast ES	$2,975,700	X	0%	=	$0	$195,000	X	0%	=	$0
Southern Local K-12	$4,650,000	X	0%	=	$0	$300,000	X	0%	=	$0
United K-12	$9,694,000	X	0%	=	$0	$495,000	X	0%	=	$0
Wellsville HS	$7,347,800	X	0%	=	$0	$325,000	X	0%	=	$0
West Point ES	$614,200	X	0%	=	$0	$140,000	X	0%	=	$0
Westgate MS	$3,695,300	X	0%	=	$0	$280,000	X	0%	=	$0
Act 1 Education Ctr. Jr. HS	$900,100	X	0%	=	$0	$165,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
American Spirit Academy K-12	$469,700	X	0%	=	$0	$180,000	X	0%	=	$0
Heartland Christian School K-12	$4,950,000	X	0%	=	$0	$545,000	X	0%	=	$0
St. Aloysius ES	$275,000	X	0%	=	$0	$200,000	X	0%	=	$0
St. Paul ES	$3,000,000	X	0%	=	$0	$155,000	X	0%	=	$0
American Standards Brands	$985,000	X	0%	=	$0	$425,000	X	0%	=	$0
Flex-N-Gate/Ventra Salem	$1,795,000	X	0%	=	$0	$500,000	X	0%	=	$0
Fresh Mark Inc.	$895,000	X	0%	=	$0	$350,000	X	0%	=	$0
Wal-Mart Stores Inc.	$6,985,000	X	0%	=	$0	$1,650,000	X	0%	=	$0
Pioneer Pottery Inc	$550,000	X	0%	=	$0	$110,000	X	0%	=	$0
Zarbana Industries	$455,000	X	0%	=	$0	$450,000	X	0%	=	$0
Miller Casting	$750,000	X	0%	=	$0	$650,000	X	0%	=	$0
Columbiana Foundry Company	$400,000	X	0%	=	$0	$375,000	X	0%	=	$0
Kensington PO	$315,000	X	0%	=	$0	$80,000	X	0%	=	$0
Summitville PO	$215,000	X	0%	=	$0	$56,000	X	0%	=	$0
Columbiana PO	$500,000	X	0%	=	$0	$175,000	X	0%	=	$0
New Waterford PO	$225,000	X	0%	=	$0	$65,000	X	0%	=	$0
Calcutta PO	$175,000	X	0%	=	$0	$60,000	X	0%	=	$0
Winona PO	$200,000	X	0%	=	$0	$70,000	X	0%	=	$0
Homeworth PO	$150,000	X	0%	=	$0	$55,000	X	0%	=	$0
East Liverpool PO	$436,400	X	0%	=	$0	$155,000	X	0%	=	$0
East Palestine PO	$244,500	X	0%	=	$0	$75,000	X	0%	=	$0
East Rochester PO	$230,000	X	0%	=	$0	$85,000	X	0%	=	$0
Hanoverton PO	$300,000	X	0%	=	$0	$80,000	X	0%	=	$0
Rogers PO	$325,000	X	0%	=	$0	$75,000	X	0%	=	$0
Salem PO	$596,600	X	0%	=	$0	$195,000	X	0%	=	$0
Salineville PO	$315,000	X	0%	=	$0	$65,000	X	0%	=	$0
Negley PO	$295,000	X	0%	=	$0	$85,000	X	0%	=	$0
North Georgetown PO	$250,000	X	0%	=	$0	$60,000	X	0%	=	$0
Leetonia PO	$134,800	X	0%	=	$0	$62,500	X	0%	=	$0
Lisbon PO	$614,300	X	0%	=	$0	$250,000	X	0%	=	$0
Elkton PO	$210,000	X	0%	=	$0	$69,500	X	0%	=	$0
Washingtonville PO	$265,000	X	0%	=	$0	$80,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Wellsville PO	$145,600	X	0%	=	$0	$67,500	X	0%	=	$0
Carnegie Public Library	$442,600	X	0%	=	$0	$250,000	X	0%	=	$0
Columbiana Public Library	$1,312,500	X	0%	=	$0	$355,000	X	0%	=	$0
East Palestine Memorial Public Library	$826,600	X	0%	=	$0	$315,000	X	0%	=	$0
Leetonia Community Public Library	$2,122,600	X	0%	=	$0	$550,000	X	0%	=	$0
Lepper Library	$580,000	X	0%	=	$0	$275,000	X	0%	=	$0
Salem Public Library	$1,184,400	X	0%	=	$0	$400,000	X	0%	=	$0
Wellsville Public Library	$367,900	X	0%	=	$0	$220,000	X	0%	=	$0
Hiram Bell Farmstead	$165,000	X	0%	=	$0	$0	X	0%	=	$0
Burchfield Homestead	$125,000	X	0%	=	$0	$50,000	X	0%	=	$0
Richard L Cawood Residence	$95,000	X	0%	=	$0	$45,000	X	0%	=	$0
Cherry Valley Coke Ovens	$85,000	X	0%	=	$0	$0	X	0%	=	$0
Church Hill Road Covered Bridge	$450,000	X	0%	=	$0	$0	X	0%	=	$0
Diamond Historic District	$3,000,000	X	0%	=	$0	$0	X	0%	=	$0
East Liverpool Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
East Liverpool Pottery	$215,000	X	0%	=	$0	$200,000	X	0%	=	$0
Nicholas Eckis House	$150,000	X	0%	=	$0	$65,000	X	0%	=	$0
Elks Club	$135,000	X	0%	=	$0	$35,000	X	0%	=	$0
Sandy and Beaver Canal District	$675,000	X	0%	=	$0	$0	X	0%	=	$0
Godwin Knowles House	$185,000	X	0%	=	$0	$80,000	X	0%	=	$0
Hanna-Kenty House	$140,000	X	0%	=	$0	$70,000	X	0%	=	$0
Hanoverton Canal Town District	$1,750,000	X	0%	=	$0	$0	X	0%	=	$0
Franklin Harris Farmstead	$200,000	X	0%	=	$0	$65,000	X	0%	=	$0
Daniel Howell Hise House	$95,000	X	0%	=	$0	$45,000	X	0%	=	$0
Hostetter Inn	$465,000	X	0%	=	$0	$140,000	X	0%	=	$0
Ikirt House	$85,000	X	0%	=	$0	$35,000	X	0%	=	$0
Homer Laughlin House	$110,000	X	0%	=	$0	$40,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Lisbon Historic District	$4,000,000	X	0%	=	$0	$0	X	0%	=	$0
Daniel McBean Farmstead	$225,000	X	0%	=	$0	$80,000	X	0%	=	$0
Odd Fellows Temple	$115,000	X	0%	=	$0	$65,000	X	0%	=	$0
Mary A. Patterson Memorial	$60,000	X	0%	=	$0	$0	X	0%	=	$0
Potters National Bank	$270,000	X	0%	=	$0	$110,000	X	0%	=	$0
Salem Downtown Historic District	$3,250,000	X	0%	=	$0	$0	X	0%	=	$0
Charles Nelson Schmick House	$90,000	X	0%	=	$0	$60,000	X	0%	=	$0
John Street House	$85,000	X	0%	=	$0	$45,000	X	0%	=	$0
Teegarden-Centennial Covered Bridge	$475,000	X	0%	=	$0	$0	X	0%	=	$0
Cassius Clark Thompson House	$120,000	X	0%	=	$0	$65,250	X	0%	=	$0
Travelers Hotel	$850,000	X	0%	=	$0	$250,000	X	0%	=	$0
YMCA	$465,000	X	0%	=	$0	$125,000	X	0%	=	$0
Residential	$3,767,040,000	X	0%	=	$0	$1,883,520,000	X	0%	=	$0
			Total Loss to Structure		**$0**			**Total Loss to Contents**		**$52,823**

Hazard: Drought

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Columbiana County Courthouse	$550,000	X	0	+	$5,000	X	0	=	$0	$0
Columbiana City Hall	$275,000	X	0	+	$4,200	X	0	=	$0	$0
East Liverpool City Hall	$250,000	X	0	+	$3,250	X	0	=	$0	$0
East Palestine Village Offices	$220,000	X	0	+	$3,000	X	0	=	$0	$0
Hanoverton Village Offices	$155,000	X	0	+	$2,100	X	0	=	$0	$0
Salem City Hall	$280,000	X	0	+	$3,400	X	0	=	$0	$0
Salineville Village Offices	$150,000	X	0	+	$1,500	X	0	=	$0	$0
Wellsville Village Offices	$165,000	X	0	+	$1,000	X	0	=	$0	$0
Leetonia Village Offices	$110,000	X	0	+	$1,000	X	0	=	$0	$0
Lisbon Village Offices	$290,000	X	0	+	$1,100	X	0	=	$0	$0
New Waterford Village Offices	$100,000	X	0	+	$1,000	X	0	=	$0	$0
Washingtonville Village Offices	$90,000	X	0	+	$1,000	X	0	=	$0	$0
Elkrun Township Hall	$95,000	X	0	+	$1,000	X	0	=	$0	$0
Fairfield Township Hall	$140,000	X	0	+	$1,000	X	0	=	$0	$0
Madison Township Hall	$125,000	X	0	+	$1,000	X	0	=	$0	$0
Salem Township Hall	$125,000	X	0	+	$1,000	X	0	=	$0	$0
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Highways	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Columbiana County Airport	$0	X	0	+	$0	X	0	=	$0	$0
Columbiana County Port Authority	$0	X	0	+	$0	X	0	=	$0	$0
East Liverpool Water Works	$1,000,000	X	0.25	+	$30,000	X	0	=	$250,000	$255,325
East Palestine Sewer and Water	$750,000	X	0.25	+	$20,000	X	0	=	$187,500	$192,750
Leetonia Water Board	$375,000	X	0.25	+	$35,000	X	0	=	$93,750	$96,915
Salem Sewage Plant	$12,000,000	X	0	+	$800,000	X	0	=	$0	$0
Salineville Water Plant	$410,000	X	0.25	+	$12,000	X	0	=	$102,500	$107,000

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Washingtonville Water and Sewer	$13,450,000	X	0	+	$95,000	X	0	=	$0	$15,000
Wellsville Filtration Plant	$280,000	X	0	+	$9,000	X	0	=	$0	$0
Wellsville Sewage Disposal	$750,000	X	0	+	$18,000	X	0	=	$0	$0
Buckeye Water District	$2,350,000	X	0	+	$40,000	X	0	=	$0	$6,375
Columbiana City Water Works/Sewer Dept.	$1,675,000	X	0	+	$35,000	X	0	=	$0	$4,725
Leetonia Sewage Plant	$6,000,000	X	0	+	$65,000	X	0	=	$0	$0
Lisbon Village Water Dept.	$3,250,000	X	0	+	$48,000	X	0	=	$0	$3,000
New Waterford Water / Waste Water Plant	$3,000,000	X	0	+	$45,000	X	0	=	$0	$5,483
Salineville Sewer Plant	$8,650,000	X	0	+	$75,000	X	0	=	$0	$0
Columbiana County Sheriff	$14,400	X	0	+	$2,000	X	0	=	$0	$0
Columbiana County EMA	$2,200	X	0	+	$0	X	0	=	$0	$0
Columbiana County 911 Ctr.	$10,000	X	0	+	$0	X	0	=	$0	$0
Columbiana PD	$5,500	X	0	+	$0	X	0	=	$0	$0
East Liverpool PD	$3,000	X	0	+	$0	X	0	=	$0	$0
East Palestine PD	$2,600	X	0	+	$0	X	0	=	$0	$0
Leetonia PD	$7,000	X	0	+	$0	X	0	=	$0	$0
Lisbon PD	$6,000	X	0	+	$0	X	0	=	$0	$0
Liverpool Township PD	$3,200	X	0	+	$0	X	0	=	$0	$0
New Waterford PD	$4,000	X	0	+	$0	X	0	=	$0	$0
Ohio State Highway Patrol	$80,000	X	0	+	$0	X	0	=	$0	$0
Perry Township PD	$2,500	X	0	+	$0	X	0	=	$0	$0
Salem PD	$8,000	X	0	+	$0	X	0	=	$0	$0
Salineville PD	$9,000	X	0	+	$0	X	0	=	$0	$0
St. Clair Township PD	$5,500	X	0	+	$0	X	0	=	$0	$0
Washingtonville PD	$3,500	X	0	+	$0	X	0	=	$0	$0
Wellsville PD	$10,000	X	0	+	$0	X	0	=	$0	$0
Calcutta FD	$4,800	X	0	+	$0	X	0	=	$0	$0
Columbiana FD	$6,000	X	0	+	$0	X	0	=	$0	$0
East Liverpool FD	$4,200	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
East Palestine FD	$3,800	X	0	+	$0	X	0	=	$0	$0
Franklin Township VFD	$3,000	X	0	+	$0	X	0	=	$0	$0
Hanoverton VFD	$4,500	X	0	+	$0	X	0	=	$0	$0
Guilford Lake FD	$6,000	X	0	+	$0	X	0	=	$0	$0
Highlandtown VFD	$4,800	X	0	+	$0	X	0	=	$0	$0
Homeworth VFD	$5,000	X	0	+	$0	X	0	=	$0	$0
Leetonia FD/EMS	$7,000	X	0	+	$0	X	0	=	$0	$0
Lisbon FD	$10,000	X	0	+	$0	X	0	=	$0	$0
Dixonville FD	$3,500	X	0	+	$0	X	0	=	$0	$0
Lacroft VFD	$4,500	X	0	+	$0	X	0	=	$0	$0
Negley VFD/EMS	$3,900	X	0	+	$0	X	0	=	$0	$0
New Waterford FD	$4,600	X	0	+	$0	X	0	=	$0	$0
North Georgetown VFD	$5,550	X	0	+	$0	X	0	=	$0	$0
Perry Township VFD	$8,000	X	0	+	$0	X	0	=	$0	$0
Rogers Village FD	$6,500	X	0	+	$0	X	0	=	$0	$0
Salem FD	$10,000	X	0	+	$0	X	0	=	$0	$0
Salineville VFD	$5,100	X	0	+	$0	X	0	=	$0	$0
Wellsville VFD	$4,600	X	0	+	$0	X	0	=	$0	$0
West Point FD	$4,800	X	0	+	$0	X	0	=	$0	$0
Winona FD	$5,000	X	0	+	$0	X	0	=	$0	$0
Glenmoor VFD	$12,000	X	0	+	$0	X	0	=	$0	$0
Air Evac Lifeteam 81	$100,000	X	0	+	$0	X	0	=	$0	$0
EMT Ambulance	$6,500	X	0	+	$0	X	0	=	$0	$0
Lifeteam EMS Inc.	$7,000	X	0	+	$0	X	0	=	$0	$0
KLG Ambulance / MICU	$5,800	X	0	+	$0	X	0	=	$0	$0
North Star Critical Care	$4,000	X	0	+	$0	X	0	=	$0	$0
Maple-Cotton Funeral Home and EMS	$3,200	X	0	+	$0	X	0	=	$0	$0
Tri-County Ambulance	$3,500	X	0	+	$0	X	0	=	$0	$0
Columbiana EMS	$8,000	X	0	+	$0	X	0	=	$0	$0
Leetonia EMS	$4,300	X	0	+	$0	X	0	=	$0	$0
New Waterford EMS	$4,000	X	0	+	$0	X	0	=	$0	$0
East Palestine EMS	$6,000	X	0	+	$0	X	0	=	$0	$0
East Liverpool City Hospital	$750,000	X	0	+	$104,000	X	0	=	$0	$0
Salem Community Hospital	$800,000	X	0	+	$120,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Parkside Healthcare Center	$300,000	X	0	+	$30,000	X	0	=	$0	$0
Vista Center	$350,000	X	0	+	$35,000	X	0	=	$0	$0
Blossom Nursing and Rehab. Center	$300,000	X	0	+	$30,000	X	0	=	$0	$0
Calcutta Healthcare Center	$375,000	X	0	+	$40,000	X	0	=	$0	$0
East Liverpool Convalescent Center	$300,000	X	0	+	$30,000	X	0	=	$0	$0
Nentwick Convalescent Home	$425,000	X	0	+	$36,000	X	0	=	$0	$0
Essex of Salem #1	$450,000	X	0	+	$40,000	X	0	=	$0	$0
Essex of Salem #2	$425,000	X	0	+	$37,000	X	0	=	$0	$0
Essex of Salem #3	$375,000	X	0	+	$31,000	X	0	=	$0	$0
Pleasant view North Retirement	$415,000	X	0	+	$33,000	X	0	=	$0	$0
Salem Care Center	$400,000	X	0	+	$37,500	X	0	=	$0	$0
Assisted Living Ministry Services	$365,000	X	0	+	$34,000	X	0	=	$0	$0
Crossroads at Beaver Creek	$650,000	X	0	+	$43,000	X	0	=	$0	$0
Grace Woods Senior Living	$425,000	X	0	+	$39,500	X	0	=	$0	$0
The Renaissance at Vista	$500,000	X	0	+	$42,000	X	0	=	$0	$0
Sterling House of Salem	$435,000	X	0	+	$40,000	X	0	=	$0	$0
Whispering Pines Village	$395,000	X	0	+	$35,000	X	0	=	$0	$0
St. Mary's Alzheimer's Center	$465,000	X	0	+	$42,000	X	0	=	$0	$0
Adkins Nursing Home	$400,000	X	0	+	$35,000	X	0	=	$0	$0
Great Trail Care Center	$365,000	X	0	+	$30,000	X	0	=	$0	$0
Holander House	$370,000	X	0	+	$31,000	X	0	=	$0	$0
Twin Oaks Retirement Center	$550,000	X	0	+	$42,500	X	0	=	$0	$0
Covington Skilled Nursing & Rehab Ctr.	$565,000	X	0	+	$43,000	X	0	=	$0	$0
American Health Care	$415,000	X	0	+	$33,000	X	0	=	$0	$0
Harmony Village	$485,000	X	0	+	$36,000	X	0	=	$0	$0

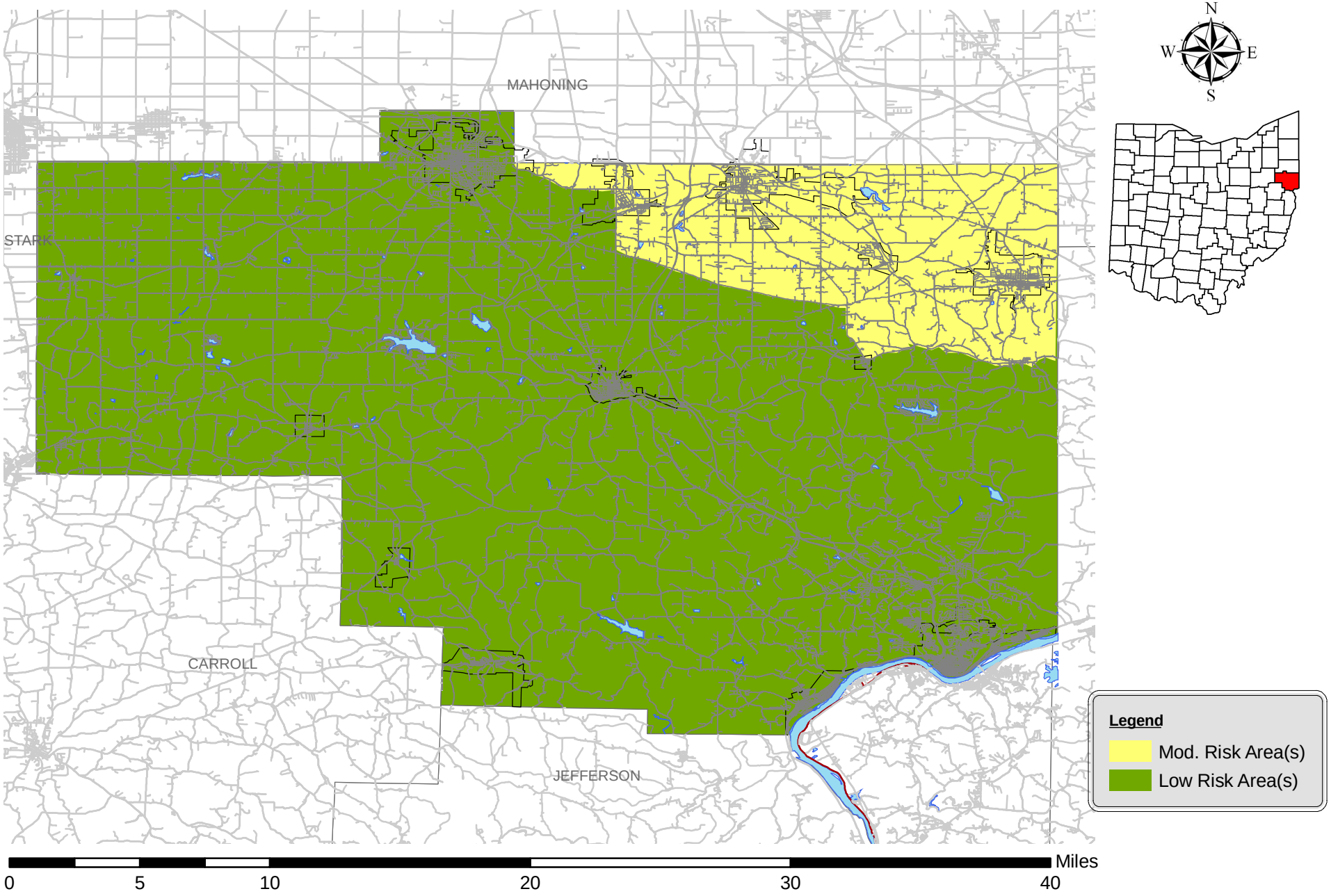
	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Courtyard at Lexington	$585,000	X	0	+	$43,500	X	0	=	$0	$0
Century House of Salem	$480,000	X	0	+	$35,500	X	0	=	$0	$0
Columbiana County Mental Health	$400,000	X	0	+	$31,000	X	0	=	$0	$0
Beaver Local HS	$43,000	X	0	+	$0	X	0	=	$0	$0
Beaver Local MS	$32,000	X	0	+	$0	X	0	=	$0	$0
Buckeye ES	$25,000	X	0	+	$0	X	0	=	$0	$0
Calcutta ES	$22,500	X	0	+	$0	X	0	=	$0	$0
Columbiana Co. Career and Technical Ctr.	$280,000	X	0	+	$0	X	0	=	$0	$0
Columbiana HS	$40,000	X	0	+	$0	X	0	=	$0	$0
Crestview ES	$25,000	X	0	+	$0	X	0	=	$0	$0
Crestview MS/HS	$75,000	X	0	+	$0	X	0	=	$0	$0
David Anderson Jr/Sr HS	$54,000	X	0	+	$0	X	0	=	$0	$0
DAW MS	$33,000	X	0	+	$0	X	0	=	$0	$0
East ES	$26,500	X	0	+	$0	X	0	=	$0	$0
East Liverpool Jr./Sr. HS	$38,000	X	0	+	$0	X	0	=	$0	$0
East Palestine ES	$23,000	X	0	+	$0	X	0	=	$0	$0
East Palestine MS	$35,000	X	0	+	$0	X	0	=	$0	$0
East Palestine HS	$40,000	X	0	+	$0	X	0	=	$0	$0
Garfield ES	$22,500	X	0	+	$0	X	0	=	$0	$0
Joshua Dixon ES	$26,000	X	0	+	$0	X	0	=	$0	$0
Lacroft ES	$35,000	X	0	+	$0	X	0	=	$0	$0
Leetonia K-12	$39,500	X	0	+	$0	X	0	=	$0	$0
Mckinley ES	$25,000	X	0	+	$0	X	0	=	$0	$0
North ES	$28,500	X	0	+	$0	X	0	=	$0	$0
Reilly ES	$30,000	X	0	+	$0	X	0	=	$0	$0
Rogers ES	$26,500	X	0	+	$0	X	0	=	$0	$0
Salem Jr./Sr. HS	$60,000	X	0	+	$0	X	0	=	$0	$0
South Side MS	$33,000	X	0	+	$0	X	0	=	$0	$0
Southeast ES	$23,500	X	0	+	$0	X	0	=	$0	$0
Southern Local K-12	$48,500	X	0	+	$0	X	0	=	$0	$0
United K-12	$70,000	X	0	+	$0	X	0	=	$0	$0
Wellsville HS	$65,000	X	0	+	$0	X	0	=	$0	$0
West Point ES	$31,000	X	0	+	$0	X	0	=	$0	$0
Westgate MS	$38,000	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Act 1 Education Ctr. Jr. HS	$22,000	X	0	+	$0	X	0	=	$0	$0
American Spirit Academy K-12	$20,000	X	0	+	$0	X	0	=	$0	$0
Heartland Christian School K-12	$48,500	X	0	+	$0	X	0	=	$0	$0
St. Aloysius ES	$29,500	X	0	+	$0	X	0	=	$0	$0
St. Paul ES	$32,500	X	0	+	$0	X	0	=	$0	$0
American Standards Brands	$44,800	X	0	+	$11,200	X	0	=	$0	$0
Flex-N-Gate/Ventra Salem	$38,000	X	0	+	$9,500	X	0	=	$0	$0
Fresh Mark Inc.	$35,000	X	0	+	$8,000	X	0	=	$0	$0
Wal-Mart Stores Inc.	$109,600	X	0	+	$27,400	X	0	=	$0	$0
Pioneer Pottery Inc	$30,000	X	0	+	$7,000	X	0	=	$0	$0
Zarbana Industries	$50,000	X	0	+	$13,500	X	0	=	$0	$0
Miller Casting	$65,000	X	0	+	$14,000	X	0	=	$0	$0
Columbiana Foundry Company	$40,000	X	0	+	$10,000	X	0	=	$0	$0
Kensington PO	$1,800	X	0	+	$0	X	0	=	$0	$0
Summitville PO	$2,100	X	0	+	$0	X	0	=	$0	$0
Columbiana PO	$4,800	X	0	+	$0	X	0	=	$0	$0
New Waterford PO	$3,600	X	0	+	$0	X	0	=	$0	$0
Calcutta PO	$3,000	X	0	+	$0	X	0	=	$0	$0
Winona PO	$3,250	X	0	+	$0	X	0	=	$0	$0
Homeworth PO	$2,850	X	0	+	$0	X	0	=	$0	$0
East Liverpool PO	$5,000	X	0	+	$0	X	0	=	$0	$0
East Palestine PO	$3,450	X	0	+	$0	X	0	=	$0	$0
East Rochester PO	$3,650	X	0	+	$0	X	0	=	$0	$0
Hanoverton PO	$4,000	X	0	+	$0	X	0	=	$0	$0
Rogers PO	$3,650	X	0	+	$0	X	0	=	$0	$0
Salem PO	$6,000	X	0	+	$0	X	0	=	$0	$0
Salineville PO	$3,350	X	0	+	$0	X	0	=	$0	$0
Negley PO	$4,250	X	0	+	$0	X	0	=	$0	$0
North Georgetown PO	$3,200	X	0	+	$0	X	0	=	$0	$0
Leetonia PO	$3,300	X	0	+	$0	X	0	=	$0	$0
Lisbon PO	$5,650	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Elkton PO	$4,150	X	0	+	$0	X	0	=	$0	$0
Washingtonville PO	$4,100	X	0	+	$0	X	0	=	$0	$0
Wellsville PO	$3,450	X	0	+	$0	X	0	=	$0	$0
Carnegie Public Library	$1,600	X	0	+	$800	X	0	=	$0	$0
Columbiana Public	$12,000	X	0	+	$1,250	X	0	=	$0	$0
East Palestine Memorial Public Library	$9,500	X	0	+	$1,000	X	0	=	$0	$0
Leetonia Community Public Library	$22,000	X	0	+	$2,000	X	0	=	$0	$0
Lepper Library	$3,840	X	0	+	$500	X	0	=	$0	$0
Salem Public Library	$13,500	X	0	+	$1,500	X	0	=	$0	$0
Wellsville Public Library	$1,500	X	0	+	$750	X	0	=	$0	$0
Hiram Bell Farmstead	$0	X	0	+	$0	X	0	=	$0	$0
Burchfield Homestead	$0	X	0	+	$0	X	0	=	$0	$0
Richard L Cawood Residence	$0	X	0	+	$0	X	0	=	$0	$0
Cherry Valley Coke Ovens	$0	X	0	+	$0	X	0	=	$0	$0
Church Hill Road Covered Bridge	$0	X	0	+	$0	X	0	=	$0	$0
Diamond Historic District	$0	X	0	+	$0	X	0	=	$0	$0
East Liverpool Historic District	$0	X	0	+	$0	X	0	=	$0	$0
East Liverpool Pottery	$0	X	0	+	$0	X	0	=	$0	$0
Nicholas Eckis House	$0	X	0	+	$0	X	0	=	$0	$0
Elks Club	$0	X	0	+	$0	X	0	=	$0	$0
Sandy and Beaver Canal District	$0	X	0	+	$0	X	0	=	$0	$0
Godwin Knowles House	$0	X	0	+	$0	X	0	=	$0	$0
Hanna-Kenty House	$0	X	0	+	$0	X	0	=	$0	$0
Hanoverton Canal Town District	$0	X	0	+	$0	X	0	=	$0	$0
Franklin Harris Farmstead	$0	X	0	+	$0	X	0	=	$0	$0
Daniel Howell Hise House	$0	X	0	+	$0	X	0	=	$0	$0
Hostetter Inn	$0	X	0	+	$0	X	0	=	$0	$0
Ikirt House	$0	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Homer Laughlin House	$0	X	0	+	$0	X	0	=	$0	$0
Lisbon Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Daniel McBean Farmstead	$0	X	0	+	$0	X	0	=	$0	$0
Odd Fellows Temple	$0	X	0	+	$0	X	0	=	$0	$0
Mary A. Patterson Memorial	$0	X	0	+	$0	X	0	=	$0	$0
Potters National Bank	$0	X	0	+	$0	X	0	=	$0	$0
Salem Downtown Historic District	$0	X	0	+	$0	X	0	=	$0	$0
Charles Nelson Schmick House	$0	X	0	+	$0	X	0	=	$0	$0
John Street House	$0	X	0	+	$0	X	0	=	$0	$0
Teegarden-Centennial Covered Bridge	$0	X	0	+	$0	X	0	=	$0	$0
Cassius Clark Thompson House	$0	X	0	+	$0	X	0	=	$0	$0
Travelers Hotel	$0	X	0	+	$0	X	0	=	$0	$0
YMCA	$0	X	0	+	$0	X	0	=	$0	$0
Residential	$0	X	0	+	$0	X	0	=	$0	$0
Total Loss to Structure Use & Function									**$633,750**	**$686,573**

HAZARD MAPPING: DROUGHT



2.2 PROFILING HAZARDS

2.2.3. Earthquake

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulation within or along the edge of the Earth's tectonic plates.

INTRODUCTION

Earthquakes are one of nature's most damaging hazards and are more widespread than is often realized. The area of greatest seismic activity in the United States is along the Pacific Coast, in the states of California and Alaska; however, as many as 40 states can be characterized as having moderate earthquake risk. Although most people do not think of Ohio as an earthquake-prone state, at least 170 earthquakes with epicenters in Ohio have been felt since 1776, most were felt in the local region surrounding the epicenter, and 14 of these have caused "minor to moderate" damage in Ohio. Several methods of research identified earthquakes as a hazard in Columbiana County, including the following sources:

Period of Occurrence:	At any time.
Number of Events to Date:	0 Epicenters
Probability of Event:	Infrequent.
Warning Time:	None.
Potential Impacts:	According to FEMA, areas with a PGA of 3 to 5 (0.03 to 0.05) will incur little to no damage with no function loss.
Cause Injury or Death:	Minor risk of injury.
Potential Facility Shutdown:	None.

Figure 2.3a

- Ohio Seismic Network,
- Ohio Department of Natural Resources (ODNR), Division of Geological Survey,
- Ohio Earthquake Information Center (OEIC),
- ESRI GIS earthquake data for Ohio, and
- USGS National Seismic Hazard Mapping Project.

Most earthquakes go unnoticed, some people and animals are more sensitive to minor events than others. Usually, it requires a magnitude of 2.5-3.0 for a local shaker to be noticed.

For the purposes of this Hazard Risk Assessment (HRA) it is assumed that Columbiana County has a countywide low earthquake risk. Earthquakes have not resulted in any damage in Columbiana County. The risk of earthquake is not targeted to any particular areas within the county.

High Probability Low Impact	**High Probability Moderate Impact**	**High Probability High Impact**
Moderate Probability Low Impact	**Moderate Probability Moderate Impact**	**Moderate Probability High Impact**
Low Probability Low Impact	**Low Probability Moderate Impact**	**Low Probability High Impact**

Figure 2.3b

HAZARD IDENTIFICATION

Peak Ground Acceleration (PGA) is a measure of the strength of ground movements. The PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity. Based on the national map provided by the United States Geological Survey (USGS) (see figure 2.3c at right) that shows the PGA values for areas with a 10% chance of being exceeded over 50 years, the majority of Ohio including Columbiana County has an earthquake risk as it is located in the 3% area. According to the FEMA *State and Local Mitigation Planning How-To Guide: Understanding Your Risks,* areas rated as an MMI IV (a PGA of 2.0%-3.0% classifies an area as MMI IV) will not experience damage as a result of earthquakes. In these areas, perceived shaking is also light.

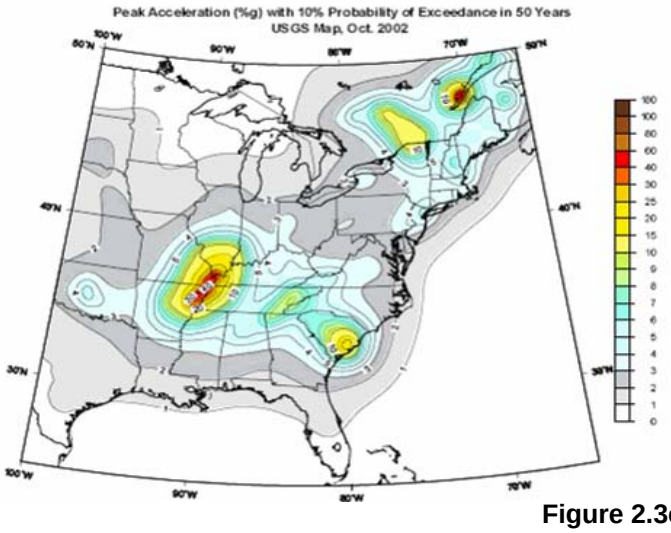


Figure 2.3c

Ohio is located on the periphery of the New Madrid Seismic Zone, an area in Missouri and adjacent states that was the site of the largest earthquake sequence to occur in historical times in the continental United States. Earthquake activity in Columbiana County would probably stem from an event along the Highlandtown Fault, which crosses Franklin, Wayne, Washington and Yellow Creek Townships in southwestern Columbiana County, as well as the Pittsburgh-Washington Cross Strike Structural Discontinuity which begins in Liverpool Township and crosses into

neighboring West Virginia and Pennsylvania. Two (2) other faults lie nearby in adjacent counties. A portion of the Suffield Fault System lies to the northwest in Stark County and the Smith Township Fault, also to the northwest, in Mahoning County. There is also a major fault located under Lake Erie to the north of Columbiana County.

The table below (Table 2.3a) is the Modified Mercalli Scale, which is the general relationship between epicentral Modified Mercalli intensities and magnitude. Intensities can be highly variable depending on local geologic conditions. The Mercalli Scale is a semi-quantitative linear scale, whereas the Richter Scale (shown in Table 2.3b below) is a quantitative logarithmic scale. The Richter Magnitude Scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded between the various seismographs. Adjustments are located for the variation in the distance between the various seismographs and the epicenter of the earthquake. On the Richter scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake and a strong earthquake might be rated as a magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude

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

Table 2.3a

Severity	Richter Scale	
	Magnitude	Mercalli
Mild	0-2.9	I-III
Moderate	2.9-4.1	IV-V
Intermediate	4.1-5.4	VI-VII
Severe	5.4-7.3	VIII-X
Catastrophic	7.3 +	XI-XIII

Table 2.3b

represents a tenfold increase in measured amplitude.

HISTORY OF EVENTS

According to an *Earthquake Epicenters In Ohio Map* prepared by the Ohio Department of Natural Resources (see Figure 2.3d), a 2.6 mbLg magnitude earthquake occurred on March 17, 2011 near Youngstown and Austintown, no damage was reported. This appears to have been the first in a series of 11 episodes throughout 2011 that originated in the same area. Even though Columbiana County has endured relatively limited earthquake activity, Mahoning, Ashtabula and Geauga Counties, to the north, has been the site of multiple earthquakes ranging in magnitudes of 2.0 to 5.4. There have been at least 12 earthquakes epicentered near, or felt in Columbiana County since the original Columbiana County All Hazard Multi-Jurisdictional Mitigation Plan was adopted. Two (2) of these were significant enough to be felt while the other nine (9) were less than 3.0 and were generally not felt by the public (see Table 2.3c).

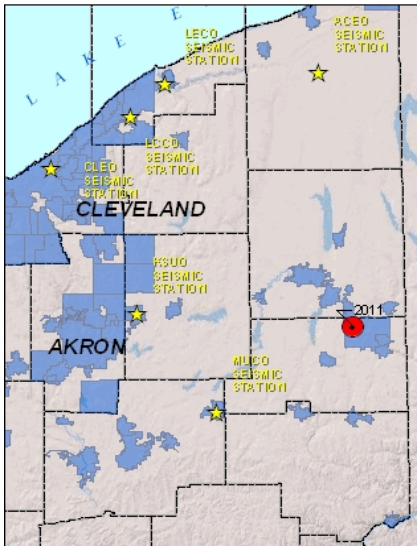


Figure 2.3d

RECENT MODERATE EARTHQUAKES IN OR NEAR COLUMBIANA COUNTY			
Date	**Epicenter Location**	**Mag.**	**Description**
December 31, 2011	Youngstown, Mahoning County, Ohio	4.0	A 4.0 magnitude earthquake centered at Youngstown rocked northeastern Ohio just before 3:05 p.m. EST on New Year's Eve. This was the 11th earthquake in a sequence that began on March 17, 2011 at Youngstown. The earthquake was felt throughout northeastern Ohio, adjacent areas in western Pennsylvania, and in Ontario, Canada. Media reports indicate that damage was minor.
June 23, 2010	Ontario-Quebec Border Region, Canada	5.0	This event was widely felt across Ohio, New York, Pennsylvania, and neighboring areas.

Table 2.3c

HAZARD IMPACTS

The severity of an earthquake is dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning, and after just a few seconds can cause massive damage and extensive causalities. Common effects of earthquakes are ground motion and shaking, surface ruptures, and ground failure. The risk of fire immediately following an earthquake is often high because of broken electrical lines and gas mains. In recent years, officials in most of the world's major cities have installed devices that shut these services down automatically if an earthquake strikes. Other hazards that may result from an earthquake are utility and communications failures.

The impacts to a community from earthquake events include injuries to citizens and public safety officials, damage to property, lost revenue and economic damages, increased demand on public safety and infrastructure related services. Ground shaking from earthquakes can collapse buildings and bridges, disrupt gas, electric, and phone service, and sometimes trigger landslides, flash floods, fires, and tsunamis.

PAST MITIGATION EFFORTS

The United States has been a world front-runner in mitigation efforts related to natural disasters. The advent of United States building codes, zoning codes, research on liquefaction areas and ground shaking, building retrofitting, non-structural mitigation/tie-downs, public education, drop-cover-and-hold exercises, and public television specials have dramatically reduced the impact to property, injuries and economic damage. When the United States is compared to countries that do not have these codes and standards (e.g., Turkey, Iran, and Pakistan the earthquake disaster results are dramatically different).

Columbiana County conducted HAZUS earthquake scenarios for the most populated areas of the county, East Liverpool and Salem, in August 2012. These scenarios were conducted as a means to identify the potential impacts that could occur and affect the area in the event of a significant epicenter.

HAZARD MAPPING

See the Columbiana County Earthquake Map for a graphical representation of the hazard areas with regard to earthquake. The green areas represent "low hazard areas,"

the yellow areas represent “moderate hazard areas,” the orange areas represent “high hazard areas,” and the red areas represent “extreme high hazard areas.”

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Residential	47,088	47,088	100%	$3,767,040,000	$3,767,040	0.10%	107,841	107,841	100%
Commercial	1,578	1,578	100%	$631,200,000	$315,600	0.05%	17,469	17,469	100%
Industrial	444	444	100%	$222,000,000	$111,000	0.05%	6,505	6,505	100%
Agricultural	4,120	4,120	100%	$721,000,000	$721,000	0.10%	3,090	3,090	100%
Religious/Non-Profit	103	103	100%	$20,600,000	$10,300	0.05%	4,120	4,120	100%
Government	45	45	100%	$18,000,000	$9,000	0.05%	1,350	1,350	100%
Education	46	46	100%	$17,250,000	$8,625	0.05%	18,276	18,276	100%
Utilities	20	20	100%	$30,000,000	$15,000	0.05%	60	60	100%
Total	**53,444**	**53,444**	**100%**	**$5,427,090,000**	**$4,957,565**	**0.11%**	**158,711**	**158,711**	**100%**

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?		X
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?		X
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Earthquake

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Columbiana County Courthouse	$1,850,000	X	0%	=	$0	$700,000	X	0.25%	=	$1,750
Columbiana City Hall	$1,250,000	X	0%	=	$0	$400,000	X	0.30%	=	$1,200
East Liverpool City Hall	$650,000	X	0%	=	$0	$325,000	X	0%	=	$0
East Palestine Village Offices	$425,000	X	0%	=	$0	$275,000	X	0.25%	=	$688
Hanoverton Village Offices	$375,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
Salem City Hall	$976,800	X	0%	=	$0	$390,000	X	0.30%	=	$1,170
Salineville Village Offices	$311,900	X	0%	=	$0	$190,000	X	0%	=	$0
Wellsville Village Offices	$518,100	X	0%	=	$0	$300,000	X	0%	=	$0
Leetonia Village Offices	$335,000	X	0%	=	$0	$90,000	X	0.30%	=	$270
Lisbon Village Offices	$979,500	X	0%	=	$0	$395,000	X	0.25%	=	$988
New Waterford Village Offices	$265,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Washingtonville Village Offices	$250,000	X	0%	=	$0	$55,000	X	0.30%	=	$165
Elkrun Township Hall	$145,000	X	0%	=	$0	$70,000	X	0.25%	=	$175
Fairfield Township Hall	$360,000	X	0%	=	$0	$220,000	X	0.25%	=	$550
Madison Township Hall	$245,000	X	0%	=	$0	$165,000	X	0.25%	=	$413
Salem Township Hall	$310,000	X	0%	=	$0	$200,000	X	0.30%	=	$600
Bridges	$115,000,000	X	0%	=	$0	$0	X	0%	=	$0
Highways	$1,525,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Railroads	$85,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Columbiana County Airport	$679,200	X	0%	=	$0	$203,760	X	0.25%	=	$509
Columbiana County Port Authority	$595,000	X	0%	=	$0	$148,750	X	0.25%	=	$372
East Liverpool Water Works	$1,895,000	X	0%	=	$0	$3,550,000	X	0%	=	$0
East Palestine Sewer and Water	$3,165,000	X	0%	=	$0	$3,500,000	X	0.25%	=	$8,750
Leetonia Water Board	$1,750,000	X	0%	=	$0	$2,110,000	X	0.30%	=	$6,330
Salem Sewage Plant	$7,450,000	X	0%	=	$0	$6,250,000	X	0.30%	=	$18,750
Salineville Water Plant	$2,450,000	X	0%	=	$0	$3,000,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Washingtonville Water and Sewer	$9,355,000	X	0%	=	$0	$10,000,000	X	0.30%	=	$30,000
Wellsville Filtration Plant	$985,000	X	0%	=	$0	$1,255,000	X	0%	=	$0
Wellsville Sewage Disposal	$1,553,000	X	0%	=	$0	$2,875,000	X	0%	=	$0
Buckeye Water District	$3,650,000	X	0%	=	$0	$4,250,000	X	0%	=	$0
Columbiana City Water Works/Sewer Dept.	$2,655,000	X	0%	=	$0	$3,150,000	X	0.25%	=	$7,875
Leetonia Sewage Plant	$3,950,000	X	0%	=	$0	$4,550,000	X	0.30%	=	$13,650
Lisbon Village Water Dept.	$1,875,000	X	0%	=	$0	$2,000,000	X	0.25%	=	$5,000
New Waterford Water / Waste Water Plant	$2,455,000	X	0%	=	$0	$3,655,000	X	0.25%	=	$9,138
Salineville Sewer Plant	$5,650,000	X	0%	=	$0	$5,000,000	X	0%	=	$0
Columbiana County Sheriff	$350,000	X	0%	=	$0	$625,000	X	0.25%	=	$1,563
Columbiana County EMA	$565,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
Columbiana County 911 Ctr.	$265,000	X	0%	=	$0	$635,000	X	0.25%	=	$1,588
Columbiana PD	$225,000	X	0%	=	$0	$325,000	X	0.25%	=	$813
East Liverpool PD	$215,000	X	0%	=	$0	$289,000	X	0%	=	$0
East Palestine PD	$210,000	X	0%	=	$0	$198,000	X	0.25%	=	$495
Leetonia PD	$235,000	X	0%	=	$0	$105,000	X	0.30%	=	$315
Lisbon PD	$979,500	X	0%	=	$0	$320,000	X	0.25%	=	$800
Liverpool Township PD	$200,000	X	0%	=	$0	$165,000	X	0.25%	=	$413
New Waterford PD	$310,000	X	0%	=	$0	$175,000	X	0.25%	=	$438
Ohio State Highway Patrol	$865,000	X	0%	=	$0	$455,000	X	0.25%	=	$1,138
Perry Township PD	$309,900	X	0%	=	$0	$170,000	X	0.30%	=	$510
Salem PD	$395,000	X	0%	=	$0	$265,000	X	0.30%	=	$795
Salineville PD	$311,900	X	0%	=	$0	$250,000	X	0%	=	$0
St. Clair Township PD	$295,000	X	0%	=	$0	$175,000	X	0.25%	=	$438
Washingtonville PD	$235,000	X	0%	=	$0	$145,000	X	0.30%	=	$435
Wellsville PD	$518,100	X	0%	=	$0	$325,000	X	0%	=	$0
Calcutta FD	$170,000	X	0%	=	$0	$645,000	X	0.25%	=	$1,613
Columbiana FD	$426,700	X	0%	=	$0	$890,000	X	0.30%	=	$2,670
East Liverpool FD	$135,300	X	0%	=	$0	$465,000	X	0%	=	$0

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
East Palestine FD	$192,300	X	0%	=	$0	$385,000	X	0.25%	=	$963
Franklin Township VFD	$95,850	X	0%	=	$0	$245,000	X	0.25%	=	$613
Hanoverton VFD	$235,450	X	0%	=	$0	$300,000	X	0.25%	=	$750
Guilford Lake FD	$195,000	X	0%	=	$0	$345,000	X	0.25%	=	$863
Highlandtown VFD	$104,900	X	0%	=	$0	$295,000	X	0%	=	$0
Homeworth VFD	$113,900	X	0%	=	$0	$310,000	X	0.25%	=	$775
Leetonia FD/EMS	$124,500	X	0%	=	$0	$565,000	X	0.30%	=	$1,695
Lisbon FD	$325,000	X	0%	=	$0	$610,000	X	0.25%	=	$1,525
Dixonville FD	$84,500	X	0%	=	$0	$285,000	X	0.25%	=	$713
Lacroft VFD	$149,300	X	0%	=	$0	$365,000	X	0.25%	=	$913
Negley VFD/EMS	$110,200	X	0%	=	$0	$410,000	X	0.25%	=	$1,025
New Waterford FD	$150,900	X	0%	=	$0	$425,000	X	0.25%	=	$1,063
North Georgetown VFD	$100,100	X	0%	=	$0	$315,000	X	0.25%	=	$788
Perry Township VFD	$309,900	X	0%	=	$0	$565,000	X	0.30%	=	$1,695
Rogers Village FD	$161,000	X	0%	=	$0	$435,650	X	0.25%	=	$1,089
Salem FD	$215,500	X	0%	=	$0	$565,000	X	0.30%	=	$1,695
Salineville VFD	$311,900	X	0%	=	$0	$325,000	X	0%	=	$0
Wellsville VFD	$143,600	X	0%	=	$0	$415,000	X	0%	=	$0
West Point FD	$200,000	X	0%	=	$0	$365,000	X	0.25%	=	$913
Winona FD	$172,500	X	0%	=	$0	$375,000	X	0.25%	=	$938
Glenmoor VFD	$752,000	X	0%	=	$0	$650,000	X	0.25%	=	$1,625
Air Evac Lifeteam 81	$86,600	X	0%	=	$0	$0	X	0.25%	=	$0
EMT Ambulance	$112,200	X	0%	=	$0	$240,000	X	0.30%	=	$720
Lifeteam EMS Inc.	$135,000	X	0%	=	$0	$220,000	X	0.25%	=	$550
KLG Ambulance / MICU	$76,500	X	0%	=	$0	$182,000	X	0.30%	=	$546
North Star Critical Care	$84,900	X	0%	=	$0	$175,000	X	0.25%	=	$438
Maple-Cotton Funeral Home and EMS	$165,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
Tri-County Ambulance	$118,600	X	0%	=	$0	$190,000	X	0.25%	=	$475
Columbiana EMS	$426,800	X	0%	=	$0	$350,000	X	0.30%	=	$1,050
Leetonia EMS	$185,000	X	0%	=	$0	$265,000	X	0.30%	=	$795
New Waterford EMS	$175,000	X	0%	=	$0	$215,000	X	0.25%	=	$538
East Palestine EMS	$265,000	X	0%	=	$0	$300,000	X	0.25%	=	$750
East Liverpool City Hospital	$16,750,000	X	0%	=	$0	$8,000,000	X	0%	=	$0
Salem Community Hospital	$17,250,000	X	0%	=	$0	$8,350,000	X	0.30%	=	$25,050

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Parkside Healthcare Center	$2,172,700	X	0%	=	$0	$410,000	X	0.25%	=	$1,025
Vista Center	$3,536,000	X	0%	=	$0	$475,000	X	0.25%	=	$1,188
Blossom Nursing and Rehab. Center	$1,650,000	X	0%	=	$0	$215,000	X	0.30%	=	$645
Calcutta Healthcare Center	$4,947,200	X	0%	=	$0	$500,000	X	0.25%	=	$1,250
East Liverpool Convalescent Center	$539,600	X	0%	=	$0	$275,000	X	0%	=	$0
Nentwick Convalescent Home	$2,109,100	X	0%	=	$0	$315,000	X	0.25%	=	$788
Essex of Salem #1	$1,768,800	X	0%	=	$0	$500,000	X	0.30%	=	$1,500
Essex of Salem #2	$1,882,800	X	0%	=	$0	$465,000	X	0.30%	=	$1,395
Essex of Salem #3	$1,569,900	X	0%	=	$0	$395,000	X	0.30%	=	$1,185
Pleasant view North Retirement	$1,243,300	X	0%	=	$0	$380,000	X	0.30%	=	$1,140
Salem Care Center	$1,443,900	X	0%	=	$0	$350,000	X	0.30%	=	$1,050
Assisted Living Ministry Services	$212,800	X	0%	=	$0	$185,000	X	0.25%	=	$463
Crossroads at Beaver Creek	$3,450,000	X	0%	=	$0	$550,000	X	0.25%	=	$1,375
Grace Woods Senior Living	$897,300	X	0%	=	$0	$365,000	X	0.30%	=	$1,095
The Renaissance at Vista	$3,536,000	X	0%	=	$0	$465,000	X	0.25%	=	$1,163
Sterling House of Salem	$325,000	X	0%	=	$0	$350,000	X	0.30%	=	$1,050
Whispering Pines Village	$415,000	X	0%	=	$0	$300,000	X	0.25%	=	$750
St. Mary's Alzheimer's Center	$650,000	X	0%	=	$0	$495,000	X	0.25%	=	$1,238
Adkins Nursing Home	$315,000	X	0%	=	$0	$256,000	X	0.25%	=	$640
Great Trail Care Center	$225,000	X	0%	=	$0	$195,000	X	0.25%	=	$488
Holander House	$200,000	X	0%	=	$0	$165,000	X	0.25%	=	$413
Twin Oaks Retirement Center	$600,000	X	0%	=	$0	$435,000	X	0.25%	=	$1,088
Covington Skilled Nursing & Rehab Ctr.	$795,000	X	0%	=	$0	$495,000	X	0.25%	=	$1,238
American Health Care	$435,000	X	0%	=	$0	$400,000	X	0.25%	=	$1,000
Harmony Village	$275,500	X	0%	=	$0	$165,000	X	0.25%	=	$413
Courtyard at Lexington	$595,000	X	0%	=	$0	$285,000	X	0.25%	=	$713

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Century House of Salem	$275,000	X	0%	=	$0	$250,000	X	0.30%	=	$750
Columbiana County Mental Health	$560,000	X	0%	=	$0	$325,000	X	0.25%	=	$813
Beaver Local HS	$4,756,100	X	0%	=	$0	$295,000	X	0.25%	=	$738
Beaver Local MS	$2,866,200	X	0%	=	$0	$255,000	X	0.25%	=	$638
Buckeye ES	$1,914,500	X	0%	=	$0	$195,000	X	0.30%	=	$585
Calcutta ES	$1,624,700	X	0%	=	$0	$165,000	X	0.25%	=	$413
Columbiana Co. Career and Technical Ctr.	$6,888,400	X	0%	=	$0	$1,250,000	X	0.25%	=	$3,125
Columbiana HS	$5,657,000	X	0%	=	$0	$355,000	X	0.30%	=	$1,065
Crestview ES	$200,000	X	0%	=	$0	$185,000	X	0.25%	=	$463
Crestview MS/HS	$12,341,800	X	0%	=	$0	$650,000	X	0.25%	=	$1,625
David Anderson Jr/Sr HS	$4,015,300	X	0%	=	$0	$565,000	X	0.25%	=	$1,413
DAW MS	$2,232,400	X	0%	=	$0	$245,000	X	0%	=	$0
East ES	$1,455,000	X	0%	=	$0	$195,000	X	0.25%	=	$488
East Liverpool Jr./Sr. HS	$12,683,000	X	0%	=	$0	$365,000	X	0%	=	$0
East Palestine ES	$1,365,000	X	0%	=	$0	$225,000	X	0.25%	=	$563
East Palestine MS	$3,450,000	X	0%	=	$0	$285,000	X	0.25%	=	$713
East Palestine HS	$5,000,000	X	0%	=	$0	$400,000	X	0.25%	=	$1,000
Garfield ES	$1,383,000	X	0%	=	$0	$225,000	X	0%	=	$0
Joshua Dixon ES	$1,622,900	X	0%	=	$0	$265,000	X	0.25%	=	$663
Lacroft ES	$4,765,600	X	0%	=	$0	$300,000	X	0.25%	=	$750
Leetonia K-12	$3,650,000	X	0%	=	$0	$415,000	X	0.30%	=	$1,245
Mckinley ES	$2,000,000	X	0%	=	$0	$150,000	X	0.25%	=	$375
North ES	$2,155,000	X	0%	=	$0	$165,000	X	0.25%	=	$413
Reilly ES	$2,566,500	X	0%	=	$0	$180,000	X	0.30%	=	$540
Rogers ES	$1,714,100	X	0%	=	$0	$155,000	X	0.25%	=	$388
Salem Jr./Sr. HS	$8,977,100	X	0%	=	$0	$455,000	X	0.30%	=	$1,365
South Side MS	$4,000,000	X	0%	=	$0	$235,000	X	0.25%	=	$588
Southeast ES	$2,975,700	X	0%	=	$0	$195,000	X	0.30%	=	$585
Southern Local K-12	$4,650,000	X	0%	=	$0	$300,000	X	0%	=	$0
United K-12	$9,694,000	X	0%	=	$0	$495,000	X	0.25%	=	$1,238
Wellsville HS	$7,347,800	X	0%	=	$0	$325,000	X	0%	=	$0
West Point ES	$614,200	X	0%	=	$0	$140,000	X	0.25%	=	$350
Westgate MS	$3,695,300	X	0%	=	$0	$280,000	X	0.25%	=	$700
Act 1 Education Ctr. Jr. HS	$900,100	X	0%	=	$0	$165,000	X	0.25%	=	$413

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
American Spirit Academy K-12	$469,700	X	0%	=	$0	$180,000	X	0.25%	=	$450
Heartland Christian School K-12	$4,950,000	X	0%	=	$0	$545,000	X	0.25%	=	$1,363
St. Aloysius ES	$275,000	X	0%	=	$0	$200,000	X	0.25%	=	$500
St. Paul ES	$3,000,000	X	0%	=	$0	$155,000	X	0.30%	=	$465
American Standards Brands	$985,000	X	0%	=	$0	$425,000	X	0.25%	=	$1,063
Flex-N-Gate/Ventra Salem	$1,795,000	X	0%	=	$0	$500,000	X	0.30%	=	$1,500
Fresh Mark Inc.	$895,000	X	0%	=	$0	$350,000	X	0.25%	=	$875
Wal-Mart Stores Inc.	$6,985,000	X	0%	=	$0	$1,650,000	X	0.25%	=	$4,125
Pioneer Pottery Inc	$550,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Zarbana Industries	$455,000	X	0%	=	$0	$450,000	X	0.25%	=	$1,125
Miller Casting	$750,000	X	0%	=	$0	$650,000	X	0.25%	=	$1,625
Columbiana Foundry Company	$400,000	X	0%	=	$0	$375,000	X	0.30%	=	$1,125
Kensington PO	$315,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Summitville PO	$215,000	X	0%	=	$0	$56,000	X	0.25%	=	$140
Columbiana PO	$500,000	X	0%	=	$0	$175,000	X	0.30%	=	$525
New Waterford PO	$225,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Calcutta PO	$175,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
Winona PO	$200,000	X	0%	=	$0	$70,000	X	0.25%	=	$175
Homeworth PO	$150,000	X	0%	=	$0	$55,000	X	0.25%	=	$138
East Liverpool PO	$436,400	X	0%	=	$0	$155,000	X	0%	=	$0
East Palestine PO	$244,500	X	0%	=	$0	$75,000	X	0.25%	=	$188
East Rochester PO	$230,000	X	0%	=	$0	$85,000	X	0.25%	=	$213
Hanoverton PO	$300,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Rogers PO	$325,000	X	0%	=	$0	$75,000	X	0.25%	=	$188
Salem PO	$596,600	X	0%	=	$0	$195,000	X	0.30%	=	$585
Salineville PO	$315,000	X	0%	=	$0	$65,000	X	0%	=	$0
Negley PO	$295,000	X	0%	=	$0	$85,000	X	0.25%	=	$213
North Georgetown PO	$250,000	X	0%	=	$0	$60,000	X	0.25%	=	$150
Leetonia PO	$134,800	X	0%	=	$0	$62,500	X	0.30%	=	$188
Lisbon PO	$614,300	X	0%	=	$0	$250,000	X	0.25%	=	$625
Elkton PO	$210,000	X	0%	=	$0	$69,500	X	0.25%	=	$174
Washingtonville PO	$265,000	X	0%	=	$0	$80,000	X	0.30%	=	$240

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Wellsville PO	$145,600	X	0%	=	$0	$67,500	X	0%	=	$0
Carnegie Public Library	$442,600	X	0%	=	$0	$250,000	X	0.25%	=	$625
Columbiana Public Library	$1,312,500	X	0%	=	$0	$355,000	X	0.30%	=	$1,065
East Palestine Memorial Public Library	$826,600	X	0%	=	$0	$315,000	X	0.25%	=	$788
Leetonia Community Public Library	$2,122,600	X	0%	=	$0	$550,000	X	0.30%	=	$1,650
Lepper Library	$580,000	X	0%	=	$0	$275,000	X	0.25%	=	$688
Salem Public Library	$1,184,400	X	0%	=	$0	$400,000	X	0.30%	=	$1,200
Wellsville Public Library	$367,900	X	0%	=	$0	$220,000	X	0%	=	$0
Hiram Bell Farmstead	$165,000	X	0%	=	$0	$0	X	0.25%	=	$0
Burchfield Homestead	$125,000	X	0%	=	$0	$50,000	X	0.30%	=	$150
Richard L Cawood Residence	$95,000	X	0%	=	$0	$45,000	X	0.25%	=	$113
Cherry Valley Coke Ovens	$85,000	X	0%	=	$0	$0	X	0.30%	=	$0
Church Hill Road Covered Bridge	$450,000	X	0%	=	$0	$0	X	0.25%	=	$0
Diamond Historic District	$3,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
East Liverpool Historic District	$2,000,000	X	0%	=	$0	$0	X	0%	=	$0
East Liverpool Pottery	$215,000	X	0%	=	$0	$200,000	X	0%	=	$0
Nicholas Eckis House	$150,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Elks Club	$135,000	X	0%	=	$0	$35,000	X	0.25%	=	$88
Sandy and Beaver Canal District	$675,000	X	0%	=	$0	$0	X	0.25%	=	$0
Godwin Knowles House	$185,000	X	0%	=	$0	$80,000	X	0.25%	=	$200
Hanna-Kenty House	$140,000	X	0%	=	$0	$70,000	X	0.25%	=	$175
Hanoverton Canal Town District	$1,750,000	X	0%	=	$0	$0	X	0.25%	=	$0
Franklin Harris Farmstead	$200,000	X	0%	=	$0	$65,000	X	0.30%	=	$195
Daniel Howell Hise House	$95,000	X	0%	=	$0	$45,000	X	0.30%	=	$135
Hostetter Inn	$465,000	X	0%	=	$0	$140,000	X	0.25%	=	$350
Ikirt House	$85,000	X	0%	=	$0	$35,000	X	0.25%	=	$88
Homer Laughlin House	$110,000	X	0%	=	$0	$40,000	X	0.25%	=	$100

	Structure Loss (Task A1)					Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure ($)	Replacement Value of Contents ($)	X	Percent Damage (%)	=	Loss to Contents ($)
Lisbon Historic District	$4,000,000	X	0%	=	$0	$0	X	0.25%	=	$0
Daniel McBean Farmstead	$225,000	X	0%	=	$0	$80,000	X	0%	=	$0
Odd Fellows Temple	$115,000	X	0%	=	$0	$65,000	X	0.25%	=	$163
Mary A. Patterson Memorial	$60,000	X	0%	=	$0	$0	X	0.25%	=	$0
Potters National Bank	$270,000	X	0%	=	$0	$110,000	X	0.25%	=	$275
Salem Downtown Historic District	$3,250,000	X	0%	=	$0	$0	X	0.30%	=	$0
Charles Nelson Schmick House	$90,000	X	0%	=	$0	$60,000	X	0.30%	=	$180
John Street House	$85,000	X	0%	=	$0	$45,000	X	0.30%	=	$135
Teegarden-Centennial Covered Bridge	$475,000	X	0%	=	$0	$0	X	0.30%	=	$0
Cassius Clark Thompson House	$120,000	X	0%	=	$0	$65,250	X	0.25%	=	$163
Travelers Hotel	$850,000	X	0%	=	$0	$250,000	X	0.25%	=	$625
YMCA	$465,000	X	0%	=	$0	$125,000	X	0.25%	=	$313
Residential	$3,767,040,000	X	0%	=	$0	$1,883,520,000	X	0.02%	=	$376,704
			Total Loss to Structure		**$0**			**Total Loss to Contents**		**$628,212**

Hazard: Earthquake

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Columbiana County Courthouse	$550,000	X	0	+	$5,000	X	0	=	$0	$1,750
Columbiana City Hall	$275,000	X	0	+	$4,200	X	0	=	$0	$1,200
East Liverpool City Hall	$250,000	X	0	+	$3,250	X	0	=	$0	$0
East Palestine Village Offices	$220,000	X	0	+	$3,000	X	0	=	$0	$688
Hanoverton Village Offices	$155,000	X	0	+	$2,100	X	0	=	$0	$563
Salem City Hall	$280,000	X	0	+	$3,400	X	0	=	$0	$1,170
Salineville Village Offices	$150,000	X	0	+	$1,500	X	0	=	$0	$0
Wellsville Village Offices	$165,000	X	0	+	$1,000	X	0	=	$0	$0
Leetonia Village Offices	$110,000	X	0	+	$1,000	X	0	=	$0	$270
Lisbon Village Offices	$290,000	X	0	+	$1,100	X	0	=	$0	$988
New Waterford Village Offices	$100,000	X	0	+	$1,000	X	0	=	$0	$188
Washingtonville Village Offices	$90,000	X	0	+	$1,000	X	0	=	$0	$165
Elkrun Township Hall	$95,000	X	0	+	$1,000	X	0	=	$0	$175
Fairfield Township Hall	$140,000	X	0	+	$1,000	X	0	=	$0	$550
Madison Township Hall	$125,000	X	0	+	$1,000	X	0	=	$0	$413
Salem Township Hall	$125,000	X	0	+	$1,000	X	0	=	$0	$600
Bridges	$0	X	0	+	$0	X	0	=	$0	$0
Highways	$0	X	0	+	$0	X	0	=	$0	$0
Railroads	$0	X	0	+	$0	X	0	=	$0	$0
Columbiana County Airport	$0	X	0	+	$0	X	0	=	$0	$509
Columbiana County Port Authority	$0	X	0	+	$0	X	0	=	$0	$372
East Liverpool Water Works	$1,000,000	X	0	+	$30,000	X	0	=	$0	$0
East Palestine Sewer and Water	$750,000	X	0	+	$20,000	X	0	=	$0	$8,750
Leetonia Water Board	$375,000	X	0	+	$35,000	X	0	=	$0	$6,330
Salem Sewage Plant	$12,000,000	X	0	+	$800,000	X	0	=	$0	$18,750
Salineville Water Plant	$410,000	X	0	+	$12,000	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Washingtonville Water and Sewer	$13,450,000	X	0	+	$95,000	X	0	=	$0	$30,000
Wellsville Filtration Plant	$280,000	X	0	+	$9,000	X	0	=	$0	$0
Wellsville Sewage Disposal	$750,000	X	0	+	$18,000	X	0	=	$0	$0
Buckeye Water District	$2,350,000	X	0	+	$40,000	X	0	=	$0	$0
Columbiana City Water Works/Sewer Dept.	$1,675,000	X	0	+	$35,000	X	0	=	$0	$7,875
Leetonia Sewage Plant	$6,000,000	X	0	+	$65,000	X	0	=	$0	$13,650
Lisbon Village Water Dept.	$3,250,000	X	0	+	$48,000	X	0	=	$0	$5,000
New Waterford Water / Waste Water Plant	$3,000,000	X	0	+	$45,000	X	0	=	$0	$9,138
Salineville Sewer Plant	$8,650,000	X	0	+	$75,000	X	0	=	$0	$0
Columbiana County Sheriff	$14,400	X	0	+	$2,000	X	0	=	$0	$1,563
Columbiana County EMA	$2,200	X	0	+	$0	X	0	=	$0	$500
Columbiana County 911 Ctr.	$10,000	X	0	+	$0	X	0	=	$0	$1,588
Columbiana PD	$5,500	X	0	+	$0	X	0	=	$0	$813
East Liverpool PD	$3,000	X	0	+	$0	X	0	=	$0	$0
East Palestine PD	$2,600	X	0	+	$0	X	0	=	$0	$495
Leetonia PD	$7,000	X	0	+	$0	X	0	=	$0	$315
Lisbon PD	$6,000	X	0	+	$0	X	0	=	$0	$800
Liverpool Township PD	$3,200	X	0	+	$0	X	0	=	$0	$413
New Waterford PD	$4,000	X	0	+	$0	X	0	=	$0	$438
Ohio State Highway Patrol	$80,000	X	0	+	$0	X	0	=	$0	$1,138
Perry Township PD	$2,500	X	0	+	$0	X	0	=	$0	$510
Salem PD	$8,000	X	0	+	$0	X	0	=	$0	$795
Salineville PD	$9,000	X	0	+	$0	X	0	=	$0	$0
St. Clair Township PD	$5,500	X	0	+	$0	X	0	=	$0	$438
Washingtonville PD	$3,500	X	0	+	$0	X	0	=	$0	$435
Wellsville PD	$10,000	X	0	+	$0	X	0	=	$0	$0
Calcutta FD	$4,800	X	0	+	$0	X	0	=	$0	$1,613
Columbiana FD	$6,000	X	0	+	$0	X	0	=	$0	$2,670
East Liverpool FD	$4,200	X	0	+	$0	X	0	=	$0	$0

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
East Palestine FD	$3,800	X	0	+	$0	X	0	=	$0	$963
Franklin Township VFD	$3,000	X	0	+	$0	X	0	=	$0	$613
Hanoverton VFD	$4,500	X	0	+	$0	X	0	=	$0	$750
Guilford Lake FD	$6,000	X	0	+	$0	X	0	=	$0	$863
Highlandtown VFD	$4,800	X	0	+	$0	X	0	=	$0	$0
Homeworth VFD	$5,000	X	0	+	$0	X	0	=	$0	$775
Leetonia FD/EMS	$7,000	X	0	+	$0	X	0	=	$0	$1,695
Lisbon FD	$10,000	X	0	+	$0	X	0	=	$0	$1,525
Dixonville FD	$3,500	X	0	+	$0	X	0	=	$0	$713
Lacroft VFD	$4,500	X	0	+	$0	X	0	=	$0	$913
Negley VFD/EMS	$3,900	X	0	+	$0	X	0	=	$0	$1,025
New Waterford FD	$4,600	X	0	+	$0	X	0	=	$0	$1,063
North Georgetown VFD	$5,550	X	0	+	$0	X	0	=	$0	$788
Perry Township VFD	$8,000	X	0	+	$0	X	0	=	$0	$1,695
Rogers Village FD	$6,500	X	0	+	$0	X	0	=	$0	$1,089
Salem FD	$10,000	X	0	+	$0	X	0	=	$0	$1,695
Salineville VFD	$5,100	X	0	+	$0	X	0	=	$0	$0
Wellsville VFD	$4,600	X	0	+	$0	X	0	=	$0	$0
West Point FD	$4,800	X	0	+	$0	X	0	=	$0	$913
Winona FD	$5,000	X	0	+	$0	X	0	=	$0	$938
Glenmoor VFD	$12,000	X	0	+	$0	X	0	=	$0	$1,625
Air Evac Lifeteam 81	$100,000	X	0	+	$0	X	0	=	$0	$0
EMT Ambulance	$6,500	X	0	+	$0	X	0	=	$0	$720
Lifeteam EMS Inc.	$7,000	X	0	+	$0	X	0	=	$0	$550
KLG Ambulance / MICU	$5,800	X	0	+	$0	X	0	=	$0	$546
North Star Critical Care	$4,000	X	0	+	$0	X	0	=	$0	$438
Maple-Cotton Funeral Home and EMS	$3,200	X	0	+	$0	X	0	=	$0	$500
Tri-County Ambulance	$3,500	X	0	+	$0	X	0	=	$0	$475
Columbiana EMS	$8,000	X	0	+	$0	X	0	=	$0	$1,050
Leetonia EMS	$4,300	X	0	+	$0	X	0	=	$0	$795
New Waterford EMS	$4,000	X	0	+	$0	X	0	=	$0	$538
East Palestine EMS	$6,000	X	0	+	$0	X	0	=	$0	$750
East Liverpool City Hospital	$750,000	X	0	+	$104,000	X	0	=	$0	$0
Salem Community Hospital	$800,000	X	0	+	$120,000	X	0	=	$0	$25,050

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Parkside Healthcare Center	$300,000	X	0	+	$30,000	X	0	=	$0	$1,025
Vista Center	$350,000	X	0	+	$35,000	X	0	=	$0	$1,188
Blossom Nursing and Rehab. Center	$300,000	X	0	+	$30,000	X	0	=	$0	$645
Calcutta Healthcare Center	$375,000	X	0	+	$40,000	X	0	=	$0	$1,250
East Liverpool Convalescent Center	$300,000	X	0	+	$30,000	X	0	=	$0	$0
Nentwick Convalescent Home	$425,000	X	0	+	$36,000	X	0	=	$0	$788
Essex of Salem #1	$450,000	X	0	+	$40,000	X	0	=	$0	$1,500
Essex of Salem #2	$425,000	X	0	+	$37,000	X	0	=	$0	$1,395
Essex of Salem #3	$375,000	X	0	+	$31,000	X	0	=	$0	$1,185
Pleasant view North Retirement	$415,000	X	0	+	$33,000	X	0	=	$0	$1,140
Salem Care Center	$400,000	X	0	+	$37,500	X	0	=	$0	$1,050
Assisted Living Ministry Services	$365,000	X	0	+	$34,000	X	0	=	$0	$463
Crossroads at Beaver Creek	$650,000	X	0	+	$43,000	X	0	=	$0	$1,375
Grace Woods Senior Living	$425,000	X	0	+	$39,500	X	0	=	$0	$1,095
The Renaissance at Vista	$500,000	X	0	+	$42,000	X	0	=	$0	$1,163
Sterling House of Salem	$435,000	X	0	+	$40,000	X	0	=	$0	$1,050
Whispering Pines Village	$395,000	X	0	+	$35,000	X	0	=	$0	$750
St. Mary's Alzheimer's Center	$465,000	X	0	+	$42,000	X	0	=	$0	$1,238
Adkins Nursing Home	$400,000	X	0	+	$35,000	X	0	=	$0	$640
Great Trail Care Center	$365,000	X	0	+	$30,000	X	0	=	$0	$488
Holander House	$370,000	X	0	+	$31,000	X	0	=	$0	$413
Twin Oaks Retirement Center	$550,000	X	0	+	$42,500	X	0	=	$0	$1,088
Covington Skilled Nursing & Rehab Ctr.	$565,000	X	0	+	$43,000	X	0	=	$0	$1,238
American Health Care	$415,000	X	0	+	$33,000	X	0	=	$0	$1,000
Harmony Village	$485,000	X	0	+	$36,000	X	0	=	$0	$413

	Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	+	Displacement Cost per Day ($)	X	Displacement Time (Days)	=	Structure Use & Function Loss ($)	**Structure + Contents + Function Loss**
Courtyard at Lexington	$585,000	X	0	+	$43,500	X	0	=	$0	$713
Century House of Salem	$480,000	X	0	+	$35,500	X	0	=	$0	$750
Columbiana County Mental Health	$400,000	X	0	+	$31,000	X	0	=	$0	$813
Beaver Local HS	$43,000	X	0	+	$0	X	0	=	$0	$738
Beaver Local MS	$32,000	X	0	+	$0	X	0	=	$0	$638
Buckeye ES	$25,000	X	0	+	$0	X	0	=	$0	$585
Calcutta ES	$22,500	X	0	+	$0	X	0	=	$0	$413
Columbiana Co. Career and Technical Ctr.	$280,000	X	0	+	$0	X	0	=	$0	$3,125
Columbiana HS	$40,000	X	0	+	$0	X	0	=	$0	$1,065
Crestview ES	$25,000	X	0	+	$0	X	0	=	$0	$463
Crestview MS/HS	$75,000	X	0	+	$0	X	0	=	$0	$1,625
David Anderson Jr/Sr HS	$54,000	X	0	+	$0	X	0	=	$0	$1,413
DAW MS	$33,000	X	0	+	$0	X	0	=	$0	$0
East ES	$26,500	X	0	+	$0	X	0	=	$0	$488
East Liverpool Jr./Sr. HS	$38,000	X	0	+	$0	X	0	=	$0	$0
East Palestine ES	$23,000	X	0	+	$0	X	0	=	$0	$563
East Palestine MS	$35,000	X	0	+	$0	X	0	=	$0	$713
East Palestine HS	$40,000	X	0	+	$0	X	0	=	$0	$1,000
Garfield ES	$22,500	X	0	+	$0	X	0	=	$0	$0
Joshua Dixon ES	$26,000	X	0	+	$0	X	0	=	$0	$663
Lacroft ES	$35,000	X	0	+	$0	X	0	=	$0	$750
Leetonia K-12	$39,500	X	0	+	$0	X	0	=	$0	$1,245
Mckinley ES	$25,000	X	0	+	$0	X	0	=	$0	$375
North ES	$28,500	X	0	+	$0	X	0	=	$0	$413
Reilly ES	$30,000	X	0	+	$0	X	0	=	$0	$540
Rogers ES	$26,500	X	0	+	$0	X	0	=	$0	$388
Salem Jr./Sr. HS	$60,000	X	0	+	$0	X	0	=	$0	$1,365
South Side MS	$33,000	X	0	+	$0	X	0	=	$0	$588
Southeast ES	$23,500	X	0	+	$0	X	0	=	$0	$585
Southern Local K-12	$48,500	X	0	+	$0	X	0	=	$0	$0
United K-12	$70,000	X	0	+	$0	X	0	=	$0	$1,238
Wellsville HS	$65,000	X	0	+	$0	X	0	=	$0	$0
West Point ES	$31,000	X	0	+	$0	X	0	=	$0	$350
Westgate MS	$38,000	X	0	+	$0	X	0	=	$0	$700