Athens County Hazard Mitigation Plan 2019

Part of a Multi-Jurisdictional Program to Make Athens County Safer for its Citizens

Purpose Statement

The Athens County Multi-jurisdictional Natural Hazards Mitigation Plan identifies local hazard mitigation goals and objectives, and specific mitigation actions to implement over the long term that will result in reduction in risk and potential for future losses associated with the occurrence of natural hazards.

The participating entities developed a mitigation action plan that will be adopted and implemented by each participating community. This Plan was produced to reduce the impact of natural hazards on citizens, infrastructure, private property, and critical facilities through a combined effort of communities, institutions, and residents.

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Chapter 1 – Introduction and the Mitigation Planning Process

1.1 Background for Mitigation Planning

In an effort to improve lives, planning attempts to take what we have learned from the past and apply it to what we think the future will bring. It is taking a long term view to try to minimize risks faced by our citizens. For purposes of this Plan, hazards are limited to those events, such as earthquakes, tornadoes, or floods, not primarily activated by human activity. While human activity may be what turns a natural event into a disaster, Mother Nature, rather than human activity, is what initiates the natural event.

Local governments can take action to protect citizens from natural hazard events such as flooding and tornadoes. This Plan takes a proactive approach to do that. While there are no lives completely safe from all the hazards that exist in the world, it is possible to take a reasoned planning approach to minimize risk to citizens as much as possible. Every year flood waters, earthquakes, tornadoes, wildfires, and other natural disasters destroy homes, stall economic progress, and displace families. To reduce vulnerability, communities can develop a natural hazard mitigation plan that will promote resiliency from disasters.

According to the Ohio Emergency Management Agency, a hazard mitigation plan is a strategic/guidance document used by an entity to reduce future risk to life and property. A hazard mitigation plan has the following elements:

- A public participation process for bringing together diverse stakeholders in the jurisdiction(s) to provide an array of input into the plan,
- A risk assessment to identify the hazards, determine the people and property subject to those hazards, and estimate vulnerability,
- A mitigation strategy that contains goals, objectives and an action plan to implement priority mitigation actions that reduce risk,
- A maintenance process to ensure the plan is reviewed, updated and does not sit idly, and
- An adoption requirement to ensure the participating jurisdictions support the plan.

A community that has undertaken a comprehensive set of natural hazard mitigation activities and measures for sustainability gains multiple benefits. Essential services can reach people in need. Devastating property damage and community disruption are minimized. Business can resume

Mitigation: Sustained actions taken to reduce or eliminate long-term risk to life and property from hazards.

more quickly or continue as usual in the face of hazardous events. Homes and schools can avoid costly repairs. Local governments can meet their mandate to ensure the health, safety, and welfare of their citizens, even in the face of natural disasters. In addition, the residents of such a community enjoy a stronger economy and a better quality of life.

1.2 Purpose

The purpose of this Plan is to develop a comprehensive strategy to reduce the impacts of natural hazards in Athens County. Since 2005 the County has had policies and programs in place that enable individuals, groups, and communities to plan for and manage the effects of natural hazards. The Disaster Mitigation Act of 2000 (DMA2K) requires communities to develop and adopt a Natural Hazard Mitigation Plan. The Act requires that a community update its Natural Hazard Mitigation Plan at least once every five years. The municipalities and unincorporated areas are cooperating to create a multijurisdictional Plan. Rather than creating individual plans for each community, efficiencies and cooperation are enhanced with all working together.

1.3 Athens County – Profile

1.3.1 History, Culture, and Physiography

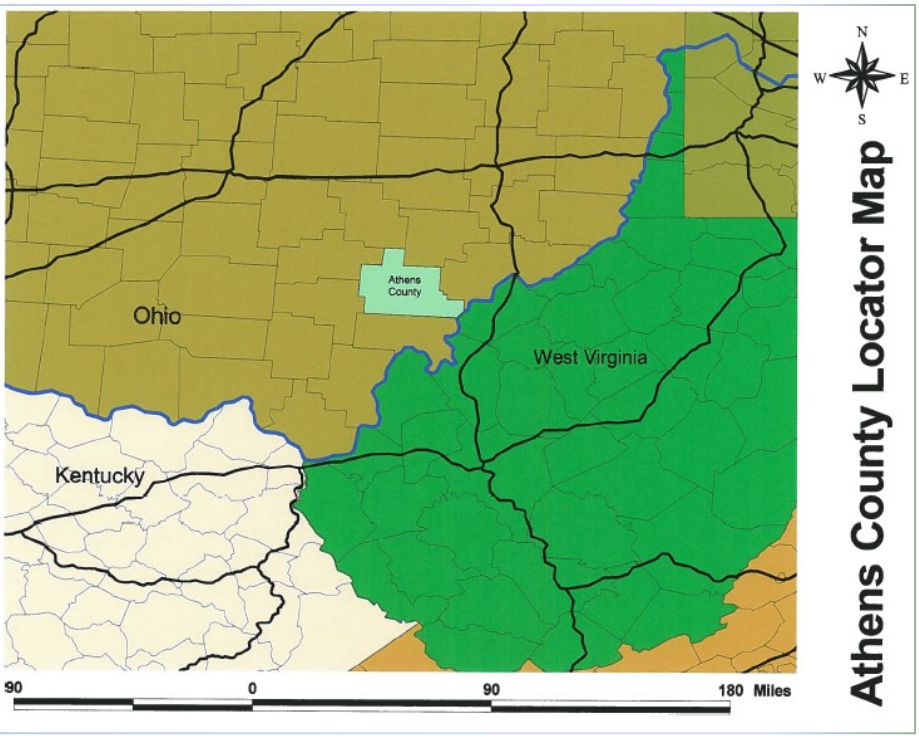
Paleo-Indians roamed the state of Ohio after the last of the glaciers receded about 12,000 years ago. Evidence of these early people are flint points and scrapers, artifacts used for hunting and food and hide preparation. Later natives, the Archaic Indians, lived in Athens County from approximately 6,000-1,500 B.C. Evidence of their existence is stone points and bone tools, gravesites, skeletal remains, and campsites. These people lived by hunting and fishing and were nomadic. The Adena people, sometimes called the Early Woodland culture, came after the Archaic and lived from approximately 1,000 B.C.-100 A.D. These were the builders of the many mounds that still exist in Athens County. Many more of these mounds have been destroyed by modern peoples. Excavation of Adena mounds has revealed pottery shards, pipes, blades, gorgets, and copper bracelets and beads. A different culture, the Hopewell, existed in the area from about 100 A.D.-700 A.D. It is not known for certain whether the Adena culture assimilated into this new culture but evidence suggests that both cultures existed at the same time for several hundred years. The Hopewell culture had more elaborate customs and artifacts than the Adena and evidence shows they had an elaborate system of trade. The decline of the Hopewell culture lead to a simpler culture, referred to as the Late Woodland. The Late Woodland people existed from 700 A.D. to the first contact with European settlers when records were kept. The Late Woodland people were the first to use bow and arrow. They also cultivated fields with a variety of tools made of antlers, stones, sticks, shells, and bones.[1]

Many of Athens County's early migrant settlers came from New England. Athens County was part of the Ohio Company of Associates Land Purchase of 1787. Its first settlement was at Marietta and many of the early settlers of the County travelled upstream on the Hocking River to reach what became townsites and homesites. Two townships were set aside as university lands and Ohio University became the first institution of higher learning in the Northwest Territory.

[1] Beatty, Elizabeth Grover and Marjorie S. Stone, Getting to Know Athens County, 1984, pp. 11-15.

The area was rich in natural resources. Forests provided needed wood for shelters, boats, and firewood. Waterways provided fish, fresh water, and power for mills. Many years after initial settlement, coal was discovered to be a valuable source of heat and a commodity for export to growing industrial cities in Ohio. These natural resources influenced settlement patterns and had an influence on where and how people lived. Locations near the waterways provided flat ground for farming, power, transportation, and buildings. Locations near coal deposits became mining towns and eventually railroad stops. The area is underlain with shale deposits and weathered sandstone and limestone. The hilly terrain of Athens County presents a challenge for building and one of the issues is that some of the soils are very unstable, particularly when saturated. These settlement patterns and the inherent attributes of these natural resources have had a profound influence with the hazards of flooding, land subsidence, and land slippage.

"Of course, flooding is always a threat to the lowlands and Athens County has had many floods- in 1847, 1853, 1883, 1907, 1913, 1937, 1964, and 1968, to mention the most destructive. The flood of 1883 put the forty-year-old canal out of business between Athens and Nelsonville. It also closed for good the salt wells at Salina, Armitage, and west of Chauncey, and the coal shaft which had been sunk to get coal with which to boil water to make salt. The 1907 flood was probably the most destructive of human life, however. Seven people lost their lives and fourteen Carnegie Hero Medals were awarded to Athenians, some posthumously.[2]



Map 1 Athens County

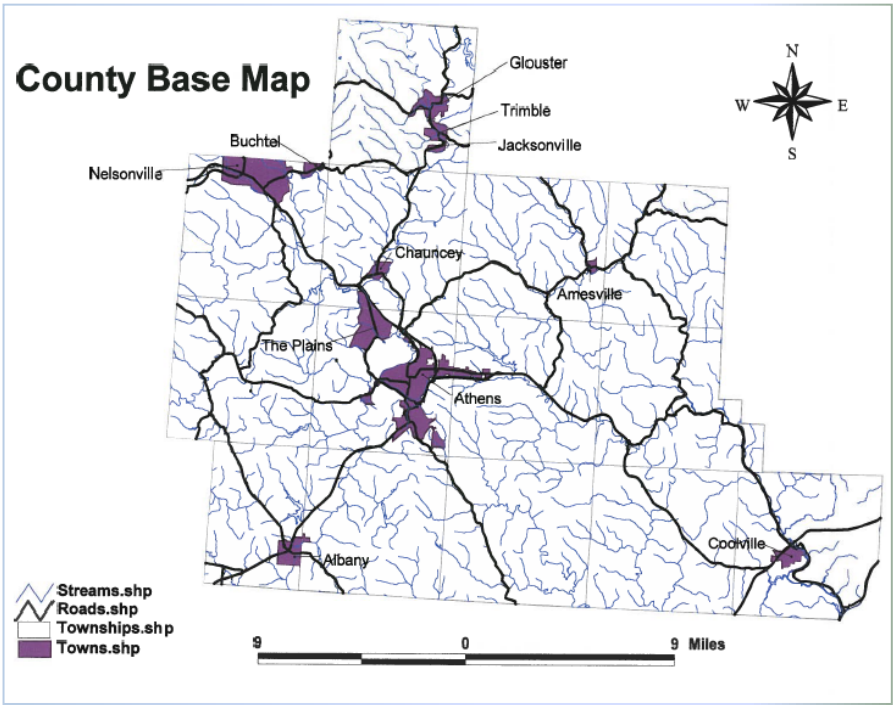
Athens County is located in southeastern Ohio approximately 75 miles southeast of Columbus, the state capitol. The County is comprised of 14 townships, 2 cities, and 8 villages contained in an area of approximately 504 square miles. About 484 square miles are unincorporated. The County's population in unincorporated areas is 29,933 and there are 13,977 housing units in this area according to the 2010 census. The population density of this rural area is 61.8 residents per square mile and the housing density is 28.8 units per square mile. For comparison, Ohio's population density is 258 residents per square

[2] Ibid. p2.

mile and its housing density is 114.4 units per square mile. The same numbers for the City of Columbus are, respectively, 3,529.3 and 1,663.5. The 2018 population estimate for the entire county is 65,818, an increase of 1,061 from the 2010 census population of 64,757. Additional County census data can be found in Appendix 1.

Athens County is located in a rural setting comprised of the rugged topography that makes up the unglaciated Allegheny Plateau region. The landscape is comprised of hills, narrow ridges, and narrow stream valleys. Elevations in the County range from a low of slightly less than 600 feet to a high of approximately 1060 feet. The Hocking River, with an overall watershed of 1,200 square miles, drains most of the County and travels through it for a distance of over 40 miles. The south central portion of the County is drained by the Shade River system. A small portion of Bern Township in the northeast drains into the Wolf Creek drainage. A small portion in southern Lee Township drains into the Leading Creek drainage. Western parts of Lee, Waterloo, and York Townships drain into the Raccoon Creek watershed. The Ohio River borders on the southeastern corner of the County for several miles.

Athens County is located in Ohio's Appalachian region. While much of Appalachia lags behind the state economically, Athens County is the home of Ohio University which provides the county's major employment opportunity. Athens County's unemployment figures are lower and per capita income is higher than most of the Appalachian Ohio region. In 2010, the total employment for all industries in Athens County was 26,193 with government claiming the largest portion at about 33.2%.



Map 2 County Base Map

Major transportation arteries are U.S. Route 50 and State Routes 32, 56, and 550 traveling in an east-west direction and U.S. Route 33 and State Routes 13, 144, 329, and 681 traveling in a north-south direction. A Norfolk-Southern railroad line operated by a smaller carrier traveling between Charleston, West Virginia and Toledo, Ohio bisects the county in a north-south direction.

1.4 Overview of Natural Hazards Mitigation Planning

1.4.1 General Plan Requirements and Process

The Disaster Mitigation Act of 2000 is the law that requires preparation of state and local mitigation plans before state and local governments can receive federal assistance in the event of a Presidentially-declared disaster. The Mitigation Branch of the Ohio Emergency Management Agency, a section of the Ohio Department of Public Safety, is the branch of Ohio government responsible for coordinating mitigation planning in the state of Ohio. The mission of the Mitigation Branch is "…to integrate hazard mitigation principles in a variety of ways to make Ohio communities more sustainable and citizens more resilient in the face of future disaster events." The contents of a Plan, per Federal Emergency Management Agency standards must include:

- How the Plan was prepared and who was involved in the planning process.
    - Public involvement is essential. Various outreach approaches shall be described.
    - Multi-jurisdictional plans need to show each communities capabilities for accomplishing hazard mitigation and reducing vulnerability.
- A risk assessment
    - Identification of the hazards likely to affect the area, noting data limitations and providing an explanation for eliminating hazards from further consideration.
    - A discussion of past events and a description of their severity and resulting effects.
    - A description of the local vulnerability to the described hazards in terms of the types and numbers of buildings, infrastructure, and critical facilities located in the jurisdiction.
    - A description of the potential dollar losses to the vulnerable structures identified and a description of the methods used to calculate the estimate.
    - A description of the vulnerability in terms of land use and development so that mitigation options can be considered in future land-use decisions.
- A hazard mitigation strategy describing:
    - Goals to reduce or avoid long-term vulnerabilities to the identified hazards.
    - A range of specific mitigation actions and projects to be considered, with particular emphasis on new and existing buildings and infrastructure.
    - An action plan identifying how the actions will be implemented and administered by the local jurisdiction. Prioritization must 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. For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA's approval of the plan.
    - Provisions for reviewing, monitoring and evaluating progress of the Plan's implementation. The Plan must also be updated at least every five years and reapproved.
- Adoption by the local governing body.
    - The Plan must include documentation that the local governing body has formally adopted it.

- In a multi-jurisdictional Plan, all participating local units of government seeking plan approval must individually adopt the Plan, with the exception of unincorporated units of government. Townships fall under the County's jurisdiction in this effort and are not required to adopt the Plan individually.

When a Plan is completed in draft form, the Ohio Emergency Management Agency performs an initial review and provides feedback so the Plan can be revised. The revised drafted plan is then sent to the Federal Emergency Management Agency for its review and comment. Any suggested changes to the Plan are then made. The Plan approved by Ohio Emergency Management and FEMA is subsequently adopted by the County Commissioners and the individual cities and villages as required before federal approval.

Resilient: The characteristic of an individual or society to recover after a disaster strike.

1.4.2 Previous Natural Hazard Mitigation Plans

Mitigation planning per the requirements of Disaster Mitigation Act of 2000 began in 2002 when Athens County and other local units of government collaborated in a planning effort to develop Natural Hazard Mitigation Plans. Five separate plans were adopted, starting in 2003, with the Village of Amesville. the City of Athens, the Village of Trimble, and Athens County adopting separate plans. The City of Nelsonville and the Villages of Albany, Buchtel, Chauncey, Coolville, Glouster, and Jacksonville adopted a multi-jurisdictional plan. All these Plans were approved by 2005 and are referred to as the 2005 Plans.

Each jurisdiction that prepared an individual Plan worked within its political boundaries. Mayors headed up a committee of council members, citizens, and business people to prepare the elements of their Plans. These planning groups designed the planning process, identified the scope of the Plan, reviewed the risk assessment, helped form and refine mitigation strategies, and assisted with the prioritization of objectives. Even before the Plans were finalized and officially approved, the benefits of a multijurisdictional approach became obvious. Working under the umbrella of one Plan eliminates inefficiencies, allows opportunity for collaboration, and keeps everyone involved.

With the spirit of cooperation and an interest in efficiency, an update to the original 2005 Plans was started in 2009. To seek support for updating the existing mitigation plans, the Athens County Regional Planning Commission and Emergency Management Agency focused on the resources needed to update the existing hazard mitigation plans. Essential steps included identifying, organizing and re-assembling members of the community as well as technical expertise required during the plan update process.

As a result, the Athens County Regional Planning Commission and Emergency Management Agency sought support and information from various jurisdictions, business, industry, non-profit organizations, other interested organizations and individuals. Obtaining the support of community and organizational leaders was the best foundation for the plan update effort. Pending federal approval, the County and its participating jurisdictions intended to formally adopt this Plan by passing a resolution or ordinance.

The Mitigation Planning Team was formed by notifying and assembling individuals and organizations that previously served on the team when the 2005 Plans were first drafted:

County Organizations
Athens County Commissioners
Athens County Regional Planning Commission
Economic Development Committee
Ohio State University Extension
Athens County Engineer
Floodplain Manager

The major employers, academia, non-profit organizations and other interested parties invited to participate were:

Major Employers
Diagnostic Hybrids Inc.
ED MAP Inc.
Rocky Boot Company
Sunpower Inc.
Wal-mart Stores Inc.

Colleges and Universities
Hocking College
Ohio University

Non-Profit Organizations
Federal Valley Watershed Group
Friends of the Hocking River (FOHR)
Hocking River Commission
Monday Creek Restoration Project
Raccoon Creek Partnership
Sunday Creek Watershed Group

Although representatives of these organizations were invited, none chose to participate.

The contiguous counties to Athens County were also invited to attend and participate. These counties are:

Ohio	West Virginia
Hocking County	Wood County
Meigs County	
Morgan County	
Perry County	
Vinton County	
Washington County	

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

As a result of assessing community support and inviting a comprehensive range of resources, the following team was assembled in 2009 to update the Athens County Natural Hazard Mitigation Plan:

ORGANIZATION
Southern Ohio Chapter of the Red Cross
Athens County Regional Planning Commission
City of Athens
Village of Amesville
Village of Buchtel
Athens County Engineer
Athens County Commissioners
Athens County EMA
Ohio State University Extension
Ohio University
Athens County 911
Athens City-County Health Department
City of Nelsonville

Additionally, each of the political jurisdictions were engaged as participants and given many chances to provide input to affect the plan's content. These opportunities were usually demonstrated during scheduled and special meetings, but also included conference calls, e-mail and correspondence by postal service. As a result, the jurisdictions' representatives presented the views of their communities during the update of the hazard analysis, risk assessment, and vulnerability analyses. For the mitigation strategy, the representatives examined and evaluated mitigation goals and objectives from the perspective of the jurisdiction and offered what actions may be taken. They also presented the status of each mitigation action from the 2005 plans. Below is a summary of each participating jurisdiction and their representative:

Participating Jurisdictions

COMMUNITY	Position / Title
Athens County	Commissioner
City of Athens	Mayor and Planner
City of Nelsonville	Code Director
Village of Buchtel	Mayor
Village of Albany	Mayor
Village of Glouster	Mayor
Village of Coolville	Mayor
Village of Jacksonville	Mayor
Village of Chauncey	Mayor
Village of Trimble	Mayor
Village of Amesville	Mayor

This planning effort took the form of a multi-jurisdictional plan based on what had been learned from the preparation of the 2005 Plans. A multi-jurisdictional approach:

- enables comprehensive approaches to mitigation of hazards that affect multiple jurisdictions;
- allows economies of scale by: leveraging individual capabilities; sharing costs and resources; avoids duplication of efforts; and
- imposes an external discipline on the process.

Surrounding jurisdictions were invited to participate in the planning process. Adjacent County EMA Directors and other county officials were invited to participate in the Natural Hazard Planning Committee, however, none chose to participate. Invitations were extended to Hocking, Meigs, Morgan, Perry, Vinton and Washington Counties in Ohio, as well as Wood County in West Virginia.

Engaging the Public

Public participation and input to the planning process was first announced through a press release to news media outlets. Copies were also available in the public libraries. Comment forms were available for the public to complete and to be picked up by Athens County representatives. Comments that were received by the public were accepted and implemented into the plan as appropriate. Throughout the plan development phase, the public was invited to attend and participate in Mitigation Planning Team meetings. Meeting locations, dates and times were made available to the public and announcements were posted at meeting locations. After the planning process was finished, the public had the opportunity to review and comment on the revised plan. The Plan was approved and adopted in 2014.

1.5 The Planning Process for 2019

1.5.1 Background

The methods of mitigation planning are constantly being updated as science provides better data, as analysis tools are improved, as people's opinions change, as we learn from our firsthand experiences with natural disasters, and as emergency management agencies refine techniques for review and evaluation. Based on review comments from previous planning efforts, this 2019 Plan attempts to do the following:

- Provide improved outreach opportunity with the use of two online surveys, one for the general public and one for key persons.
- Interact with individual jurisdictions on a more personal level by attending several council meetings to provide information and answer questions.
- Perform a thorough review of previous action items to ascertain progress and formulate new and improved approaches to mitigation.

Based upon the previous success with a multi-jurisdictional format, all local governments in the County decided to utilize this approach for the 2019 update. The Athens County Regional Planning Commission took the lead in organizing this effort. Using the multi-jurisdictional approach, the County is able to identify certain elements in this Plan that are common to all government units. These include overall process, common hazards, general goals, collaborative actions, and maintenance. Although this Plan was prepared using the multi-jurisdictional approach, it is important to note that not all areas of the county face the same natural hazards or to the same extent. Due to the unique topography, river systems, varied land cover and settlement patterns and past human activity, some natural hazards are a greater threat in certain areas. Different jurisdictions also have different levels of administrative and response capability. This Plan recognizes these differences and provides policies and guidelines that are unique for each jurisdiction. Some areas of the Plan that are unique to the individual cities and villages include geographically specific hazards, risks, and specific goals and actions. The County's geographic information system was utilized more than in previous hazard mitigation planning efforts. This allowed better planning that accommodates the unique attributes of each participating jurisdiction.

1.5.2 Organizing

An invitation to participate was mailed to the individuals and organizations listed in Appendix 2. Of these invitees 28 individuals elected to serve on the Athens County Multi-jurisdictional Natural Hazard Mitigation 2019 Plan Update (members indicated in appendix 2) Planning Committee. Efforts were made to include local, state, and federal governmental agencies, the private sector, Ohio University and Hocking College, and non-profit organizations. Mayors and a City Manager were all invited to represent their respective jurisdictions. An executive committee was formed to be a working group that could take care of the day-to-day needs of a large scale planning effort. The executive committee was comprised of the EMA Director, the Athens City Planner, an undergraduate intern with the City Planner, the Emergency Response Coordinator with the Athens City-County Health Department, the Planning Director for Athens County, and a planning consultant hired by Athens County.

1.5.3 Outreach

The NHMP approved in 2014 had relied on a public survey conducted in 2010. Therefore, in order to maximize public input and reflect current opinion, several online surveys were conducted. The first survey (survey and results in Appendix 3) was intended for the general public and was made available on the websites of the County Planner, the Health Department, the City of Athens, and the Emergency Management Agency. The second survey (survey and results in Appendix 4) was aimed at people in positions of authority and who have awareness of natural hazards through some aspect of their work. These individuals included the members of the NHMP

Committee and others who can speak for private businesses, business groups, non-profit organizations, and governmental organizations. This second survey was intended to fill any gaps that may exist in the representation on the full NHMP Committee, particularly with the private sector.

There were 129 responses to the public survey and 36 responses to the key person survey. Responses were insightful and every effort has been made to incorporate these results into the mitigation planning effort. A brief discussion of the results is therefore a part of Chapter 3, Mitigation Plan, and results are also included in a summary of results in Appendix 5.

In order to inform the public about the Plan update, a press release (see Appendix 6) was issued to three local newspapers and three radio stations. The newspapers were The Athens Messenger, The Athens News, and The Post. The radio stations were WATH, WOUB, and WYNO.

Additionally, a member of the 2019 Multi-Jurisdictional Natural Hazard Mitigation Plan Update Executive Planning Committee publicly presented at each municipality. These presentations discussed the plan's purpose, the update process, and created opportunity for dialog and public comment. Presentations included the proposed hazard ranking per municipality, requested information about public assistance received and or changes to critical facilities since the 2014 plan, discussed mitigation items and requested any and all proposed actions be submitted to the planning team, announced the public survey available and encouraged municipal outreach. Below is the schedule of municipal presentations.

Table 1 Athens County Natural Hazard Mitigation Plan Outreach by Jurisdiction

Jurisdictional Public Outreach Natural Hazard Mitigation 2019 Plan Update Executive Planning Committee Presentation		
Municipality	**Executive Planning Committee Member**	**Date of Public Meeting**
Village of Buchtel	Bob Eichenberg, Consultant	Village Council August 1, 2019
Village of Glouster	Bob Eichenberg, Consultant	Village Council August 5, 2019
Village of Trimble	Donald Gossel, EMA Director	Village Council August 12, 2019
Village of Coolville	Bob Eichenberg, Consultant	Village Council August 13, 2019
Village of Chauncey	Donald Gossel, EMA Director	Village Council August 20, 2019
Village of Chauncey	Jessie Powers, Co. Planning Director	Village Council September 18, 2019
Village of Jacksonville	Donald Gossel, EMA Director	Village Council August 21, 2019
Village of Albany	Donald Gossel, EMA Director	Village Council August 22, 2019
City of Athens	Paul Logue, City Planning Director	City Council August 26, 2019
City of Nelsonville	Jessie Powers, Co. Planning Director	City Council September 9, 2019
Village of Amesville	Donald Gossel, EMA Director	Village Council September 11, 2019

1.6 Relationship to other community, regional, and state plans

1.6.1 Community Overview and Capabilities by Jurisdiction

Community capability presents itself in the form of:

- Planning and regulatory
- Administrative and technical
- Financial
- Education and outreach

Due to their relatively small populations and a lack of industrial tax base, most of the jurisdictions participating with this Plan struggle to meet all the needs of their citizens. In spite of a lack of resources, all communities actively strive to keep citizens safe in the event of a natural hazard.

Some of the jurisdictions in Athens County utilize some form of comprehensive land use or master planning, zoning, and building codes to guide and control local building and land development. The purpose of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide.

Common to all jurisdictions is a police force. Of course, the level of sophistication varies by community with most villages relying on a village marshal working in cooperation with the Athens County Sheriff's Department. Ohio University, within the City of Athens, also has its own police force. Hocking College, within the City of Nelsonville, also has its own police force. The Ohio State Highway Patrol Post is located on the eastern end of the City of Athens and serves all of Athens County. The same can be said for fire departments with the Cities of Athens and Nelsonville having separate departments and the remainder of the incorporated and unincorporated areas relying on volunteer departments. Municipalities obtain utilities through various means and several operate their own utilities, thus indicating a higher level of sophistication.

Table 2 illustrates the various planning documents within the different jurisdictions. When coordinated with other community planning, a mitigation plan will yield the most cost-effective and efficient results, optimal use of limited resources, and also serve to protect lives, property and natural resources. As comprehensive plans are reviewed and updated, and after mitigation strategies are developed, mitigation policies and activities should be incorporated into any of the Plan elements.

Table 2 Planning and Land Use Documents by Jurisdiction

Table						
Municipality	**Zoning**	**Subdivision Regulations**	**Housing Codes**	**Comprehensive Plan**	**Land Use/ Land Development Ordinances**	**Flood Plain Ordinance**
Albany	X	X				
Amesville						X
Athens	X	X	X	X	X	X
Buchtel						X
Chauncey						X
Coolville						X
Glouster						X
Jacksonville						X
Nelsonville	X	X	X	X	X	X
Trimble						X
Unincorp. Athens County		X		X		X

Table 7 in Chapter 4 shows the current status of NFIP compliance for the various jurisdictions. A willingness to uphold the NFIP standards indicates a commitment and capability to enforce planning law and to think to the future. Villages do not have the administrative capabilities of the cities or county and therefore must rely on elected officials and employees who have many other responsibilities to enforce the rules that go with being NFIP compliant. Several municipalities and unincorporated areas have administered mitigation projects, thus showing a higher level of capacity. Those with flood and landslide mitigation capacity include Athens County, Amesville Village, Athens City, Glouster Village, and Trimble Village. Knowledge and understanding was gained from the mitigation program implementation.

1.6.1.1 Albany

The Village of Albany, located in Lee and Alexander Townships, is the only village in Athens County to adopt zoning. This was a large and admirable step for a small municipality and shows the ability of the Village to administer a land use process that will provide for a better future for its residents. The Village has its own wastewater system and buys water in bulk from the Leax Water District. The Village is the only jurisdiction that does not have any mapped floodplain area within its boundary. Albany employs a village marshal and within its borders is the Albany volunteer fire department.

1.6.1.2 Amesville

The Village of Amesville is located on Federal Creek in Ames Township and employs a village marshal. The Village has a history of flooding and has been a strong advocate for NFIP compliance and became involved in an acquisition, elevation, and dry floodproofing program that has resulted in the removal or improvement of many floodprone properties in the Village.

1.6.1.3 Athens City

The City of Athens has a number of professional staff that make it the most capable municipality for coping with natural hazards as they arise. The City employs a full time Mayor, a Service-Safety Director and Assistant Director, a City Planner, a City Engineer and Assistant Engineer, a police chief, a fire chief, and a Code Director with a full-time staff.

The Hocking Conservancy District operates within the City limits. The Conservancy is responsible for maintenance of the flood control project that was built in the early 1970's to control the frequent flooding that had occurred throughout the decades, but particularly in the 1960's when Ohio University sustained a heightened level of property damage. The Hocking River was channelized through the City as a result. Funds for maintenance are paid from an assessment of properties that benefit from the flood control. The majority of the fund is paid by Ohio University.

In December 2009 the City of Athens adopted a new version of Athens City Code Title 25, Flood Damage Prevention. The stated purposes of Title 25 are to protect human life and health; minimize expenditure of public money for costly flood control projects; minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; minimize prolonged business interruptions; minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, and sewer lines, streets and bridges located in areas of special flood hazard; help maintain a stable tax base by providing for the proper use and development of areas of special flood hazard so as to protect property and minimize future flood blight areas; ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; minimize the impact of development on adjacent properties within and near the flood prone areas; ensure that the flood storage and conveyance functions of the floodplain are maintained; minimize the impact of development on the natural, beneficial values of the floodplain; prevent floodplain uses that are either hazardous or environmentally incompatible; and meet community participation requirements of the National Flood Insurance Program.

To draft the new ordinance, an ad hoc committee that included local developers, engineers, university officials, planners, and business interests was convened in 2008. This committee was tasked with drafting a new ordinance that was both compliant with Athens participation in the NFIP and that adopted higher standards with the goal of reducing future damage. In order to reduce future damage, the city's ordinance includes a series of higher standards that exceed the minimum standards of the NFIP. These higher standards include requirements for compensatory storage in the 50 and 20-year floodplains, cumulative accounting of substantial damage and improvements, and requirements that critical facilities not be located in the 20-year floodplain.

Compensatory Storage

The City of Athens hired a local professional engineer to map the boundaries of both the 50-year and 20-year floodplains. This mapping was done utilizing hydraulic and hydrologic study methods that are consistent with Army Corps of Engineer modeling methodologies. Once the 50 and 20-year floodplains were mapped, the city was able to adopt compensatory storage requirements that put limits on the amount of fill dirt that can be imported into these areas without providing on

site water storage areas of equal amounts. This requirement exceeds NFIP regulations and is intended to reduce the amount of fill imported into the floodplain and make property owners responsible for the impacts of flooding on their property, rather than making greater impacts on other land owners.

Substantial Improvements

Many structures in the City of Athens were built prior to the adoption of a flood damage prevention ordinance and issuance of FIRM maps in 1980. NFIP guidelines permit these structures to remain non-compliant unless the property owner wishes to improve a structure to the extent that the cost of improvements exceeds 50% of the structure's value. The City of Athens higher standard for substantial improvements extends the 50% threshold to a rolling 5-year basis that is tracked through permitting. This requirement means that if a series of improvements over a 5-year period exceed 50% of the structure's value then it must come into compliance.

Critical Facilities

New critical facilities are prohibited on the 5% annual chance (20-year) floodplain. Existing facilities are allowed to perform any maintenance necessary to continue operation, but are prohibited from expanding unless the facility has direct access to a driveway or roadway whose surface elevation is not less than the flood protection elevation and such escape route leads directly out of the floodplain area.

1.6.1.4 Athens County Unincorporated

The unincorporated portion of Athens County is overseen by the Athens County Commissioners. The Commissioners have responsibility for all residents, including in municipalities, however the municipalities exercise direct control in their jurisdictions through the Mayor/Council form of government. No unincorporated regions of the County are zoned with exception of floodplain zoning. A portion of an unincorporated area known as The Plains is being considered for zoning. The Athens Township Trustees appointed a 5-member Zoning Commission to prepare a map and zoning resolution for consideration by voters in the November 2020 election. The County actively enforces its floodplain regulations through the office of the County Planner. The County Planning Director reports to the County Commissioners and an active Regional Planning Commission with broad representation. In addition to floodplain management, the Planning Director oversees subdivision regulations, comprehensive plan updates, and a variety of other planning initiatives.

Athens County employs a County Engineer, a County Sheriff, a 9-1-1 Coordinator, an Emergency Management Director, and a GIS Coordinator, all of whom are critical figures with mitigation planning. The Athens City-County Health Department also employs an Emergency Response Coordinator.

Athens County relies on a variety of providers for all utilities. While American Electric Power provides most of the electricity, there are several rural electric cooperatives in operation. Most of the County is rural and unsewered. Plans are underway for the City of Nelsonville to construct a new wastewater treatment plant that will be regional in scope. It will pick up currently unsewered

areas in York Township, northern Athens County. Potable water is delivered by several rural water districts.

The current Athens County Comprehensive Plan contains some elements which include principles of natural hazard mitigation planning. These should be strengthened in the Comprehensive Plan update. The Comprehensive Plan provided the opportunity for mapping of critical facilities, including schools and shelters. The chapter on Land Use discusses proper site planning that takes natural hazards into account. To strengthen Plan connectivity, natural hazards should be considered in more detail in the chapters on Transportation, Economic Development, Utilities and Infrastructure, Housing, Heritage, and Community Facilities. The Comprehensive Plan discussed the problem of invasive species. Therefore, the 2019 NHMP recognizes this problem by listing it as one of the natural hazards in the Plan.

Athens County, through the County Commissioner's office, participated with a floodplain mitigation project that included acquisition and dry floodproofing. Athens County, through the York Township Trustees, participated with another mitigation program involving acquisition.

1.6.1.5 Buchtel

The Village of Buchtel employs a village marshal and a village administrator. It obtains its potable water and sanitary sewer service from the City of Nelsonville, its neighbor to the west.

The Village of Buchtel is located on Snow Fork, a branch of Monday Creek. A lack of funding has prevented FEMA from providing a detailed Flood Insurance Rate Map and the Village only has approximate A-zones. For years it was generally assumed that the Village's flood mapping was inadequate by showing too small an area as floodplain. The new Flood Insurance Rate Maps for the Village (effective date 12/18/2009) now show a much larger area in the floodplain and are being questioned as perhaps including too large an area. Some investigation is underway locally to see if there may have been a modeling error with the A-zone elevations for Snow Fork.

1.6.1.6 Chauncey

The Village of Chauncey employs a village administrator. The Village has its own public water and sanitary sewer systems. The Village has a history of flood-related problems and repetitive losses. The Village is not in compliance with the NFIP. A number of property owners have made property improvements that are in violation of NFIP standards. There has not been any resolution for most of these properties. Production of a structure and value list and mapping these properties is an activity in the County's five year natural hazard mitigation plan.

1.6.1.7 Coolville

The Village of Coolville employs a village marshal. It purchases bulk water from the Little Hocking Water District and recently had its own sewer system constructed. The Village has only a small portion of its land in the 1% chance floodplain and no structures in the floodplain and chooses not to participate in the NFIP.

1.6.1.8 Glouster

The Village of Glouster is the largest village in Athens County and has its own police force. It employs a full time village administrator. It purchases bulk water from the Sunday Creek Water District and is part of the wastewater treatment system that serves Glouster, Trimble, Jacksonville, and surrounding areas. Glouster is unique among municipalities in that it has its own electric company, purchasing bulk power and distributing it on lines that it owns. The Village has been active with its floodplain management and has participated with a mitigation buyout program.

1.6.1.9 Jacksonville

The Village of Jacksonville is considering once again employing a village marshal. It purchases bulk water from the Sunday Creek Water District and is part of the wastewater treatment system that serves Glouster, Trimble, Jacksonville, and surrounding areas.

1.6.1.10 Nelsonville

The City of Nelsonville is the only municipality in Athens County that operates with the City Manager form of government. The City employs a full time City Manager, police chief, fire chief, and code officer. Nelsonville has its own water and wastewater treatment plants. Nelsonville has actively enforced its floodplain regulations and recently participated with a flood mitigation program involving acquisition of floodprone structures.

Through updating their land use codes, the City of Nelsonville has made strides to provide additional protection against natural hazards for its residents. Nelsonville adopted higher than minimum standards for floodplain regulations with the passage of Ordinance 55-09, one foot freeboard and no inoperable vehicles in the floodway. See below for these standards:

Residential Structures

New construction and substantial improvement of any residential structure, including manufactured homes, shall have the lowest floor, including basement, elevated to or above the flood protection elevation. “Flood Protection Elevation (FPE)”: The Flood Protection Elevation is the base flood elevation plus one (1) foot of freeboard. In areas where no base flood elevations exist from any authoritative source, the flood protection elevation can be historical flood elevations, or base flood elevations determined and/or approved by the floodplain administrator.

Recreational Vehicles

All other vehicles stored in the open or in an enclosed building below the base flood elevation shall be operable and capable of independent propulsion in the event of flooding. Junk, inoperable and/or unlicensed motor vehicles or recreational vehicles shall be specifically prohibited from being located, stored or permitted to remain in the floodway.

Additional ordinances and regulations regarding mitigation in Nelsonville can be found in Appendix 7.

1.6.1.11 Trimble

The Village of Trimble recently participated with a flood mitigation program involving acquisition of floodprone structures and is partnering with the Athens County Land Reutilization Corporation

or Land Bank for demolition of dilapidated structures on the properties. It purchases bulk water from the Sunday Creek Water District and is part of the wastewater treatment system that serves Glouster, Trimble, Jacksonville, and surrounding areas. The Village has been active with its floodplain management and has participated with a mitigation buyout programs over the years.

1.6.2 Buckeye Hills Regional Council

The regional planning agency for southeastern Ohio is the Buckeye Hills Regional Council. According to its website:

"Buckeye Hills Regional Council is a council of governments dedicated to improving the lives of residents in southeast Ohio."

By working collaboratively with elected officials across Athens, Hocking, Meigs, Monroe, Morgan, Noble, Perry, and Washington counties, we grow strong communities through our five divisions: Aging & Disability, Community Development, Mapping & Data, Population Health, and Transportation Planning.
We are designated as:

- an Area Agency on Aging
- the District 18 Liaison for the Ohio Public Works Commission
- an Economic Development District
- a Local Development District
- a Regional Transportation Planning Organization
- the Southeast Ohio Aging & Disability Resource Network"

While no program at Buckeye Hills Regional Council specifically deals with hazard mitigation planning, all programs are interrelated with local mitigation planning. The five divisions assist local governments with planning efforts, provide mapping and data which can include hazards mapping and can work to improve critical facilities, particularly transportation and environmental infrastructure. As one of Ohio's Area Agencies on Aging, the Regional Council is in a unique position to provide information on a vulnerable population during hazard events. Emergency response systems are listed for each county in southeastern Ohio. All nursing homes and other housing locations for elders are listed.

Buckeye Hills Regional Council's Development Director sits on the Athens County NHMP 2019 Committee and will offer input and advice throughout the planning process. Because most natural hazard events go beyond the geographic boundaries of individual counties, regional cooperation is imperative and needs to be strengthened. Additionally, Buckeye Hills provided maps of vulnerable populations living within Athens County, located in Appendix 8. Vulnerable populations are often the most heavily impacted by natural hazards and include persons with disabilities, those living in poverty, zero car households, minorities, and seniors.

1.6.3 State of Ohio Hazard Mitigation Plan 2019

The State of Ohio has prepared and adopted a Hazard Mitigation Plan. The Plan was last updated in 2019. This plan is in accordance with the Disaster Mitigation Act of 2000 which requires that a state must update its hazard mitigation plan every five years. Currently, the State of Ohio Hazard Mitigation Plan is considered a "Enhanced Plan" that also meets the Severe Repetitive Loss Program addendum requirements. According to the state, this means:

> Ohio communities are eligible for the Hazard Mitigation Grant Program which makes available an amount equal to 20% of the Federal disaster costs for mitigation projects.
>
> Ohio communities are eligible for the Public Assistance (PA) program after a Federal disaster declaration. PA funds are utilized by communities to reimburse for certain costs incurred as a result of a disaster.
>
> Ohio communities receive a more favorable cost share under the Severe Repetitive Loss and Flood Mitigation Assistance Programs than would otherwise be available.

The State of Ohio Hazard Mitigation Plan (SOHMP) identifies how Ohio has successfully implemented many hazard mitigation programs to improve the state's resilience in the face of future disasters, and identifies work remaining to be done. An overall purpose of the state's plan is to provide a framework for actions by state agencies, local governments, business and industry, and citizens to ensure that adequate mitigation planning activities are being completed, that hazard mitigation actions are based on factual, scientific information, and that mitigation actions are not only appropriate for the particular situation, but are also wise investments of taxpayer funds.

For planning purposes, the state divides itself into three planning regions and Athens County is in Region 3, the Appalachian region of Ohio.

Chapter 2 - Hazards Analysis and Risk Assessment

2.1 Hazards Background

With only a few exceptions, the various natural hazards that might impact the County of Athens at some future time have been the same natural hazards that have historically impacted the County. Barring a major change in weather patterns, extreme weather events will likely occur in a similar fashion as the historic record indicates. There is a lively debate in scientific and policy-making communities about the causes and impacts of global warming. There is data that indicates changes are happening in our weather patterns. Trends seem to indicate more severe or variable weather in terms of rainfall intensity and amounts, wind speed, and temperatures which appear to be on the rise in southeastern Ohio.

A new hazard is now listed for Athens County. The hazard is invasive species and is prompted by its listing in the State Plan Draft for 2019. Invasive species were recognized as a problem in the Athens County Comprehensive Land Use Plan completed in 2010. The problem has only worsened over the past ten years, sometimes with amazing speed. The Emerald Ash Borer was not in Athens County ten years ago and today most Ash Trees in Athens County are dead as a result of its infestation.

When a hazard assessment is performed, it is important to realize that unique and extreme environmental conditions are necessary to create extreme hazards. For instance, widespread flooding conditions are the result of strong low pressure weather systems that bring in large quantities of moist air. The flooding can be made worse if the rain occurs on already frozen ground during a rapid period of snow melt. Occasionally several strong weather systems will pass through an area within days of each other and if each brings large rainfall amounts, the flooding can be made much worse. On a similar note, while highly unlikely in southeastern Ohio, should an earthquake occur when our slip prone soils are already highly saturated, we could be faced with landslides that are larger and more frequent than those to which we are accustomed.

Generally speaking, the more severe or extreme the natural event, the less likely its occurrence because of the unique circumstances required for that extreme event to happen. While any scale tornado in Athens County is rare, a truly large and destructive tornado has never happened and its chances of happening are extremely remote due to topography and weather patterns. While flooding in the County is not uncommon, large floods that cause significant damage are rare and the largest floods that can cause catastrophic damage are extremely rare. We are working with chance events however, large floods can occur in close sequence. This happened to the Village of Amesville, in northeastern Athens County, when a record flood in 1997 was followed by a record flood in 1998 that measured six feet higher than the 1997 flood. Climate change may be creating a situation in which more severe and intense storms lead to results unlike those we have experienced.

With the exception of earthquakes, natural hazards are associated with extreme events of weather. Even landslides require moisture and are more likely to occur after heavy rainfall events. Our climate has much to do with the type and severity of hazards that we face. An excellent book, Thunder in the Heartland, describes Ohio's climate and weather extremes as follows:

"…Ohio is in the middle latitudes, at low elevations, in the eastern interior of North America, and south of the Great Lakes. This location in the Heartland of North America gives Ohio a climate with four distinct seasons, large seasonal temperature ranges, frequent precipitation, and the wide variety of weather so typical of the middle latitudes.

Severe and extreme weather of various sorts are also typical of the Heartland. Temperatures in Ohio have ranged from 113 degrees to nearly – 40 degrees. Frosts have blackened corn in July and shirtsleeves weather has prevailed at Christmas. Blizzards have isolated communities for days and flood waters have surged twenty feet deep through the main streets of Ohio's cities….Drought has withered crops, hail the size of baseballs has punched through roofs of homes, and winds have blown lake freighters through bridges, trains off tracks, and homes onto sleeping occupants."[3]

An initial step with hazard identification is the production of a list of the natural hazards that could occur in Athens County. The list of hazards below, was created through input from the Natural Hazard Mitigation Committee, local public input, research from previous natural hazard disaster events and declarations, and current floodplain maps and risks assessments. The list is alphabetical and not in any particular order of likelihood of occurrence or severity. Pestilence was considered but not included in the list. Pestilence is a natural hazard but the Ohio Department of Health is so equipped to deal with such hazards that pestilence was not included in the scope of this Plan. Also ruled out because environmental conditions make the hazard's occurrence impossible are avalanche, coastal erosion, coastal storm, hurricane, tsunami, and volcano. Dam failure is included, even though it is an event caused by failure of a manmade structure, because such failure will most likely occur during or after a flood event. Due to its growing impact on Athens County, invasive species was added to the list for this update.

Dam Failure
Drought
Earthquake
Extreme Cold
Extreme Heat
Flooding (Flash)
Flooding (Riverine)
Freezing Rain/Ice Storm
Hail
High Winds
Invasive Species
Landslide/Rockfall
Land Subsidence (mines)
Thunderstorms/Lightning
Tornado
Wildfire
Winter Storms/Blizzard

[3] Schmidlin, Thomas W. and Jeanne Appelhans Schmidlin, *Thunder in the Heartland*, The Kent State University Press, Kent, Ohio, 1996, p.1.

2.2 Natural Hazard Profiles

The second step with hazard identification is profiling the hazards. Profiling uses historic documentation and currently available information and technology to assess the comparative degree of risk between the various hazards. The spreadsheet in Appendix 9 shows recent information about natural hazards and helps to organize information so that the hazards that pose the greatest risk can be given the most attention in the Plan Mapping is critical for mitigation planning and the Athens County GIS data was utilized to create custom hazard maps for each jurisdiction. These are located later in this chapter.

Each hazard identified by the Planning Committee will be described below. Basic information discussed with each hazard is location, extent (magnitude/strength), general likelihood, and prior occurrences. Probability of a future occurrence was determined for Athens County per jurisdiction and is indicated in each jurisdiction section 2.3.3- 2.3.13.

2.2.1 Dam/Levee Failure

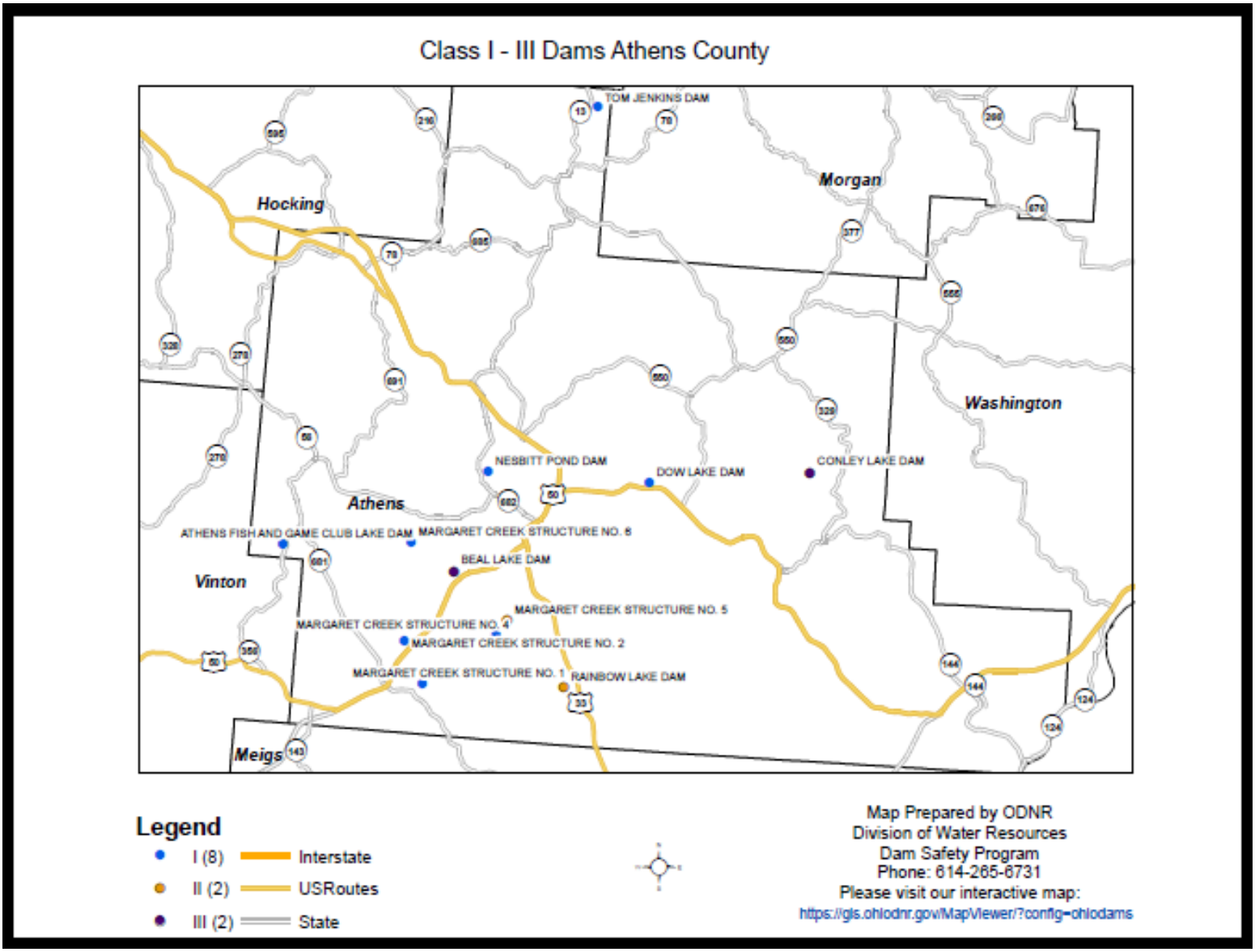
Dam failure is defined by the Army Corps of Engineers as "any condition resulting in the uncontrolled release of water other than over or through a spillway or outlet works."[4] While dam failure is an unlikely event it is still possible and any natural hazard plan needs to consider it. The SOHMP 2019 Draft Plan lists 8 reasons dams can fail. Dam failures can result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost materials from the cross section of the dam and abutments, or maintain gates, valves, and other operational components;
- Improper design including the use of improper construction materials and construction practices;
- Improper operations, including the failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway that release water to a downstream dam;
- Earthquakes, which typically cause longitudinal cracks at the tops of the embankments that can weaken entire structures.

Dam Failure: Any condition resulting in the uncontrolled release of water other than over or through a spillway or outlet works.

[4] Burr Oak Inundation Plan and Map, U.S. Army Corps of Engineers

Dams are designed with emergency spillways that allow for a controlled overtopping of the structure. In this way damage to the structure is non-existent or greatly reduced. However, should a dam fail, the damage below it can be far-reaching and severe. Dam and levee failure are location specific hazards in that those assets within the inundation area will be most affected.



Map 3 Class I-III Dams of Athens County

The Ohio Dam Safety Program rates dams as Class I-IV.

Class I:
Dams having a total storage volume greater than five thousand acre-feet or a height of greater than sixty feet shall be placed in class I. A dam shall be placed in class I when sudden failure of the dam would result in one of the following conditions.

- Probable loss of human life
- Structural collapse of one residence or one commercial or industrial business

Athens County, Ohio Class I Dam Inventory	
Dam Name	**EAP in place as of February 2020**
Nesbitt Pond Dam	No
Tom Jenkins Dam (Burr Oak Lake Dam)	Yes
Dow Lake Dam (Strouds Run Lake Dam)	Yes
Athens Fish and Game Club Dam	No
Margret Creek Structure No. 1 (Meeks Lake Dam)	Yes
Margret Creek Structure No. 2 (Lake Snowden Dam)	No
Margret Creek Structure No. 4 (Texas Eastern Dam)	Yes
Margret Creek Structure No. 6 (Fox Lake Dam)	Yes

Table 3 Athens County, OH Class I Dam Inventory

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

- Disruption of a public water supply or wastewater treatment facility, release of health hazardous industrial or commercial waste, or other health hazards
- Flooding of residential, commercial, industrial, or publicly owned structures
- Flooding of high-value property
- Damage or disruption to major roads including but not limited to interstate and state highways, and the only access to residential or other critical areas such as hospitals, nursing homes, or correctional facilities as determined by the chief
- Damage or disruption to railroads or public utilities
- Damage to downstream class I, II or III dams or levees, or other dams or levees of high value. Damage to dams or levees can include, but is not limited to, overtopping of the structure

Class III:
Dams having a total storage volume greater than fifty acre-feet or a height of greater than twenty-five feet shall be placed in class III. A dam shall be placed in class III when sudden failure of the dam would result in at least one of the following conditions, but loss of human life is not probable.

- Property losses including but not limited to rural buildings not otherwise described in paragraph (A) of this rule, and class IV dams and levees not otherwise listed as high-value property in paragraph (A) of this rule. At the request of the dam owner, the chief may exempt dams from the criterion of this paragraph if the dam owner owns the potentially affected property
- Damage or disruption to local roads including but not limited to roads not otherwise listed as major roads in paragraph (A) of this rule

Class IV:
Dams which are twenty-five feet or less in height and have a total storage volume of fifty acre-feet or less may be placed in class IV. When sudden failure of the dam would result in property losses restricted mainly to the dam and rural lands, and loss of human life is not probable, the dam may be placed in class IV. Class IV dams are exempt from the permit requirements of section

1521.06 of the Revised Code pursuant to paragraph (C) of rule 1501:21-19-01 of the Administrative Code.

Map 3 shows the locations of Class I-III dams in Athens County. Five of the twelve Class I-III dams are privately owned.

Acre-foot: An amount of water one acre in extent and one foot deep or approximately 326,000 gallons.

The SOHMP 2019 also states, "In terms of emergency management, dam failures are categorized as either sunny day failures or rainy day failures. Sunny day failures occur during a non- flooding situation with the reservoir near normal pool level. Rainy day failures usually involve periods of rainfall and flooding, and can exacerbate inadequate spillway capacity. Improper design of a spillway or operation of gates during high flows can lead to excessive water pressure and subsequent failure as well. Even though both types of failures can be disastrous, it can be assumed that a sunny day failure would be more catastrophic due to its unanticipated occurrence and the lack of time to warn residents downstream."

Inundation maps show the areas impacted if a dam should fail. Inundation maps are produced with three scenarios: 1. A sunny day failure as described above, 2. A failure during the occurrence of a 1%-chance flood, and 3. A failure during the occurrence of the probable maximum flood.

Probable Maximum Flood: Flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that is reasonably possible in the drainage basin.

There are several impounded water bodies in Athens County that could have an effect on downstream areas were one or several of the dams holding this water to fail. The large water bodies with class 1 dams are Burr Oak Lake, Dow Lake, Lake Snowden, Meeks Lake and Fox Lake. The Margaret Creek Conservancy lakes are Meeks Lake, Lake Snowden, site number 4, site number 5, and Fox Lake. Of the Margret Creek Conservancy lakes or sites only site number 5 is not classified as a class 1 dam. Other class 1 dams in Athens County are the Athens Fish and Game Club Lake Dam and the Nesbitt Pond Dam. The Burr Oak dam is managed by the

Corps of Engineers, the Dow Lake dam is managed by the Ohio Department of Natural Resources, Division of Water Dam Safety Section, the Lake Snowden dam is managed by Hocking College, the Game Club, Nesbitt Pond, and Rainbow Lake dams are private, and the Margaret Creek Conservancy District manages the remaining four lakes. The Margaret Creek Conservancy District is managed by the Hocking Conservancy District and both are organized as Conservancy Districts under Ohio law.

Burr Oak Lake, impounded by the Tom Jenkins Dam located in Athens County, Dow Lake, and Lake Snowden in southwestern Athens County could have serious effects on downstream areas should the dams fail. These dams are rated Class I. According to the ODNR, dams in Ohio have been divided into four classes; I, II, III, and IV based upon downstream threat potential. The failure of a class I dam will likely result in loss of life and pose a serious hazard to health and property in the inundation area. A class I dam has a volume capacity over five thousand acre-feet or a height greater than sixty feet. Exempt from Ohio's regulatory authority are dams less than six feet in height regardless of storage volume, dams less than 10 feet in height with not more than 50 acre-feet of storage, or not more than 15 acre-feet of total storage regardless of height.

During a heavy rainfall event in March 1997, water flowed over emergency spillways at Meeks Lake, site #4, and site #5. Subsequent to the 1997 floods, the dam at Lake Snowden was elevated to what is considered a "100% level". According to Scott Jerome, a planning engineer with the Natural Resource Conservation Service, a dam at this level is capable of holding 24"-28" of rainfall in an eight hour period. This is more than twice the amount of rainfall that has historically fallen in the Athens area.

For comparison, the 1% chance flood at this cross section is 642 feet, so a dam failure on Burr Oak Lake when the spillway is already flowing at capacity could bring an additional five feet of water to the City 24 hrs. 30 mins. after the failure.

Inundation maps were produced for the Margaret Creek Conservancy lakes, Dow Lake, and for Burr Oak Lake. The inundation map for Margaret Creek does not contain flood elevations but a comparison between it and the FEMA 1% chance flood map indicates that the inundation area affected is significantly larger than the 1% chance floodplain along some reaches of the Creek. The Burr Oak Flood Emergency Plan for the Tom Jenkins Dam calculated floodwater arrival times, peak flood times, and water elevations at various cross sections on the Hocking River from Nelsonville to Guysville in the events of a spillway design flood and dam failure. The spillway design flood is defined by the Corps of Engineers as "the maximum flow which a dam's spillway is designed to pass safely." At cross section #36, the location of the Convocation Center on Ohio University's campus, the following data was provided:

Table 4 Excerpt Burr Oak Flood Emergency Plan for Tom Jenkins Dam

	Spillway Design Flood	
	Without Dam Failure	With Dam Failure
Arrival Time	30 hrs. 00 mins.	11 hrs. 15 mins.
Peak Flood Tim	45 hrs. 30 mins	24 hrs. 30 mins.
Peak Elevation	638.0 feet	647.0 feet

The disastrous effects of a dam failure are obvious when analyzing the peak elevations below the dam and explain why dam inspection and maintenance is such a big priority in Ohio. With the exception of the Tom Jenkins Dam, ODNR has inspection responsibilities for the Class I-III dams. ODNR inspected The Athens Fish and Game Club Dam in 2016 and the remaining Class I-III dams in 2017. A detailed repair was made to the Dow Lake Dam in 2014.

The Hocking Conservancy District manages a levee through the City of Athens. It is responsible for approximately five miles of a flood control project built by the Corps of Engineers in the early 1970's. The Conservancy District receives ongoing maintenance expertise from the Corps. The portion that flows through Ohio University lands between the Richland Avenue Bridge and the US Rt. 33 Bridge has three gated pumping stations that will operate during extremely high flows. The levee has never been overtopped in this area but residents and officials need to realize it is not designed for even the 1% chance flood and climate change may test its limits. Ongoing education and emergency plans need to be continually updated and refreshed.

Based on diligent inspection by the state and federal government and their being no evidence of significant past dam failure, the likelihood of a future dam failure is rare. However, based upon past flood events and that the flood control levee through the City of Athens is not designed for a 1% chance flood, it is likely that it will be overtopped by flood waters.

2.2.2 Drought

Drought is a normal, recurrent feature of climate. In general, a drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector. This deficiency is often the result of a persistent high pressure that lowers humidity, precipitation and cloud cover and blocks moisture from entering the region. Droughts are slow, coming without warning over several weeks. They can affect vegetation, crops, and the water supply and can contribute to extreme heat events and wildfires.

The Palmer Drought Severity Index (PDSI) is a soil moisture algorithm used to measure the drought intensity. The PDSI was developed by W.C.Palmer in 1965. Many U.S. government agencies and states rely on the PDSI to trigger drought relief programs and responses. Most of the agency-based actions within the Ohio Emergency Operation Plan's Drought Incident Annex are triggered by the PDSI. The classifications run from a rating of 4.0 or greater as extremely wet to a rating of -4.0 or less as extreme drought. There are a total of 11 classifications with this system.

The SOHMP 2019 states, "Within the State of Ohio, drought is equally as possible to occur in one section of the state as it is in another. The effects of drought within the state vary though, based on land use (agricultural production as opposed to urban areas), economy (dependence on drought-impacted business such as farming), geology (presence of an aquifer or ground structure that limits well production), and water source (public water supply, private well, or cistern). There are four primary types of drought: agricultural, hydrological, meteorological, and socioeconomic. The State of Ohio is most often affected by agricultural and hydrological types of drought, and is often affected by both simultaneously."

Predicting drought is difficult because it relies on forecasting so many variables, primarily temperature and precipitation. Drought in Ohio has been recorded since 1895 using the Palmer Hydrological Drought Index (PHDI). Since then, six great Ohio droughts have occurred in 1895, 1930-31, 1934, 1953-54, 1963-64, and 1988.[5]

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, Athens County was one of those designated counties.

A review of NCDC Palmer drought indices for 2014-February 2018 in Ohio indicates that drought was not an issue. 2016 was the driest year during this period with the index dropping below -1.0 for three of the months. Additional precipitation data that is available for Athens County comes through the Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS). According to its website, "CoCoRaHS (pronounced KO-ko-rozz) is a grassroots volunteer network of backyard weather observers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow) in their local communities. By using low-cost measurement tools, stressing training and education, and utilizing an interactive Web-site, our aim is to provide the highest quality data for natural resource, education and research applications." Precipitation data gathered in the City of Athens by the CoCoRaHS County Coordinator for the period 2010-2018 was:

Table 5 Community Collaborative Rain, Hail, and Snow Network

Year	*Precipitation Amount*	**Year**	*Precipitation Amount*
2010	45.42 in.	2015	45.79 in.
2011	48.00 in.	2016	34.05 in.
2012	40.76 in.	2017	39.13 in.
2013	39.51 in.	2018	53.37 in.
2014	33.77 in.		

[5] Schmidlin, p. 147.

The precipitation data gathered by the CoCoRaHS Coordinator for the period 1/1/2019 to 9/4/2019 is 32.85 inches. The very wet year of 2018 had 53.37 inches of precipitation, so 2019 appears to be wetter than average so far. The NCDC Palmer Hydrological Drought Index for June 2019 showed southeastern Ohio to be extremely moist with an index of +4.00 and above.

Drought will affect all areas of Athens County. Based upon historical records of drought, it is likely that a drought will occur over the span of several decades and likely that a severe drought will occur when a long time span of many decades is assumed.

Drought: A deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.

2.2.3 Earthquake

Athens County has a relatively low susceptibility to severe and damaging earthquakes. Both a low Peak Ground Acceleration (PGA) and only a single recorded earthquake occurring in 1886 characterize it. According to the United States Geological Survey, Athens County has Peak Ground Accelerations (PGA) ranging from approximately 2.53 %g to approximately 2.70 %g with a 10% chance of being exceeded over 50 years. The PGA is a measurement of the strength of ground movements and is used to determine the maximum severity of an earthquake. The PGA for Athens County means that the maximum severity of an earthquake will be relatively small (2.53 %g – 2.70 %g) with a 10 % chance of an earthquake exceeding this severity over 50 years. The USGS Peak Acceleration map also shows Athens County to have dark gray shading, coinciding with a PGA between 2 and 3%g with 10% chance of exceedance in 50 years.

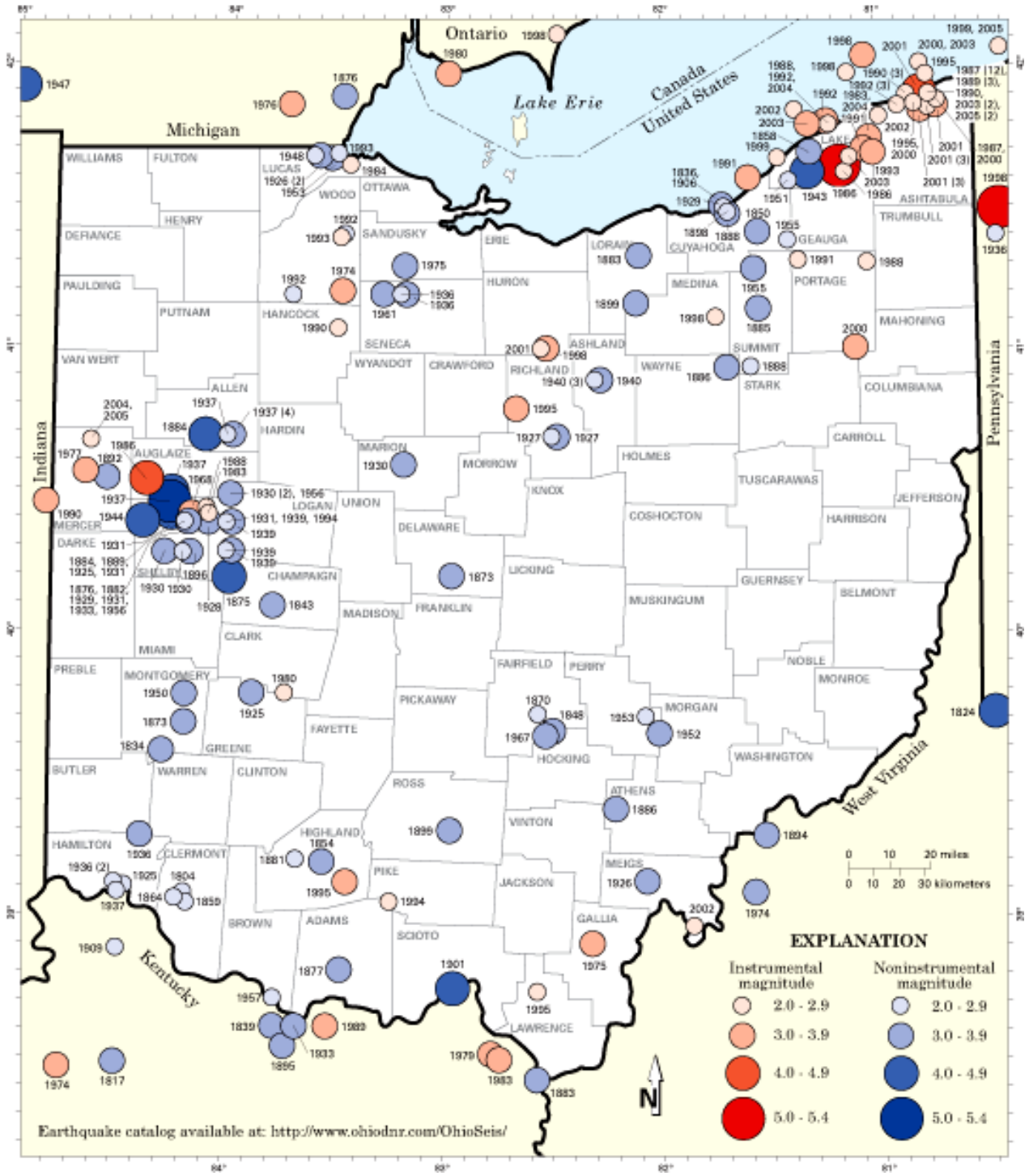
Athens County's low PGA is consistent with the history of earthquakes in the county.

Geo Facts, by the Ohio Department of Natural Resources, Division of Geological Survey identifies Southeast Ohio as "particularly susceptible to seismic activity." Ten earthquakes have occurred in the area, with minor to moderate damage occurring in Scioto, Meigs, and Perry County. A map also identifies an Athens County earthquake as occurring in 1886. It shows the earthquake's intensity to be between IV and VI on the Modified Mercalli Scale. A level VI earthquake, the most extreme possible level of the 1886 earthquake is characterized as follows: "Felt by all, many frightened and run outdoors; falling plaster and chimneys, damage small."

Earthquake: An earthquake is the shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves.

According to the National Climactic Data Center earthquake hazard map, there were no significant earthquake events in recorded history centered near Athens County. The Significant Earthquake Database contains information on destructive earthquakes from 2150 B.C. to the present that meet at least one of the following criteria: Moderate damage (approximately $1 million or more), 10 or more deaths, Magnitude 7.5 or greater, Modified Mercalli Intensity X or greater, or the earthquake generated a tsunami.

Map 4 Earthquake Events of Ohio

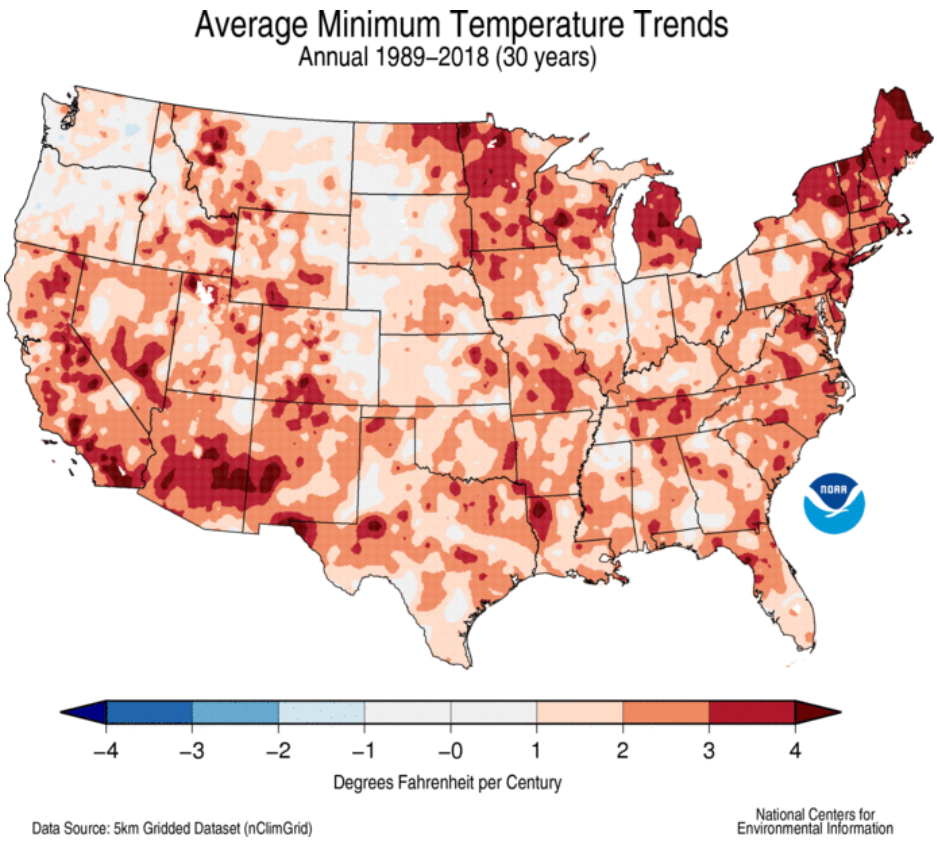


The earthquake hazard affects all areas of Athens County. Based upon past occurrences of earthquakes, it is unlikely that Athens County will experience a large and damaging earthquake.

2.2.4 Extreme Cold

The lowest temperatures in the wintertime come with arctic air masses from Canada. The coldest temperatures occur after a low pressure storm system has passed and left a fresh covering of snow. Arctic air follows as a high pressure system and centers itself in the Midwest. Clear skies will allow heat to radiate to space and the snow cover serves as an insulator between the warmer earth and the colder air.[6]

The state's coldest temperatures are not in the north, but in the valleys of southern and central Ohio. The hilly topography allows cold air to settle in valleys and some of these areas are far enough away from the temperature moderating effects of the Ohio River. The official record cold temperature for Ohio was –37° F set in 1912 near New Lexington in Perry County. January 19, 1994 was the greatest cold wave in Ohio when a greater part of the state registered –25° F or less than at any previous time on record. There were unofficial temperature readings of –40° F in Athens County.[7]



Map 5 Average Minimum Temperature Trends

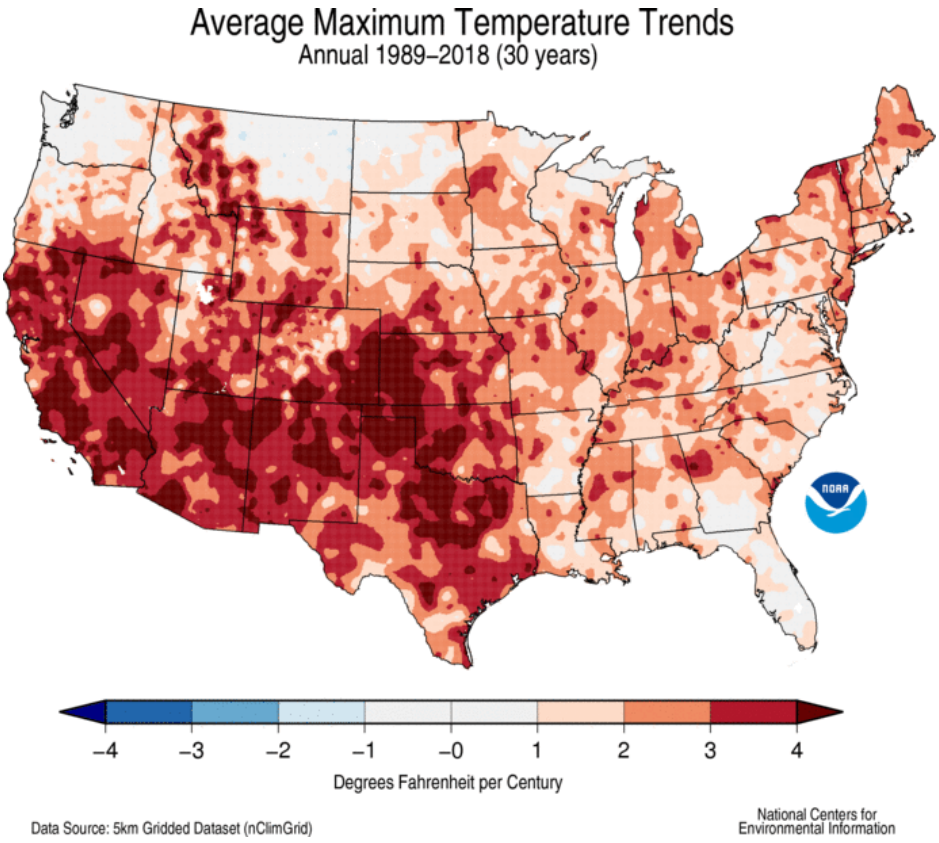
The NCDC data from 2014-2018 showed four separate incidents of cold weather that were called in by trained spotters. There was no property damage or deaths or injuries listed for these cold weather events. This hazard can affect all areas and jurisdictions in the County. Based upon the climate record for Athens County, it is likely that Athens County will experience extreme cold.

[6] Schmidlin,
[7] Schmidlin,

2.2.5 Extreme Heat

According to FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region, last for prolonged periods of time, and are often accompanied by high humidity that the body cannot tolerate. Extreme heat in Ohio, with temperatures of 110 degrees or more can have a disastrous effect on the state.

A necessary condition for extreme heat in Ohio is a Midwest drought. Soils and vegetation are dry during these droughts, allowing the hot, dry air from the Southwest to enter Ohio without the cooling effects of evaporation. Ohio heat waves are most severe in Southern Ohio, while the Northeast is tempered by the cooler waters of Lake Erie.[8]



Map 6 Average Maximum Temperatures Trends

Extreme heat in Southeastern Ohio can have widespread effects on human health, energy use, vegetation and crops, and the behavior of materials. In addition to the high temperatures, the duration of a heat wave plays an important role in how people are affected. When extreme heat periods last more than two days, an increase in these effects occurs. Specific populations in Athens County that are at a high health risk during periods of extreme heat include the elderly, young children, isolated individuals, people without access to air-conditioning, and those with respiratory difficulties.

Southeast Ohio has a history of both high temperatures and prolonged heat waves. On August 6, 1918 Amesville recorded 110 degrees. Excluding a suspicious 113-degree reading in Gallia County, Amesville exceeded the previous highest Ohio temperature of 108 degrees in Pomeroy, Ohio. [9]

[8] Schmidlin, p. 129.
[9] Schmidlin, p. 131.

The summer of 1934 again brought extreme heat to Southeast Ohio. It was preceded by the driest May in history. It is estimated that 160 Ohioans died from heat during the 1934 summer heat wave. On July 21, 1934 Gallipolis recorded a temperature of 113 degrees, the hottest temperature ever recorded in Ohio. Southeast Ohio also experienced extreme heat periods in July of 1936, August of 1947, August of 1983, and June of 1988.[10]

Map 6 shows average annual maximum temperature trends and they appear to be increasing although it must be pointed out that the 30-year data is relatively short term and the trend data for years 1895-2018 does not indicate such an increase.

Extreme heat can affect all areas and jurisdictions in the County. Based upon past records and a warming climate, it is likely that Athens County will experience extreme heat at some time.

Extreme Heat: Temperatures that hover 10 degrees or more above the average high temperature for the region, last for prolonged periods of time, and are often accompanied by high humidity that the body cannot tolerate.

2.2.6 Flooding

The flood hazard is broken into two types of flooding, flash and riverine.[11] Before discussing the particulars of each type of flooding, some background information about flooding, in general, is warranted. Flooding is the phenomenon of drainageways (creeks, runs, streams, tributaries, branches, forks, and rivers) receiving more water runoff than they can contain within their banks. As water flows over the waterway's banks it occupies low lying areas, known as floodplains, adjacent to the waterway. The magnitude of floods is measured by their frequency interval or how often they occur, at that magnitude, on average. A large flood that only occurs, on average, once every 100-years is known as a 1% annual chance flood. A flood of this magnitude has a 1% chance of occurring in any given year.

It takes unique climatic circumstances to create large-scale flooding on major streams and rivers. Contributing factors can include already saturated soils, snowmelt, and intense rainfall. The intense rainfall comes from strong, low pressure weather systems that can occur in quick succession.

[10] Schmidlin, pp. 133-146.

[11] In its Hazard Analysis and Risk Assessment, the Ohio EMA breaks floods into four categories: riverine, flash, urban and small stream, and coastal. For simplicity, this Plan will combine flash flooding with urban and small stream flooding under the title of "flash flooding." Since Athens County does not have a Lake Erie coastline, coastal flooding is not an issue.

Larger waterways on more gently sloped land have larger watersheds and it takes longer for the flood to reach its peak level. This leads to what this Plan terms a slow riverine flood. Smaller watersheds in steeper terrain will drain faster and the streams will therefore rise more quickly and fall more quickly. Water velocity will also be greater on more steeply sloped terrain. The rapid rise of high velocity water leads to what is termed a flash flood. These floods can be dangerous because of the force of the rushing water and because there is little to no warning before they hit. The largest natural disaster to impact the state of Ohio was a flood in the spring of 1913. While no part of the state was spared, the greatest impact was felt in the southwestern and west-central portions of the state. Two strong storm systems came through the same geographic areas only two days apart. According to Thunder in the Heartland, a total of 467 persons lost their lives. "Never before 1913, and never since, has so much rain fallen over so much of the state in such a short time." The Flood of 1913 set the record water levels on many Ohio streams.[12]

Southeastern Ohio and Athens County were spared the worst of the flooding from the storms of March 1913. While flooding was severe in 1913, other storms have brought higher flood levels in southeastern Ohio. The largest flood on the Hocking River occurred in March 1907 with other large floods occurring in 1873, 1884, 1937, 1945, 1963, 1964, and 1968. The 1968 flood is considered to be the 1% annual chance flood for the Hocking River and is the second largest historic flood that the Hocking River valley has seen.[13]

Athens County qualified for natural disaster assistance in 2012 due to being contiguous with counties experiencing excessive rain, flooding and flash flooding in May 2-4, 2012. Since the NHMP 2014, Athens County and its jurisdictions qualified for state and federal disaster assistance for three periods of heavy precipitation and flooding:

- Grant 4360, a presidential declaration for flooding that occurred February 14-25, 2018. $1,903,163.57 was awarded to ten government entities for repairs to roadways.
- SDRP-0217, state disaster assistance for flooding that occurred in February and March 2017. $440,789.64 was awarded to two government entities for repairs to roadways.
- SDRPAth18, state disaster assistance for flooding that occurred in June 2018. $31,752.25 was awarded to two government entities for repairs to roadways.

Flood: A flood is a natural occurrence when streams or lakes overflow their banks and spill onto the adjoining land area, which is called a floodplain.

[12] Schmidlin, p. 172.
[13] U.S. Army Corps of Engineers, *Floodplain Information, Hocking River, Athens, Ohio,* January, 1972, p. 20.

Historically, damages from flooding in Athens County have amounted to well over six million dollars.[14] This places flooding as Athens County's most costly hazard for property damage. Riverine flooding is specific to larger drainages with more extensive floodplains. Flash flooding can occur in small drainages and often occur in areas that are not shown as areas prone to flooding on the FEMA flood maps. Flash flood can occur quickly and with smaller scale weather systems and are therefore more frequent than riverine floods. Their geographical extent is also broader than that of riverine floods. Probability of future hazard events is highly likely for both types of flooding and extremely high for flash flooding somewhere within Athens County on a fairly regular basis.

2.2.6.1 Flooding (Flash)

The National Weather Service website states, "Flash Flooding can be caused by a number of things, but is most often due to extremely heavy rainfall from thunderstorms. Flash Floods can occur due to Dam or Levee Breaks, and/or Mudslides (Debris Flow).

The intensity of the rainfall, the location and distribution of the rainfall, the land use and topography, vegetation types and growth/density, soil type, and soil water-content all determine just how quickly the flash flooding may occur, and influence where it may occur.
Urban Areas are also prone to flooding in short time-spans and, sometimes, rainfall (from the same storm) over an urban area will cause flooding faster and more-severe than in the suburbs or countryside. The impervious surfaces in the urban areas do not allow water to infiltrate the ground, and the water runs off to the low spots very quickly.

Flash Flooding occurs so quickly that people are caught off-guard. Their situation may become dangerous if they encounter high, fast-moving water while traveling. If people are at their homes or businesses, the water may rise quickly and trap them, or cause damage to the property without them having a chance to protect the property."

Athens County witnesses flash flooding frequently. Intense thunderstorms will bring creek water out of its banks on an annual basis somewhere in Athens County. Fortunately, the majority of these incidents are inconvenient nuisances at worst. Occasionally, such as occurred in 1997 and 1998, intense thunderstorms will drop significant rainfall amounts in sub-watersheds of the Hocking River. These Hocking River tributaries can rise quickly and with little to no warning. On tributaries as large as Federal Creek and on many smaller tributaries there were reports of "a wall of water" advancing on the homes and towns.

Flash Flood: A flood that begins within 6 hours, and often within 3 hours, of the heavy rainfall (or other cause).

[14] National Climatic Data Center, a summary of severe weather events.

Even the lower Hocking River is prone to rapid rise such as what occurred in the June 1998 flood. The tributaries of the lower Hocking received such intense rainfall that the lower Hocking River exhibited flash flood characteristics. This flood happened at night and there was little to no time for people to remove property from the recreational vehicle camps on the lower Hocking. Fortunately, no lives were lost in Athens County during this flood.

Flash flooding is specific to drainageways that possess characteristics that allow them to have rapid water rise, often accompanied by swift flowing waters. The NCDC storm event database included eight separate flash flood events between 2014 and 2018 causing an estimated $52,000 in property damage[15]. No deaths or injuries were associated with these events. Not all areas of the County are prone to flash flooding. Identifying flash flood areas with more precision using GIS is an activity in the County's five year natural hazard mitigation plan.

2.2.6.2 Flooding (Riverine)

Figure 1 Flood from the Hocking River in 1907

The flood of 1907 was the highest flood on the Hocking River. "Fire bells began ringing in the Hocking Valley to warn of the impending flood on Wednesday, March 13th. The Athens Journal reported a great flood along the Hocking with several lives lost and a wide disruption of communication and transportation. Dozens of homes in Athens were swept away, overturned, or lifted off foundations. Telephone and telegraph wires were down and the waterworks and electric lights plants were flooded. Rail lines all along the Hocking were cut by the raging river. Large areas of Athens were inundated, causing large losses among business and railroads……Several commercial buildings at Gloucester (Glouster) were lifted and washed away by Sunday Creek, including three grocery stores, a restaurant, and Will Reese's poolroom, according to the Athens Journal. Many homes and other businesses were damaged. The coal mines around Gloucester suffered heavy losses. Mine 256 was flooded, resulting in the loss of

[15] The reports for the NCDC storm database are typically made by one of several sources: Dept. of Highways, 911 Call Center, trained weather observers, river/stream gauges, social media, broadcast media, the FAA's Automated Weather Observing System, law enforcement, or the post office.

thirteen horses, machines, motors, cars, and other equipment. All homes in Trimble were flooded."[16]

As much as 8 inches of rain fell in the Hocking River watershed during 4-10th March 1964 and brought major flooding to Athens County. The Hocking River crested in Athens on March 11 at 24.15 feet. The flood level was the highest since 1907.[17]

Two heavy rain periods within five days of each other brought flooding to the Hocking River valley between May 23rd and May 27th in 1968. Three to six inches of rain fell on already saturated soils on May 23rd-24th. The Hocking River reached flood stage on May 24th.[18] The rapid rise of waters from this flood prevented residents from moving personal belongings out of harm's way. Even though riverine flooding happens more slowly than flash flooding, it is apparent that floodwaters on the Hocking River can still rise rapidly enough to catch people off guard.

The NCDC Storm Database listed 22 flood events that were reported between 2014 and 2019. $75,500 of property damage was estimated from these events. No deaths or injuries were associated with these events.

Map Modernization

FEMA's Flood Map Modernization initiative is a nationwide, $1 billion effort to modernize the nation's inventory of flood maps. During this update the maps are produced in a seamless, countywide format. This process generated a digital flood layer that is compatible with most Geographic Information Systems (GIS) and Auto-CAD platforms. This digital layer allows local communities to utilize the digital floodplain data in conjunction with other data (such as parcel data) in order to enhance their local floodplain management programs.[19]

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[16] Schmidlin, pp. 170-171.

[17] "Athens County schools dismissed early to allow buses to deliver children home before roads were flooded by rising rivers, and Ohio University students removed their cars from basement garages at West Green dormitory. National Guard troops, firemen, and police worked through the night to evacuate residents of Rockbridge and South Logan upstream along the Hocking River…..All schools and main highways were closed in the region on Wednesday, mail delivery was curtailed, fifteen hundred Ohio University students were evacuated, and 380 Athens homes were flooded, according to the *Athens Messenger*." (from Schmidlin, p 208.).

[18] "The Hocking River reached 24.63 feet at Athens, more than 7 feet above flood stage and the highest since 1907. All communities along the Hocking were flooded, and roads, schools, businesses, and factories were closed throughout the river basin. Amesville businesses were flooded and for the first time in memory, there was water on the floor of the First National Bank Building. Three feet of water in Amesville Nursing Home forced residents to the second floor. The *Athens Messenger* reported that a helicopter delivered food to the stranded nursing-home residents. Homes were evacuated and highways blocked in Nelsonville, Murray City, Logan, Rockbridge, and Chauncey. The quick overnight arrival of the flood prevented residents from moving household goods to higher positions and, even when goods had been moved, they often had not been raised high enough. The flood came at a time of tension on university campuses as students protested the Vietnam War. Ohio National Guardsmen were on duty at Ohio University as a precaution against civil unrest, but instead they saw duty in the flood. The *Athens Messenger* reported that 'it was strange to see the Guardsmen and students working together in the flood' when only days before they had been antagonists."(Schmidlin, p. 212.).

[19] fema.gov

In 2007, FEMA began its process to modernize and update FIRM maps in Athens County. The following is a timeline of events that occurred during this process:

Initiated Map Modernization: 2007 Fiscal Year
Scoping Meeting: June 5, 2007
Preliminary Map Revisions: August 25, 2008
Open House: November 19, 2008
Comments and Appeal Period:
Start Date: December 11, 2008
Close Date: March 11, 2009
Letter of Final Determination: June 18, 2009
Maps Effective Date: December 18, 2007

2.2.7 Freezing Rain/Ice Storm

An ice storm occurs when precipitation occurs as rain but below-freezing temperatures on the ground cause the rain to freeze onto any objects with which it comes in contact. Ice storms and freezing rain are usually used synonymously. Ice storms create hazardous driving and walking conditions and can add significant weight to overhead utility cables and tree branches.

The average air temperature at ground level is 30 degrees during freezing rain but this phenomenon can occur at temperatures as low as 15 degrees. Freezing rain occurs in bands 25 to 100 miles wide, oriented west to east as a low pressure system and accompanying warm front approach from the south or southwest. Freezing rain only lasts an hour or two because the weather systems move through at thirty to fifty miles an hour. Prediction of ice storms is difficult because a slight temperature change at the ground surface can move the location of the ice storm more than 100 miles. Forecasting of the location and amount of ice accumulation is not precise.[20]

Two ice storms in early 1994 created havoc in southeastern and southern Ohio as electric utility lines were damaged from the weight of ice and from tree limbs falling on them. Widespread power outages occurred. Falling tree limbs damaged automobiles and houses. According to the NCDC, forty people were injured and damages were estimated at $10 million for these two events. The President's Day Storm of 2003 dropped up to two feet of snow in Athens County but counties south of Athens, where temperatures were warmer, had significant ice accumulation that knocked out electrical power for over one week in some situations.

The NCDC Storm Data from 2014-2019 showed 10 reports for winter storms or winter weather. Of these 10 reports, five included episodes of freezing rain. One death was indirectly attributed to a January 8, 2018 storm event when a semi-truck driver lost control of his vehicle on the US Route 33/50 bypass in the City of Athens.

All parts of Athens County can be affected by ice storms or freezing rain. Based upon the characteristics of this hazard, it is unlikely that all parts of Athens County will be affected at the same time or with the same intensity. The data available in the 2014-2019 NCDC report lists

[20] Schmidlin, p.7.

freezing rain multiple times and the historic record shows freezing rain frequently so this hazard is likely to occur.

2.2.8 Hail

Hail forms in thunderstorm clouds as water drops are cooled to form ice pellets and additional water is frozen onto the small pellets in ever larger concentric circles. Strong updrafts allow the pellets to stay aloft for long periods and grow into hailstones. While all thunderstorms contain hail, few thunderstorms produce hail that reaches the ground because it melts back to rain before reaching the earth.[21]

Figure 2 Hail that fell near Amesville

A thunderstorm can produce hail for several minutes leaving a "hailstreak" one-half mile or more wide and several miles long. A slow moving thunderstorm can produce hail for twenty minutes leaving hail to a depth of one foot. Any location in Ohio can expect hail on an average of two days per year. Most hail is small and causes no damage except bruising of fruits and vegetables. Hail one inch or more in diameter can cause dents in cars and aluminum siding, break windows, tear awnings, strip leaves from trees, and destroy crops. Animals have been killed by large hail and persons have sustained injuries from large hail. Hail in Ohio has been recorded at up to three inches in diameter.[22] According to the NCDC report, hail caused $230,000 damage in Athens County in 2002 and a total of $285,000 damage in the years 1982 to 2002.

According to the National Climactic Data Center, between March 1, 2006 and December 31, 2012 there were 30 reported hail events in Athens County. No deaths or injuries were reported with these events. Between 2014 and 2019, the NCDC recorded a total of 12 hail reports on seven different days. The largest hail was measured at 2.5 inches. Property damage was listed at $50,000 for the report with the 2.5-inch hail. There was an additional $5,000 damage estimate with one other report for a total of $55,000 estimated hail damage.

[21] Schmidlin, p. 303.
[22] Schmidlin, pp. 303-304.

The SOHMP 2019 estimated annual hail loss in Athens County at $71,910.62 or $1.08 per capita. Hail and subsequent damage can occur anywhere in Athens County. Hail will likely occur every year, but events with large hail will be rarer. However, even large hail is not uncommon. Therefore, this hazard is likely to occur.

2.2.9 High Wind

Besides tornadoes there are two types of damaging winds in Ohio, large-scale and downburst or straight-line winds. Large scale winds with speeds greater than fifty mph may occur behind a cold front associated with an intense low pressure system. Such winds may cover an extensive area and last for several hours. Downbursts are strong downdrafts, associated with thunderstorms. They can be as large as one mile wide and two to three miles long. The winds descend from a thunderstorm, strike the ground, and spread out in a fan shape.[23]

Downburst or Straight-line Wind: Downbursts are defined as strong winds produced by a downdraft over a horizontal area up to 6 miles (10 kilometers).

According to Thunder in the Heartland, minor damage to property and vegetation begins with winds at speeds as low as forty five to fifty mph. Trees are uprooted or snapped off by winds at sixty to seventy mph. Additionally, shingles are blown from roofs, windows are broken, electric and telephone lines are blown down, and mobile homes may be pushed off foundations or overturned. At wind speeds greater than one hundred mph, large trees are uprooted or snapped off, moving cars are blown off roads, mobile homes are demolished, and roofs are blown from frame houses. Winds of more than one hundred fifty mph tear roofs and walls from well-built frame homes, toss cars through the air, and topple entire forests.[24]

Athens County has had a number of high wind events according to the NCDC Storm Events Report. The report showed that a severe high wind event occurred on August 9, 2000 in which eight people were injured. The Athens Messenger, in an article titled *Storm collapses tent; 8 injured*, August 10, 2000 reported "a powerful thunderstorm caused the collapse of a tent covering the swine show ring at the Athens County Fairgrounds…At least eight people were treated by O'Bleness Memorial Hospital for personal injuries." A storm in 2010 produced a tornado that touched down in one general location and the same storm also produced several regions where the damage was caused by straight–line winds. While both types of wind events can be very damaging, experts from the National Weather Service survey the damaged areas and can determine tornado impacts by the degree of rotation evident in the debris field. High winds can

[23] Schmidlin, p. 227.
[24] Schmidlin, p. 227.

affect all areas and jurisdictions in the County. The NCDC Storm Database listed four reports of strong wind between 2014 and 2019. These listings are separate from reports of thunderstorms or tornadoes which will be discussed in separate hazard profile sections. The four strong wind reports listed a total of $85,000 of property damage. There were no deaths or injuries associated with these events.

High winds can happen anywhere in Athens County. Based upon historical records, this hazard is likely to occur.

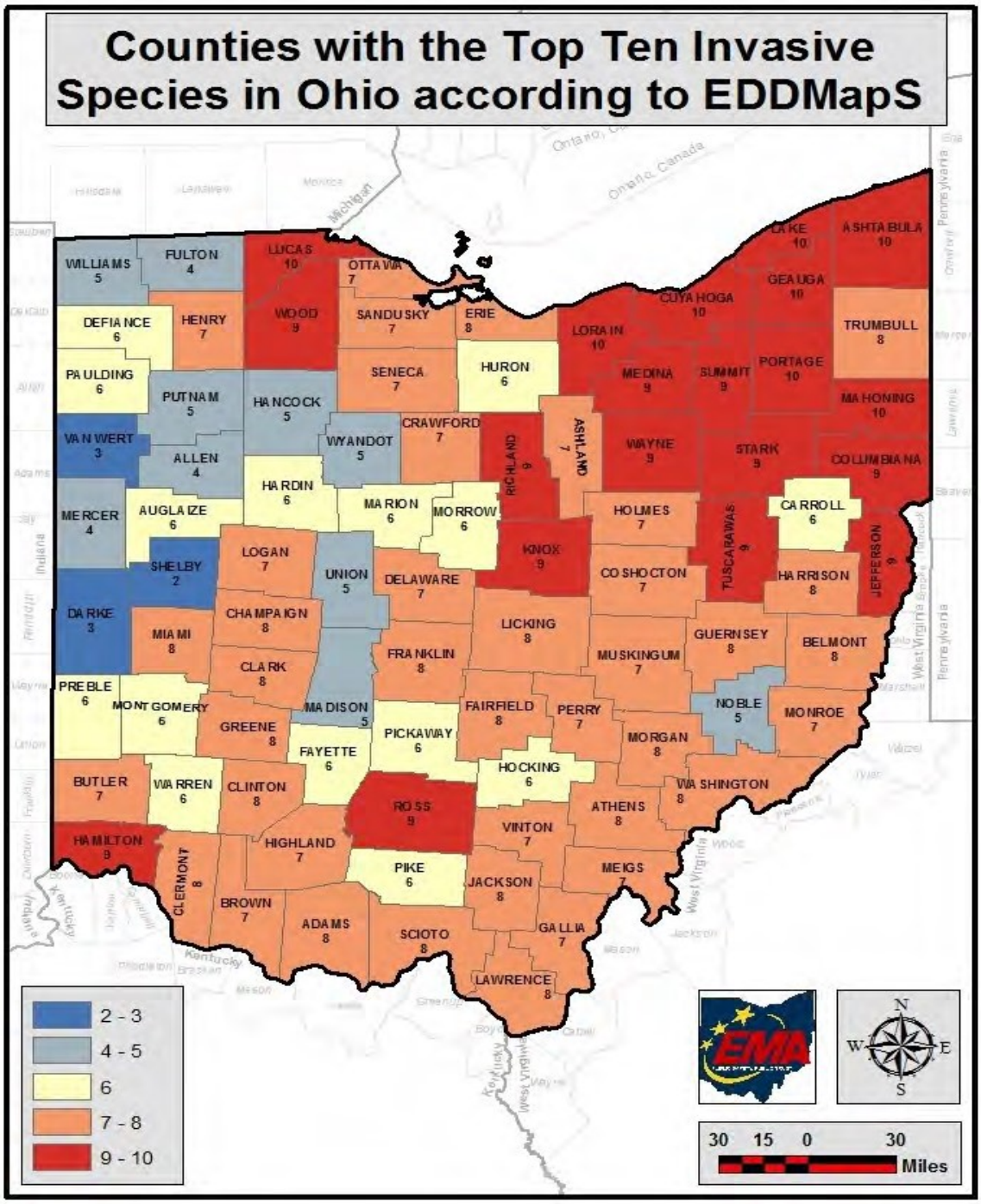
2.2.10 Invasive Species

Invasive species are added as a hazard because they are a growing threat to the ecosystems and economy in Athens County. The National Wildlife Federation defines invasive species as any living organism, whether amphibian, plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs, that is not native to an ecosystem and causes harm. These species can harm the environment, the economy, and even human health. In addition, species that can grow and reproduce quickly, spread aggressively, and have potential to cause harm are identified as "invasive".

The top ten invasive plant species in Ohio are:

- Bush Honeysuckles
- Autumn – Olive
- Buckthorns
- Common Reed Grass
- Garlic Mustard
- Japanese Honeysuckle
- Japanese Knotweed
- Multiflora Rose
- Purple Loosestrife
- Reed Canary Grass

Map 7 shows the number of "top ten" invasive species in Ohio by County. Athens County has eight of these.



Map 7 Counties with the Top Ten Invasive Species

Ed Brown, Agriculture and Natural Resources Educator with the OSU Extension Service says that environmental degradation is the main concern with invasive species. They are also seeing an increase in Poison Hemlock and Wild Parsnip and are concerned that Giant Hogweed may become established in the County.

The Emerald Ash Borer moved through the state from northwestern Ohio to southeastern Ohio in just a decade and all the Ash Trees in Athens County have been killed. This poses a problem to landowners, the logging industry, and to those responsible for maintaining highway rights-of-way. An ODOT Planning Engineer with District 10 says the Ash Tree problem has been a topic of conversation at ODOT and with County Engineers for several years. District 10 had an $800,000 contract in 2018 to remove dead trees on several roadways. While this helps, it is a small portion of the total number of dead trees in the state rights-of-way. District 10 also has a circular saw on an extending arm for tree removal. This is shared amongst all the counties in District 10 so its time in Athens County is limited. The dead Ash trees that have been standing dead for a while are too dangerous to remove by cutting at their base since the tops can vibrate lose and fall on the cutter. The engineer also noted that with narrow rights-of-way on county and township roadways, many of the dead trees will be outside of the right-of-way but could still fall into the road.

Invasive species can impact all areas of Athens County. Most state-listed terrestrial species already exist in Athens County so their likelihood of occurring in the future is 100%. While efforts are underway to minimize their spread, most of these efforts only slow the spread but do not eradicate it. It is likely that Athens County will continue to see the spread of invasive species.

Invasive Species: Any living organism, whether amphibian, plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs, that is not native to an ecosystem and causes harm.

2.2.11 Landslide/Rockfall

Landslide is the "…downward and outward movements of slopes due to rains or melting snow with accompanying damage and debris deposition."[25] As used in this section, landslide is the term that will describe all downslope movement of earth with the exception of rockfall which is the relative free-fall of rocks down a vertical or very steep slope. Downslope movement of earth has been grouped into several categories based on rate of movement and the type of geologic material associated with the movement. The types common to Athens County are rockfall, debris fall, slump, earthflow, and creep.[26]

[25] Hazard Analysis and Risk Assessment, OEMA, p. 19.
[26] The Prediction of Unstable Slopes in Southeastern Ohio, John W. Sowers, August, 1975, P. 16.

Figure 3 Landslide

There are many causes of slope movements, but they can be grouped into two general categories, geologic conditions and triggering actions. The geologic conditions are steep slopes, angle of rock layers, highly fractured rock, abundance of ferric oxide (red colors) in clay or clay shales, porous or permeable rock, soluble rock, water soluble cementing agents associated with certain rocks such as sandstone, presence of clay seams, clay soils, or clay shales subject to groundwater lubrication, and an influx of water from rain or drainage. The triggering actions are vibrations either natural or manmade, oversteepening of slopes, removal of lateral support at the toe of a slope, the collapse of drift mine workings, the weighting of the upper portion of a slope with fill or buildings, removal of vegetation from a slope, and water in excess that adds weight, dissolves rock, lubricates clay seams and increases pore water pressure in the soil.[27] Freezing and thawing also play a large role as triggering mechanisms.

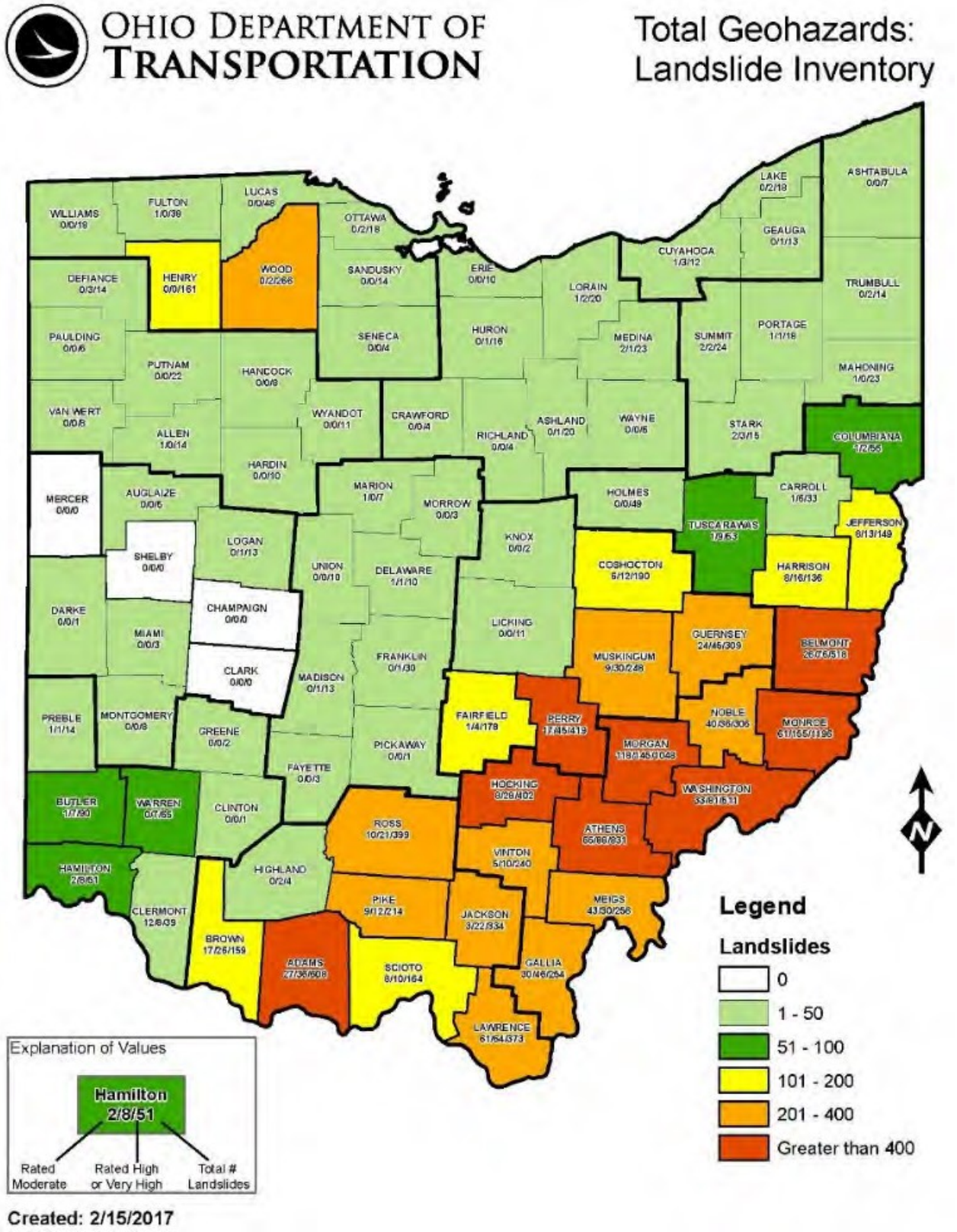
Records of landslide on state highways are kept by ODOT at the District level. District 10, which includes Athens County, lists 180 – 200 landslides per year compared with 15 for District 8 (southwestern Ohio), 12 for District 9 (southern Ohio), and 20 for District 11 (eastern). County, township, and municipal highway departments also spend considerable resources trying to prevent and having to repair landslides.

In addition to expenses for the maintenance and repair of streets and roads impacted by landslide, building foundations and utility lines are also affected. Buildings can be rendered useless and worthless if negatively impacted by landslide to a great enough extent. Landslides and rockfall can also be dangerous if they destroy a house that is occupied or destroy a roadway giving no advance warning to an unsuspecting motorist.

Landslide: The downward and outward movement of soil and rock material on slopes usually caused by moisture from rain or snow melt which acts as a lubricant.

[27] Ibid., pp. 21-22.

Map 8 Total Geohazards: Landslide Inventory



The hilly terrain and the underlying bedrock geology are significant contributors to the landslide incidence in southeastern Ohio. Map 8 shows the number of landslides recorded in Ohio, by

county, that are currently impacting the State's highway system and Athens is in the highest category with over 400 active areas. Athens County ranks third in the state with 831 landslides impacting state highways. A similar map was produced to show rockfall sites and Athens County was in the second highest rating category with between 201 and 400 sites.

The majority of funding to Athens County for past presidential disaster declarations has gone to repair roadways damaged by flooding or heavy rains. Many of the projects were landslide repairs and these tend to be the most expensive infrastructure projects, with the exception of bridge replacements, for county highway departments. Recent disaster assistance involved one federal declaration, Grant 4360 for February 14-25 flooding, and two state declarations, SDRP-0217 for February/March 2017 flooding and SDRPAth18 for June 2018 flooding. For the federal declaration, $1,903,163.57 was awarded to 11 jurisdictions in Athens County, primarily for roadway repairs. For the two state declarations, $742,057.50 was awarded to three jurisdictions in Athens County, primarily for roadway repairs.

Landslide and rockfall are specific to those areas with the geologic conditions conducive to these hazards. Their occurrence in Athens County is widespread. It is certain that this hazard will continue in any given year, but large-scale landslides and rockfalls will only occur in the wettest years. However, wet years are not uncommon, so this hazard should be considered likely to occur.

2.2.12 Land Subsidence

Land subsidence is the settling of the earth's surface due to the loss of underground geologic support. In Athens County, this loss of support is associated with past underground coal mining activity. Old coal mines used the room and pillar mining technique whereby the majority of coal was removed creating large "rooms". Enough coal was left as "pillars" in an attempt to support the overburden or roof of the mine. Pillars were often removed at a later time or pillars that remained have deteriorated and lost strength. Wooden posts were also left as pillars and these too have deteriorated and failed. In these cases, or if the roof rock above the mine is weak and fractured, the weight of the rock and earth above the mine will collapse them into the mine and may impact the ground surface.

Land Subsidence: The settling of the earth's surface due to the loss of underground geologic support.

Land subsidence can destroy buildings, roads, and infrastructure. While Athens County has not had a subsidence that has destroyed a major highway or caused extensive damage to any buildings, the presence of abandoned underground mines is a threat to be recognized. Residents

of Athens County are required to purchase mine subsidence insurance at a cost of $1 per year. Coverage is the lesser of $50,000 or the actual cost of repairs to the home. The ODNR Division of Mineral Resources Management tracks subsidences and subsidence complaints. Some complaints of ground settling or foundation damage to homes are not actually caused by underground mines and this must be determined by the Division of Mineral Resources before a claim can be paid since only subsidence from abandoned mines is eligible for insurance reimbursement.

According to the Ohio Mine Subsidence Insurance Underwriting Association (OMSIUA), "mine subsidence is different from any other catastrophe that damages structures. A fire to a building is usually extinguished in minutes and repairs can be started shortly after settlement with the insurance company. A mine subsidence event causes ground movement and this process can last for several weeks, months, or years. Because of the ongoing movement, structures damaged by subsidence cannot be repaired until this movement ceases."

The jurisdiction's Natural Hazards Risk Maps show the areas in Athens County that are susceptible to subsidence. The ODNR Division of Mineral Resource Management can provide information about subsidence's that have occurred in any given area of the state. The Division has also produced a booklet, Ask Before You Build, that serves as "a guide for landowners, developers and local officials to better assess abandoned mine lands before building."
The OMSIUA files an annual report that lists subsidence claim payments made that year. In spite of 26 claims reported in Athens County, there were no claim payments made for the period 2007-2018. This means that individual policy holders who have structural problems with their homes are often mistaken about the causes. No claim payments will be made if the problem is not caused by an abandoned mine.

Subsidence is a hazard that is geographically defined based on the location of underground mines. It is isolated to those areas shown on the hazard maps. The lack of any claim payments made over an 11-year period indicates that this hazard does not occur frequently. When it does occur, it can have major impacts for the homes, businesses, or infrastructure affected. However, a subsidence area is usually small in scale. This event is very unlikely and its impact isolated.

2.2.13 Thunderstorm and Lightning

Thunderstorms and lightning are mentioned as a separate category even though the subsections entitled High Wind and Flash Flooding cover some of the hazard issues. A thunderstorm often brings all three hazards; high winds, lightning, and intense rainfall. One key component to a thunderstorm is lightning, an atmospheric discharge of electricity. High speed videos (examined frame-by frame) show that most lightning strikes are made up of multiple individual strokes. A typical strike is made of 3 to 4 strokes. The sudden increase in pressure and temperature from lightning produces rapid expansion of the air surrounding and within a bolt of lightning. In turn, this expansion of air produces a sonic shock wave which produces the sound of thunder. Lightning often seeks a path to the tallest object available. Trees, utility line/poles, tall buildings and even humans can be sought as a pathway for the discharging electricity.

Two deaths and one injury were caused by lightning in Athens County in the mid 1990's. Damages from lightning in 1995 and 2001 totaled $81,000 in Athens County.

The NCDC Storms Database for 2014-2019 showed 26 reports for "Thunderstorm Wind". The highest reported wind speed was 74 MPH. $144,000 was reported for property damage. No deaths or injuries were attributed to these events.

Thunderstorms and lightning can affect all areas and jurisdictions in the County. They occur frequently and will likely continue to occur with regularity.

2.2.14 Tornado

Athens County is located in the Wind Zone IV, and has a high risk of extreme winds rating. One tornado and varying levels of windstorms have been recorded in Athens County, all resulting in limited damages. Predicting what parts of Athens County have a greater chance of being struck by a tornado, however, is difficult. Tornadoes can strike with very little warning.

Figure 4: Tornado results 9/16/2010

Maps obtained from *FEMA's Taking Shelter from the Storm: Building a Saferoom in Your House* (http://www.fema.gov/fima/tsfs13.shtm) were used to determine the wind speed zone and tornado activity of Athens County. According to the map *Wind Zones in the United States*, Athens County is in the Zone IV (250 mph) wind zone. The map, *Tornado Activity in the United States*, shows that between 1 and 5 tornadoes were recorded per 1,000 square miles from Athens County. By

using FEMA's *Assessing Your Risk* chart, Athens County is calculated to be in the high level of risk from extreme winds.

A search done through Tornado Project Online at http://www.tornadoproject.com found one recorded tornado occurring between 1950 and 1995 in Athens County. The May 12, 1980 tornado had no recorded deaths or injuries. It measured F1 on the Fujita Tornado Measurement Scale. F1 tornadoes are classified as moderate tornadoes (73-112 mph winds) causing moderate damages.

The Historic Tornado Touchdown Map was produced using the ESRI/FEMA Project Impact Hazard Site. This map shows the May 12, 1980 tornado occurring in Athens County with a severity level of 1 on the Fujita scale. A tornado rated at level 5 on the Fujita scale hit Gallia County on April 23, 1968 according to the National Climatic Data Center. The National Climatic Data Center also indicated that six people have died from four southeastern Ohio tornado incidents dating from 1886.

A recent high wind/tornado event occurred on September 16, 2010. The County experienced a tornado event when severe weather and tornadoes swept across the state in the afternoon of September 16th. The National Weather Service confirmed 11 tornadoes in Wayne, Holmes, Fairfield, Athens, Perry, Meigs, Delaware and Tuscarawas Counties and in the Tarlton, Ohio area that borders 3 counties. The tornadoes ranged from EF-0 to EF-3. Athens, Meigs, Pickaway, Perry and Wayne Counties declared a local state of emergency. Thirteen people were injured in Athens County (OEMA). The following is a description of the storm event from a report prepared by NOAA:

A severe thunderstorm spawned a tornado touchdown along Kimberly Road, about 4 miles south-southwest of Nelsonville in Athens County, Ohio. The EF2 tornado traveled along Matheny Road/Route 269, passed through some woods, and then crossed Highway 691 before lifting; for a total of 3.3 miles. At its largest, the tornado was about 300 yards wide. The tornado obliterated several mobile homes along Matheny Road, while also snapping numerous large softwood trees at their trunks, and some hardwoods as well. It also lofted and set back down a hay bale of 1800 pounds in weight. Seven people were injured in York Township according to Athens County Emergency Management, and a total of 13 structures were destroyed. The damage indicated that the Nelsonville-area tornado lifted as the rear-flank downdraft of the rotating thunderstorm took over. The damage path from the 80 to 100 mph downburst stretched from about 3.5 miles west-northwest of The Plains, to 4 miles east of the center of Athens; a total of 10 miles. Athens County Emergency Management tallied 6 additional injuries within the downburst portion of the storm.

Winds were estimated to be near 100 mph as the downburst blasted through The Plains, OH in a path about a quarter mile wide. Greater than one million dollars damage occurred at Athens High School in The Plains, including its athletic scoreboard, visitors' stands, and a roof off the concession stand. Also, large air conditioning units were torn off of the school. Several more structures were heavily damaged or destroyed, including three unanchored trailers pushed or rolled near the High School parking lot. Many trees were uprooted and some snapped.

The downburst continued to the east southeast, while widening to almost a half mile wide. Winds were somewhat less overall in this final portion of the downburst, but still estimated in the range of 80 mph to 100 mph. Some damage occurred near Walmart and Lowes on East State Street, a few miles east of the center of Athens. However, an Auto Service Shop farther east endured very heavy damage (noaa.gov).

There was no loss of life during this tornado event that caused destruction in Athens County. The Ohio Emergency Management Agency damage assessment teams determined that 403 properties sustained damage during the storm.

30 properties destroyed - 2 insured, 28 uninsured
51 properties with major damage - 13 insured, 38 uninsured
83 properties with minor damage - 57 insured, 26 uninsured
239 properties that were affected - 103 insured, 136 uninsured

The levels of damage are defined as follows:

Affected

Single Family Residents - Some shingle damage, few broken windows, cosmetic damage to siding, and is reparable
Trailer - Minor dents to roof or siding

Minor Damage

Single Family Residents - One wall damaged, section of roof missing or damaged, and is repairable
Trailer - Utility connections broken and slight movement on piers or foundation

Major Damage

Single Family Residents - Substantial structural damage to walls, roof, etc, but repairable
Trailer - Wall and roof damage, shifted on piers or foundation

Destroyed

Single Family Residents - Total Loss, structure is compromised and not repairable
Trailer - Total Loss, bent Frame, buckled walls, roof (woub.org)

Tornado: A narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground.

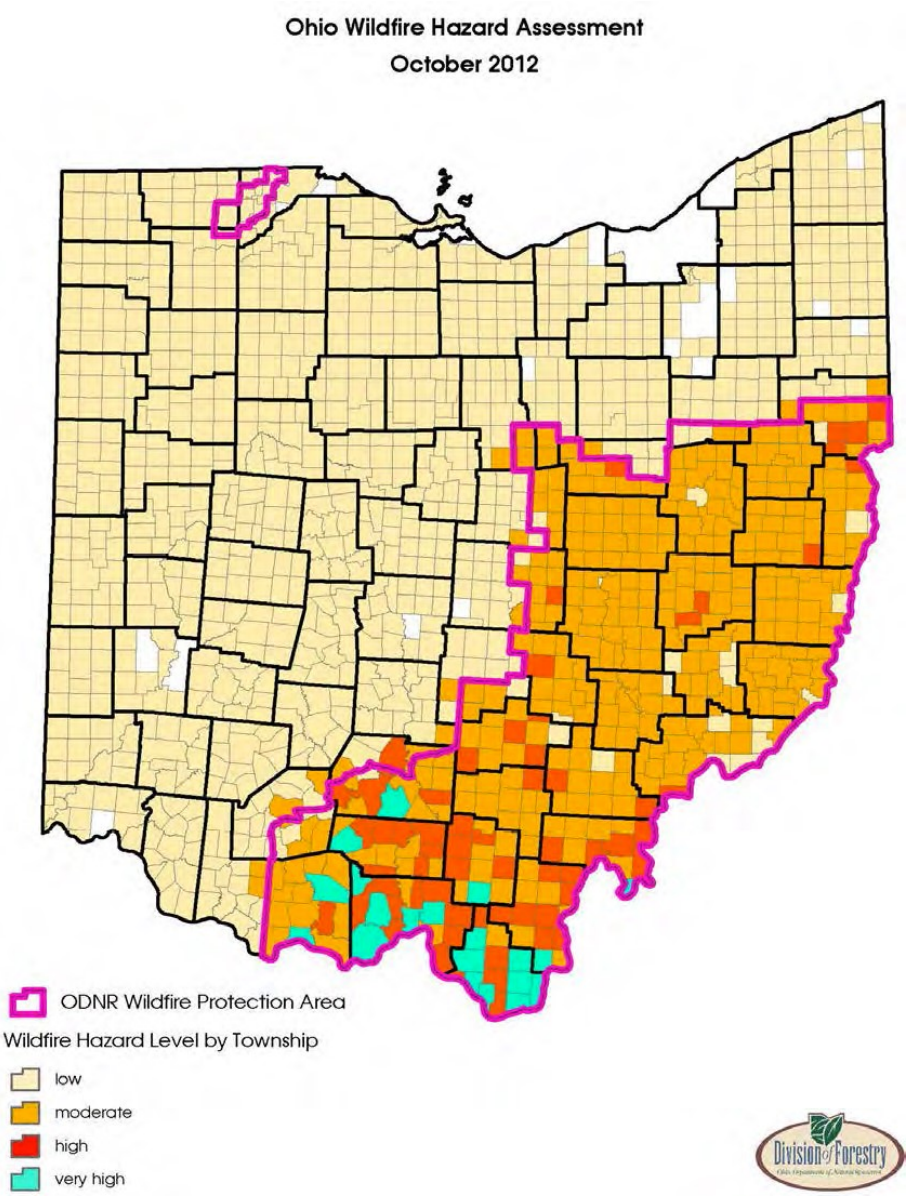
While this hazard has proven extreme, incidents are still extremely rare and no deaths were recorded for Athens County from any tornado events. Due to the September 2010 tornado event the 2014 Plan increased the tornado hazard impact from 3 to 4. Since the 2014 Plan an additional tornado was noted in the NCDC Storm Database. On 10/28/2018 an EF0 tornado touched down in York Township in northwestern Athens County causing an estimated $10,000 in property damage. There were no deaths or injuries from this event. The event narrative reads, "A very weak tornado touched down near Nelsonville, along Cullison Road, where it lofted a trampoline into power lines and blew around some loose pieces of sheet metal. Additional damage occurred near the end of the path, along Kimberly Road. Here, several trees were uprooted or snapped, with one falling onto a house, penetrating the roof. The survey found all of the trees that fell were diseased or weakly rooted. Also, in this area, a metal carport was tossed into the woods. The estimated maximum wind speed was 55 mph. A video of the tornado was taken near Cullison Road, showing a rotating funnel above the ground, with the trampoline and sheet metal being picked up and thrown as it passed over."

The tornado hazard can affect all areas and jurisdictions in the County. Although, its occurrence is rare its impact can be severe, which results in a higher relative risk rating. Climate change may be leading to a greater chance of tornado occurrence in Athens County. Data regarding this hazard will be closely watched for such changes, however, the probability for the tornado hazard will remain the same as for the 2014 Plan, which concludes an event is unlikely to occur.

2.2.15 Wildfire

The peak seasons for wildfire in Southeastern Ohio are March, April and May, before vegetation "greens-up" and October and November, after leaf drop. These are the months when warm, windy, low humidity conditions are prevalent and vegetation is more susceptible to burning. Other factors that determine an area's susceptibility to wildfire include topography and fuel. Slopes greater than 60 degrees have a high vulnerability to wildfire, slopes between 40 and 60 degrees are considered moderate and slopes less than 40 degrees have low wildfire susceptibility. Ground fuel is vegetation and woody debris that is found underneath the forest canopy. Ground fuel is also dried vegetation that can be found in unmowed or brushy fields. These are often former agricultural areas that are now reverting into early successional woody growth. Areas with a large amount of fuel are more at risk of damaging wildfire than areas relatively clean of undergrowth. Prolonged drought may cause an exceptionally long or active wildfire season, as well as contribute to extreme wildfire behavior or burning conditions. Multiple concurrent fires can tax resources and quickly create a lack of manpower and other resources and retard the ability to suppress fires rapidly and safely.

Wildfire: An uncontrolled fire that burns an area of combustible vegetation and typically occurs in rural areas.



Map 9 Ohio Wildfire Hazard Assessment

Map 9 indicates township wildfire hazard level statewide. Athens County has two townships, Waterloo and Troy, that are at high risk, and one that is low risk, Ames Township. The remaining townships are at moderate risk. The hazard map was produced by utilizing three main sets of data: historic wildfire occurrence and acres burned, fuel model land cover, and wildland urban intermix/interface data. These datasets were chosen to represent a risk, the hazard, and the value of assets at risk.

Research on the occurrence of previous wildfire in Athens County was done and produced evidence that in 1999, Southeastern Ohio was plagued with forest fires. There were a reported 31 wildfires in Athens County which burned 112 acres. No significant structural damage occurred. In comparison, in year 2001 Athens County experienced 22 fires which burned only 49 acres.

The SOHMP 2019 Draft shows a table titled Past Occurrences of Wildfire Events (1/1/07 to 12/31/17). During this eleven year period Athens County had the following:

- 84 total fire events
- 426 acres burned
- 5.07 acres/event and an estimated 8 events per year
- Fire size of 1 to 9.99 acres – 78 fires or 92.86% of all fires
- Fire size of 10 to 99.99 acres – 5 fires or 5.95% of all fires
- Fire size of 100+ acres – 1 or 1.19% of all fires

Based on the history of wildfire in Athens County the probability of a devastating wildfire event to occur appears to be relatively unlikely. However, some conditions, namely steep and vegetated slopes that are associated with wildfire vulnerability, are found in Athens County. The County does not have a wildfire risk map.

2.2.16 Winter Storm/Blizzard

Winter storm and blizzard are combined into one hazard. Winter storms are typically associated with heavy snowfall and windy conditions. Blizzards are extreme winter storms that have snowfall, high winds, and extreme cold. The high winds in blizzard conditions create poor visibility and dangerous driving conditions even if snowfall is not heavy because dry snow can be blown around giving the effect of heavy snowfall. Some of the dangers associated with winter storms and blizzards are falling tree limbs, dangerous driving, utility outages, extreme cold, collapsed roofs, and severe wind chills.

There are several storm systems that can bring snow to southeastern Ohio. Those originating in the Canadian prairies are known as Alberta Clippers. Other places of origin are the Southern Plains, the Gulf of Mexico, and the Atlantic Coast. Very heavy snowfall can occur if moisture from the Gulf is drawn up into cold air sitting over Ohio. The heaviest snowfall occurs in a band less than one hundred miles wide so less than half of Ohio is usually affected by any single storm. Snowfall of six inches or more is considered a heavy snowfall in Ohio. This depth is expected once or twice a year in northern Ohio and only once every two or three years in extreme southern Ohio. Ohio's greatest snowfall amounts from a single storm have occurred in Ohio's eastern counties where storms moving along the Appalachian Mountains bring in moisture from the Atlantic Coast. Twenty to thirty inches of snow can fall during these events.[28]

Athens County is on the edge of this area and can receive large quantities of snow if conditions are appropriate. The Thanksgiving snowstorm of 1950 is an example. Athens County received between twenty and twenty-five inches of snowfall during the storm.[29]

The NCDC Storm Database listed two reports of Winter Storm, six reports of Heavy Snow, and eight reports of Winter Weather from 2014-2019. No property damage, no injuries, and one death (indirect-a traffic accident on an icy roadway) were attributed to these events.

Winter Storms and blizzards can affect all areas and jurisdictions in the County. The probability of winter storms is likely since records indicate their regularity. However, blizzards are rare and not considered very likely.

[28] Schmidlin, p.6.

[29] "At Marietta, where weather records extend back to the early 1800's, the *Marietta Daily Times* reported the twenty-seven inches in this storm was the greatest in any known record here…..The press reported up to seventy persons were killed in Ohio by the storm, mostly from overexertion and heart attacks.", Schmidlin, pp. 39-40.

2.3 Risk Assessment by Jurisdiction

2.3.1 Background

The previous section covering hazard profiles was intended to provide an overview of the location and extent of historical hazard incidents. Based upon that information, risk can be determined, by analysis, of the potential impact of the hazard and the likelihood or probability that the hazard is going to occur. A major goal of this Update 2019 is to make the Plan fully multi-jurisdictional. That means providing each jurisdiction's unique hazard probabilities and potential impacts and customizing risk for that place. This determines the vulnerability of a place to any particular hazard and can lead to better mitigation planning.

In order to assess risk by jurisdiction, assets within that area need to be assessed and assumptions made about likelihood of personal injury or property damage should a hazard event occur. The assets to be reviewed include:

- Citizens and where they live
- Populations at greater risk due to age or lack of mobility
- Residential, commercial, and industrial buildings
- Critical facilities: Essential facilities, lifeline utility systems, transportation systems, high potential loss facilities, and hazardous materials facilities
- Repetitive loss properties
- New development

Risk was determined by multiplying a score for the probability of the hazard's occurrence by its possible impact. Each participating jurisdiction has its own unique hazard rating. This is a new addition to the Update 2019 and reflects increased awareness that each jurisdiction is unique and has its own set of risks that shape its mitigation action plan. The 2019 Plan Update discusses risk for each jurisdiction and included with each discussion is a corresponding hazard map, a table listing assets that are vulnerable to the hazards, and a risk assessment chart and table.[30] The charts are pie charts and the hazards list starts with dam failure which is shown in the 12 o'clock position on the charts. Hazards that don't exist in a jurisdiction are shown as "0" in the charts.

Asset: People, structures, facilities, and systems that have value to a community.

[30] A geographic information system was utilized to help assess vulnerability. The data used is from the Athens County Auditor's GIS program. The data can only be utilized for a general assessment of vulnerability since the structure and parcel assets are not attributed in detail. For instance, a structure can be a garage or a home or a business and the data does not tell us this. A developed parcel overlying a hazard zone such as a floodplain or an underground mine will be counted in the hazard zone even if a home or business on that parcel is not in the hazard zone.

The Athens County GIS data utilized for the risk analysis has several valuable statistics that require some caution for their use. The data includes appraised parcel value by land use classification. Parcels that are developed with structures can be separated from vacant parcels. This is valuable when trying to determine risk since there is not as much at risk from hazards on vacant land. However, GIS calculates that a parcel is in a hazard zone even when only a portion of the parcel is in the zone. The portion containing the improvement, a structure, may not be in the hazard zone but there is no way of knowing this. However, since we also have information about the numbers of structures in the hazard zone, we can get a per structure value for the jurisdiction and use this value to calculate total assets in the hazard zone based on the number of structures in the hazard zone. Another word of caution is that some structures in flood hazard zones may be mitigated and there is no way of knowing this since such attributes have not been added to the GIS database.

Vulnerability: Characteristics of community assets that make them susceptible to damage from a given hazard.

2.3.2 Scenarios and Assumed Impacts from Hazards

Vulnerability for hazards is geographically specific for those jurisdictions built in the mapped hazard zones: floodplains (including inundation areas below large dams), subsidence areas above mines, and landslide soil zones. The other hazards affect all jurisdictions on a fairly equal basis.

Damage estimates for hazards within jurisdictions will be based on previous incidents of each hazard. National Climatic Data Center historic records beginning in 1990 were analyzed for each hazard and Thunder in the Heartland[31] provided historic Ohio weather extremes dating from the late 1800's. It is assumed that the largest jurisdiction, unincorporated Athens County will have higher damage estimates than smaller jurisdictions because of the differences in numbers of potentially affected assets. Athens City, with large numbers of high value assets will also have the greatest damage estimates. The following discussion of hazards attempts to establish some basis for determining losses when the hazard occurs.

2.3.2.1 Dam Failure

Inundation areas for dam failure have not been digitized into the County GIS. However, the state of Ohio and the U.S. Army Corps of Engineers have calculated loss scenarios and produced inundation mapping for many Class I dams. Dam failure will only affect areas below the dam and will be confined to drainage areas based on elevation. Failure of the Tom Jenkins Dam will have

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the biggest impacts due to population centers located below the dam and the amount of water potentially released. The jurisdictions of Glouster, Trimble, Jacksonville, Chauncey, and Athens will all be impacted to varying extents. A failure of the Tom Jenkins dam could have impacts all the way to the Ohio River, 61 miles to the southeast. A failure when water elevations are at the Top of Active Storage Pool, which is approximately seven feet higher than the estimated elevation of the pool that would have been produced during the 1937 flooding, would produce $136,630,300 in property damage and lead to the loss of 13-157 lives depending on timing of the emergency warning and whether the breach happens during the daytime or evening.

Loss calculations in those jurisdictions affected by a failure of the Tom Jenkins dam will be calculated on the following basis: losses in Glouster, Trimble, and Jacksonville will be calculated at 30% above the 1%-chance flood loss, losses in Chauncey will be calculated at 20% above the 1%-chance flood loss, losses in Athens City and unincorporated Athens County will be calculated at 10% above the 1%-chance flood loss. For loss calculations in the jurisdictions affected by dam failure but not in the Tom Jenkins Dam inundation area (only affecting unincorporated Athens County), an additional 10% of property loss will be added to the flood loss figure for that jurisdiction. This is based on a review of the Dow Lake inundation map that showed an additional 101 critical inundated structures (this figure includes residences) and 55 inundated structures from the probable maximum flood. Dam failure is more likely when there is already a flood underway and the dam is under stress. Many of these structures are on the edge of the floodplain and the damage above that of the 1%-chance flood will be minimal. Loss of life, due to rapid water rise, is possible.

2.3.2.2 Drought

In 2012 all 88 counties in Ohio received an agricultural disaster declaration from the Secretary of Agriculture due to the losses suffered from the 2012 drought. The Draft SOHMP 2019 shows agricultural production losses in Ohio from that year based on a comparison with production in 2011, a non-drought year. Vegetable and fruit production where harmed more than hay, bean, and corn production. Losses ranged from figures in the teens to as high as 50% for apples. Athens County agriculture is based more on corn, bean, and hay production than on fruits or vegetables. Athens County does not have extensive crop irrigation so if the drought becomes severe, there is no means of providing water to crops. It is reasonable to assume a 20% agriculture production loss in a drought year. Only the rural, unincorporated areas will be directly affected with agricultural production losses. However, the economic effects will be felt by everyone as the impact ripples through the economy.

The 2017 Census of Agriculture, County Summary Highlights, showed the market value of agricultural products (this includes livestock) sold in Athens County to be $11,432,000. A 20% loss would amount to $2,286,400. A severe drought that persists for multiple seasons or even several years would have considerably more impacts on agriculture.

Drinking water supplies can be the other major asset affected by drought. Athens County communities are fortunate to have ample public water supplies, all from buried aquifers. There

were no negative impacts on the water systems from the 2012 drought. The largest rural water district, Le-Ax, moved its treatment facility and invested in a well field after the drought of 1988. The system had previously used Lake Snowden as its water source and the drought, combined with other reasons of water quality, convinced them to obtain another source.

It is not anticipated that even a severe drought will have any serious repercussion on public drinking water supplies. Private supplies, depending on well depth or water body size, may be severely impacted. The 2010 census showed only 138 occupied housing units without complete plumbing facilities. Some of these units and others with complete plumbing facilities may not be connected to a public water supply. The total housing units in these circumstances are likely to be several hundred units countywide and are located in rural areas. Water hauling will be a requirement. It is not anticipated that drought will cause a loss of life.

2.3.2.3 Earthquake

For the previous Plan, Athens County NHMP 2014, a HAZUS scenario was completed for an Earthquake. Due to planning capacity constraints, the model was not run again for 2019. Mitigation actions will include HAZUS modeling for the 2024 Update. For purposes of NHMP 2019, damages within each jurisdiction will mirror the damage percentages utilized in the 2014 HAZUS model. The earthquake hazard affects all jurisdictions. Loss of life is a possibility with this hazard. Depending upon the earthquake hazard severity and soil moisture conditions at the time of the earthquake, ground shaking could create additional impacts from other hazards, specifically landslides and subsidence. These hazards are geography-specific and will affect assets in moderate and severe landslide areas and subsidence areas where underground mining occurred.

The 2014 HAZUS model estimated that about 4,077 buildings will be at least moderately damaged, which is over 16% of the total number of buildings in the County. An estimated 135 buildings would be damaged beyond repair. On the day of the earthquake the model estimates that only 70 hospital beds of the 135 beds (or 52%) would be available for use by patients already in the hospital and those injured by the earthquake. After one week, 66% of the beds would be back in service and by 30 days, 87% would be operational. HAZUS also estimates the amount of debris that will be generated by an earthquake, broken down to two categories: Brick/Wood and Reinforced Concrete/Steel. The model estimated that .120 million tons of debris would be generated with Brick/Wood comprising 58% of the total. This would be an estimated 4,600 truckloads to remove the debris. Further, the model notes shelter requirement needs. For this scenario, it is estimated that 302 households would be displaced and that 362 people will seek temporary shelter in public shelters. Building related losses are broken into two categories: direct building losses and business interruption losses. Total building losses for this scenario were 357.91 million dollars); 17% of the estimated losses were related to business interruption. The largest loss was sustained by the residential occupancies which made up over 63% of the total loss. In these scenarios, there were no losses computed by HAZUS for business interruption due to transportation and utility lifeline outages. Adjusted for an inflation rate of 2% per year or approximately 10% over the 5 year period since the last Plan update, total building losses for that HAZUS 2014 run would have been $618.3 million or 14.4% of the appraised, improved parcel

value in the County. To calculate property losses for individual jurisdictions, it is assumed that 14.4% of the improved parcel values will be damaged in an earthquake. Injury and loss of life are possible.

2.3.2.4 Extreme Cold

This hazard will affect all jurisdictions, although the coldest temperatures have occurred at the lowest elevations in drainage "hollows" with minimal air circulation. Extreme cold will cause relatively minor building damage in the form of frozen and burst water lines. Extended extreme cold periods can cause building foundations to shift from frost heaving. Extended extreme cold periods can also lead to public infrastructure issues with damage to highway bases and frost heaving and landslides where public waterlines are located.

Rarely will someone die as a result of extreme cold but there are occasional reports of someone freezing to death due to heating systems that have stopped working or someone being asphyxiated due to heating systems that are malfunctioning and releasing toxic gases into a residence. Elderly populations are the most at risk. Property damage for two previous events in January 2014 listed $50,000 and $100,000 in damages across the County. Damage amounts will be smaller in less populated jurisdictions but this hazard can create sizable damage estimates. Damages will be estimated in $10,000 increments per 10,000 population.

2.3.2.5 Extreme Heat

This hazard will affect all jurisdictions. Asset damage will be confined to agriculture, transportation systems where highways or railroad rails react negatively to the heat, overtaxed electric grids since the peak loads on power plants now come in warm weather from air conditioning use, and people who suffer from various heat-related illnesses. Elderly populations are the most at risk. Heat related illness and loss of life are possible. Property damage will be minimal based on previous extreme heat events.

2.3.2.6 Flooding (Flash)

Flash flooding will affect jurisdictions with smaller drainage systems that react quickly to storm events. Many areas prone to flash flooding are not mapped as floodplains in Athens County. This is primarily because funding to perform such mapping is not available or is difficult to obtain. Almost any area can experience flash flooding if a rain event is hard enough. Water in flash flood areas tends to have higher velocities due to the drainages being headwaters or higher in elevation and therefore steeper. Loss of life is possible due to the rapid rise in water elevation. Higher velocities can float and carry objects not fastened down, particularly vehicles, sheds, boats, and mobile homes. These can then become floating hazards that crash into fixed structures. Flash floods can create erosion problems also because of flow velocity. This can undermine highway systems and buildings.

Flash floods will not have the same impacts as large riverine floods that cover more land and persist for longer periods of time. Injury and loss of life are possible. Damages from flash flooding will be estimated in $25,000 increments per 10,000 population.

2.3.2.7 Flooding (Riverine)

Riverine flooding has caused the most damage of any natural disaster in Athens County. Of 12 instances where federal funds were made available to Athens County since 1964, 10 of those instances were for flooding. This hazard affects those jurisdictions with floodplains. Asset damage is calculated with some of the same assumptions that were used in NHMP 2014, but with more refined GIS figures from the County and on a jurisdictional basis. The assumptions are:

- Asset values are a combination of residential, commercial, industrial, tax exempt, utility, and railroad improved properties.
- Vacant properties are not included in the total asset value that is subject to damage by a hazard.
- Assets in geographic hazard zones (floodplain, landslide, and subsidence) have their parcel values adjusted downward by a factor that is the percentage of structures in the hazard zone divided by the percentage of parcel value in the hazard zone. This will eliminate parcels that show up in a hazard zone without corresponding structures also in the hazard zone.
- Total contents value is estimated at 50% of appraised parcel value.

Damage from flooding is 20% of real estate structure value and 63% of mobile home value. Damage from flooding is 20% of contents value for real estate and 90% of contents value for mobile homes. Injury and loss of life are possible.

2.3.2.8 Freezing Rain/Ice Storm

Freezing Rain/Ice Storm impacts people by making walking and driving hazardous. Freezing rain also builds ice on tree branches, utility lines, and other overhead structures making them prone to breakage or falling over. The majority of property damage is caused by trees toppling onto homes and other structures, including power lines. Automobiles are also damaged in this way. Injuries and deaths are caused by highway accidents on slippery roadway surfaces and by trees falling on people. Weather forecasting for this hazard is improving but it is still difficult to predict just where temperature and precipitation conditions will be right to produce a freezing rain event. This event can happen in all jurisdictions. Damage in any jurisdiction is expected to be between $10,000 and $50,000 based on previous instances. Damages will be estimated in $10,000 increments per 10,000 population. Injury and loss of life are possible.

2.3.2.9 Hail

Hail can be very destructive to roofing, automobiles, tents, crops, and other objects made of sheet metal, fabric, or lightweight materials. Injury and death are possible, although unlikely. A reported hail event in Nelsonville showed a damage estimate of $200,000. Several other hail events indicated losses in the range of $1000-$50,000. This hazard will affect all jurisdictions. Damages will be estimated in $10,000 increments per 10,000 population.

2.3.2.10 High Winds

These are winds separate from tornadoes and strong thunderstorms. These winds often arrive when strong cold fronts move into the area. While generally not as damaging as tornadoes and thunderstorms winds, they can cause serious damage to property and injury or death if trees are

blown down. Unique incidents can also occur such as in 2001 when a newly constructed and unsupported block wall for a new, large retail store was toppled by high winds. Damage for that incident was listed by the NCDC at $65,000. Several regional reports showed property damage in the range of $50,000-$75,000. A high wind incident at the Athens County Fair also collapsed a large tent and injured 8 people, none life-threatening. High winds can happen in any jurisdiction. Injury and death are possible since large trees and other objects can be blown on top of people. Damages will be estimated in $25,000 increments per 10,000 population.

2.3.2.11 Invasive Species

It is very difficult to quantify damage amounts for invasive species and no attempt will be given in this NHMP Update 2019. Invasive species have their biggest impact disrupting native ecological processes by crowding out native species or occupying environmental niches where there is no predation on the invasive. This is the case of the Emerald Ash Borer that has now decimated most of the native Ash Tree population in Ohio.

The biggest financial impact to citizens is the reduction in agriculture. While difficult to quantify, effects can be felt from lower yields or the increased cost of having to apply pesticides or herbicides to deal with the problem. With the case of invasive plants that inhabit the county's ample woodlands, there is reduced yield of timber or the complete devastation of a species such as Ash. Native species that help provide diversity in the forest are also outcompeted and the ecosystem is left in a situation where there are fewer species.

Invasive species can pose a threat to life when trees are killed and are more prone to fall over in high winds. Highway Departments have to spend more money removing these trees from the right-of-way and cannot keep up with all the trees that have died recently.

2.3.2.12 Landslide/Rockfall

This is a geography-specific hazard based primarily on soil type. Landslide and rockfall are exacerbated by the presence of water which acts as a lubricant and can also become a mechanical agent when it freezes and thaws and creates movement in soils and breaks rock off of steep rock faces. Floodwaters can also create unstable situations in the soils when the bottoms of slopes are eroded away. Support is reduced below and gravity starts mass movements of rock and soils.

The majority of funding in flood disaster declarations in Athens County goes to repair of roads and bridges, in large part due to landslides adjacent to creeks and rivers. The last federal disaster declaration that included Athens County, DR-4360, awarded $1,242,898.41 of federal funds and $197,955.39 of state funds to just the Athens County Engineer for repairs to the County highway system. From the same declaration, the City of Athens received $255,881.54 in federal funds and $23,867.70 in state funds for a variety of issues, but $74,391.90 went to repair just one moderately sized landslide. The Village of Glouster received $29,981.33 in state funds to repair a landslide adjacent to Sunday Creek after flooding in 2018.

Based upon the history of landslide in the County, repairs for landslides can range from as low as several thousand dollars, if the roadway is just leveled back to original grade and minor

stabilization is provided with rock placement, to as high as several hundred thousand dollars for a large-scale stabilization. A large flood event will usually create multiple landslides so the loss estimates for a large jurisdiction like the County can go over $1,000,000. An earthquake that happens at a time when soil moisture is high could be quite devastating with damages easily into multiple millions of dollars.

Buildings constructed in landslide areas are subject to foundation problems from the movement of soils. The heavy clays are also prone to high shrink/swell with water present. The HAZUS earthquake scenario that was run for the NHMP Update 2014 indicated 4,706 buildings would be moderately damaged with repairs running to $357,910,000. If soil moisture conditions are appropriate, this number may even be low because landslides will be triggered.

Most homes will not likely suffer damage during a wet period causing landslides. However, some homes may suffer serious foundation damage. For damage estimate calculations, figures of $500 per structure in moderate landslide zones and $1,000 per structure in severe landslide zones will be utilized. There are no calculations for highway damage but $1,000,000 will be used as an estimate since numbers this large can occur on just the county highway system. Injury and loss of life are possible but unlikely.

2.3.2.13 Land Subsidence (Mines)

This hazard is also geography-specific to those portions of the County where underground mining for coal took place. Everyone who owns property in Athens County pays $1/year into an insurance pool that is available for owners who experience subsidence problems from an older, abandoned mine. Between 2007-2018, there were no subsidence-related claims paid out. As with the landslide hazard, should an earthquake occur, subsidence could be triggered since the stability of the bedrock over a mine and the stability of remaining coal piers in the mine are threatened. The hazard maps indicate jurisdictions most at risk from subsidence, however, based on historic claims information, damage in any year will likely not be more than $50,000 and this would be a worst-case scenario of subsidence being triggered by an earthquake. Injury and loss of life are possible but unlikely.

2.3.2.14 Thunderstorm/Lightning

Thunderstorms are a common occurrence in Athens County. Their intensity can create devastating winds, high rainfall amounts, and lightning. Thunderstorms can happen in any jurisdiction and damages can be extreme. The NCDC list of damages from thunderstorm winds is extensive and shows property damage of $500,000 on 4/15/93, damage of $500,000 on 11/11/93, damage of $200,000 on 6/4/02, damage of $150,000 on 6/29/2012 and ten instances ranging between $10,000 and $50,000.

Lightning strikes can also injure and kill residents either by direct hits, by causing tree limbs to fall, and by causing fires to objects hit by the lightning. On 4/11/01 lightning caused $40,000 of property damage in Stewart. Two incidents in June, 1995 created $20,000 of damage in each. There was one lightning report in the NCDC storm database covering 2014-2019 and $4,000 was reported for property damage. Damages will be estimated in $10,000 increments per 10,000 population.

2.3.2.15 Tornado

A tornado can be one of nature's most devastating forces, destroying everything in its path. Tornadoes can strike any jurisdiction and Athens County has witnessed several. The NCDC storm database showed an F1 tornado on 5/12/80 causing $250,000 in damages and an EF2 tornado on 9/16/10 causing $750,000 in damages. An EF0 tornado on 10/18/18 caused an estimated $10,000 in damages. Depending on where a tornado strikes and its intensity, damages can vary widely. Millions of dollars in losses are possible and injury and death are possible.

The EF2 tornado that struck on 9/16/10 hit a rural location that did have a number of homes on smaller parcels along the roadway. If this tornado touched down in a more densely settled area the damages would have been higher. Damages are estimated based on a scenario of an EF2 tornado touching down over an area 100 yards wide by one mile long and causing real property losses of 50% and contents losses equal to 50% of the real property loss. The 36 acre damage area will be figured as a percentage of the total area of the jurisdiction and 50% of that percentage will be multiplied by the developed parcel value to determine real property loss and half of that will be contents loss.

2.3.2.16 Wildfire

Drought years are when wildfire is most likely to occur. Records of past fire seasons in Athens County showed no structural property damage, no injuries, and no loss of life. During one 11-year period of record, the average size wildfire in Athens County was 5 acres with an average of five such fires per year. There was only one large fire of approximately 100 acres.
Wildfire in Athens County is usually associated with rural areas where a trash burning fire gets out of control. Urban jurisdictions are not likely to be at much risk because there is no vegetative undergrowth to burn. While wildfire can affect all jurisdictions, it is most likely to occur in the unincorporated portion of Athens County. Injury and loss of life are possible but unlikely.

2.3.2.17 Winter Storms/Blizzard

Winter storms occur frequently in Athens County. Blizzards are more extreme events and do not occur very often. The NCDC records show a winter storm caused $80,000 of damage on 1/20/12. Historically, 1977 and 1978 brought two of Ohio's worst years for blizzards. Statewide, there was an estimated death toll of 51 from the January 1978 blizzard. Most property damage occurs when heavy wet snows fall and roofs collapse or trees are weighted down and topple onto buildings. Blizzards can bring high winds that can tear off roofs and also blow trees down onto buildings and power and communication lines. The elderly population is particularly susceptible to this hazard, particularly if the event is prolonged. Regional damage costs from a heavy snow/blizzard scenario in January 1995 were listed at $500,000. The County could see damages in the hundreds of thousands of dollars and injury and death are possible. Damages will be estimated in $25,000 increments per 10,000 population.

2.3.3 Albany Village

Key Facts

- Albany only has 8.8 % of its land area in landslide hazard zones.
- Albany does not have any flood or subsidence zones.
- Albany does not have any repetitive loss properties.
- Albany is adjacent to the Ohio University airport.

Assets

The Village of Albany is fortunate to have been sited outside of flood zones and in an area that was never underground mined for coal. This is unique amongst the jurisdictions in Athens County. The Village of Albany has 965 structures and a developed parcel value of $29,997,290.

Critical Facilities

- Wastewater treatment plant
- Volunteer fire department
- EMS station
- Medical clinic
- US 50/32 bridge
- Railroad bridge
- Lee Township building and yard
- Water Tower

Hazard	Potential Damages	Injury/ Death
Dam Failure	No hazard	None
Drought	Minor <$10,000	Unlikely
Earthquake	$1,992,217	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	None	None
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$6,000	Unlikely
Land Subsidence (mines)	None	None
Thunderstorms/Lightning	$10,000	Possible
Tornado	$1,974,468	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

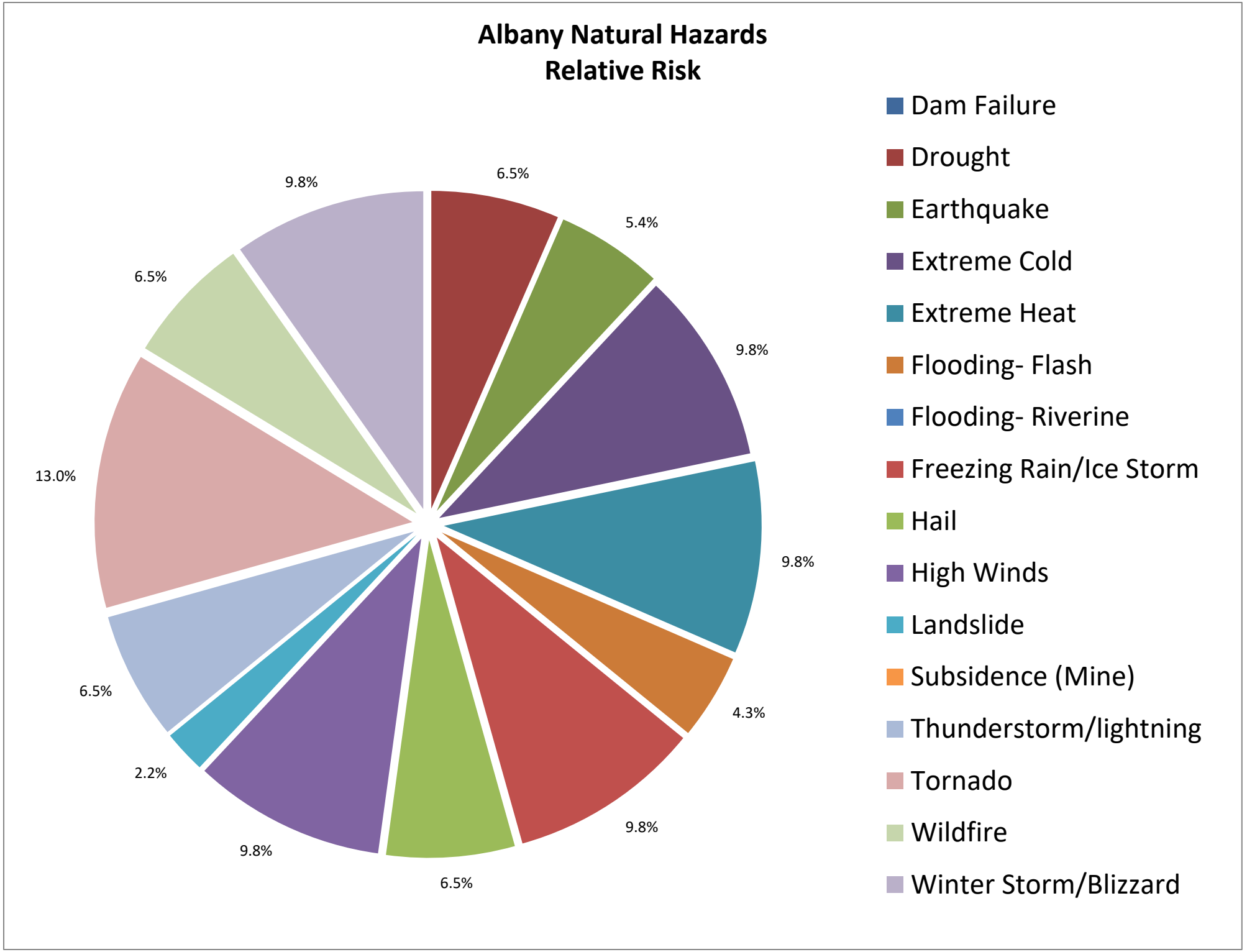
Vulnerabilities

The Village of Albany has an elderly population of 154 aged 65+ and an institutional population of 23.

New Development

There is no new development in the Village of Albany.

ALBANY									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	820.4	0	0	52.4	6.4%	19.3	2.4%	0	0%
Population[1]	901							0	
Residential Parcels	319	0	0	1	0.3%	3	0.9%	0	0%
Commercial Parcels[2]	47	0	0	0	0.0%	1	2.1%	0	0%
Industrial Parcels	0								
600-880	76					1	1.3%		
Structures[3]	965	0	0	2	0.2%	13	1.3%	0	0%
Developed Parcel Value	$29,997,290	$ -	$ -	$ -	0.0%	$ 716,620	2.4%	$ -	0%
Institutional Population[4]	23								
Elderly 65+[4]	154		**Tornado**	$1,316,312			NOTES		
Repetitive Loss Properties	0		**Tornado Contents**	$658,156			1. 2018 estimate		
Critical Facilities	7		**Total Tornado**	$1,974,468			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$1,992,217			4. 2010 census		


Albany Natural Hazards
Relative Risk
6.5%
5.4%
9.8%
9.8%
9.8%
4.3%
9.8%
6.5%
9.8%
2.2%
6.5%
13.0%
6.5%
9.8%
Dam Failure
Drought
Earthquake
Extreme Cold
Extreme Heat
Flooding- Flash
Flooding- Riverine
Freezing Rain/Ice Storm
Hail
High Winds
Landslide
Subsidence (Mine)
Thunderstorm/lightning
Tornado
Wildfire
Winter Storm/Blizzard

Albany Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	0	0	0	0.0%
Drought	2	3	6	6.5%
Earthquake	1	5	5	5.4%
Extreme Cold	3	3	9	9.8%
Extreme Heat	3	3	9	9.8%
Flooding- Flash	2	2	4	4.3%
Flooding- Riverine	0	0	0	0.0%
Freezing Rain/Ice Storm	3	3	9	9.8%
Hail	3	2	6	6.5%
High Winds	3	3	9	9.8%
Landslide/Rockfall	1	2	2	2.2%
Subsidence (Mine)	0	0	0	0.0%
Thunderstorm/lightning	3	2	6	6.5%
Tornado	3	4	12	13.0%
Wildfire	2	3	6	6.5%
Winter Storm/Blizzard	3	3	9	9.8%

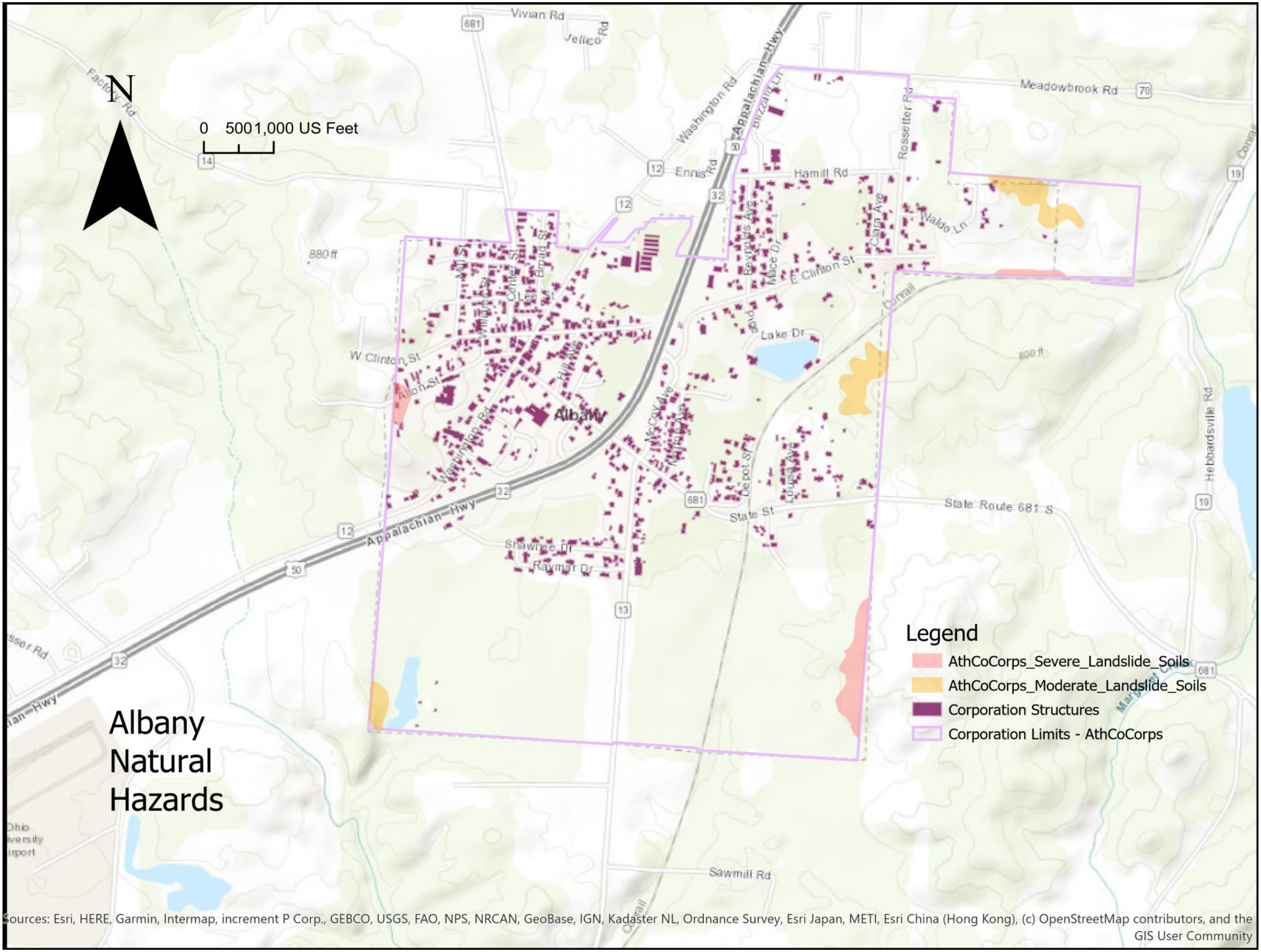
*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
3 - Casualties and extensive property damage likely occurs to target groups or injuries and property damage require multi agency/jurisdictional response and assistance
2 - Casualties may occur and property damage would occur as a local emergency
1 - No casualties will occur and property damage is unlikely to occur, a local emergency
0 - Conditions make it highly improbable that this event would occur


Albany
Natural
Hazards
N
0 500 1,000 US Feet
Legend
AthCoCorps_Severe_Landslide_Soils
AthCoCorps_Moderate_Landslide_Soils
Corporation Structures
Corporation Limits - AthCoCorps
Albany
Appalachian Hwy
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.4 Amesville Village

Key Facts

- Amesville has 32.3% of its land in the floodplain but only 3 structures (1.8% of all structures) in the floodplain because of a mitigation project after flooding in 1998.
- Amesville should have its flood maps updated because there is concern that the existing FEMA flood maps do not accurately depict the 1%-chance flood. Two floods, one in 1997 and one in 1998, far exceeded the 1%-chance flood levels.
- Amesville sits at the confluence of 3 drainages and can be subject to both flash flooding and riverine flooding.
- Amesville has only 2 structures in a landslide area (moderate).

Assets

The Village of Amesville has 169 structures and a developed parcel value of $8,547,580.

Critical Facilities

- Wastewater treatment system
- Water treatment systems
- Ames VFD
- Ames Township building and yard
- Amesville Elementary School
- SR 550 bridge

Hazard	Potential Damages	Injury/ Death
Dam Failure	No hazard	None
Drought	Minor <$10,000	Unlikely
Earthquake	$1,230,852	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	$39,164	Possible
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$1,000	Unlikely
Land Subsidence (mines)	None	None
Thunderstorms/Lightning	$10,000	Possible
Tornado	$3,150,644	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

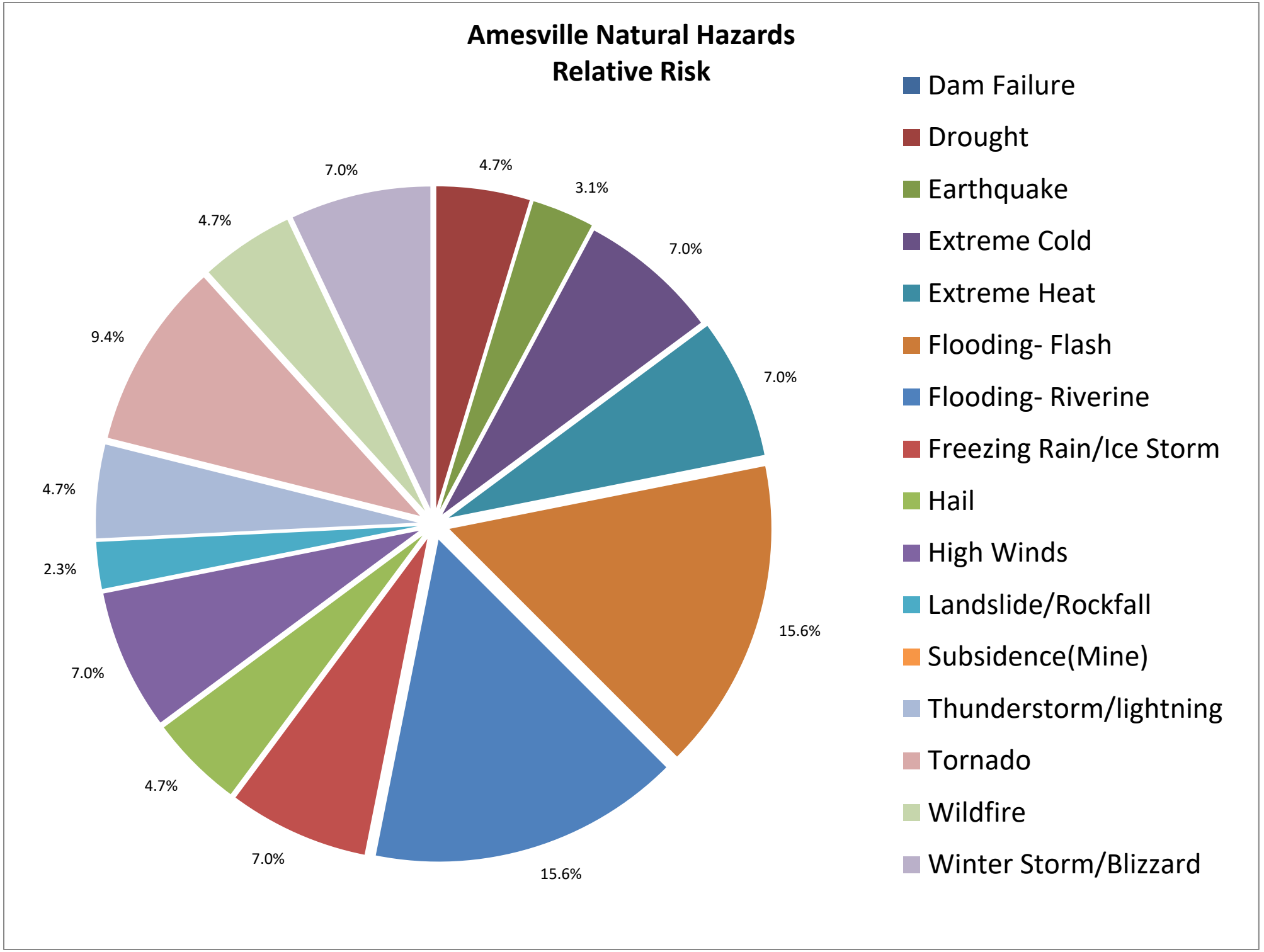
Vulnerabilities

The Village of Amesville has 22 residents 65+ years in age and 5 repetitive loss properties. The FEMA flood map for the Village may not accurately show the 1%-chance flood area.

New Development

Amesville had a wastewater treatment system constructed about ten years ago.

AMESVILLE									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	146.5	47.3	32.3%	28	19.1%	14.8	10.1%	0	0%
Population[1]	157								
Residential Parcels	86	4	4.7%		0.0%		0.0%		0%
Commercial Parcels[2]	10	3	30.0%		0.0%		0.0%		0%
Industrial Parcels	0								
600-880	130	28	21.5%	0	0.0%	0	0.0%	0	0%
Structures[3]	169	3	1.8%	2	1.2%				
Developed Parcel Value	$8,547,580	$618,580	7.2%	$1,916,810	22.4%	$ -	0.0%	$ -	0%
Institutional Population[4]	0								
Elderly 65+[4]	22		**Tornado**	$2,100,429			NOTES		
Repetitive Loss Properties	5		**Tornado Contents**	$1,050,215			1. 2018 estimate		
Critical Facilities	5		**Total Tornado**	$3,150,644			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$1,230,852			4. 2010 census		


Amesville Natural Hazards
Relative Risk
4.7%
3.1%
7.0%
7.0%
15.6%
15.6%
7.0%
4.7%
2.3%
4.7%
9.4%
4.7%
7.0%
Dam Failure
Drought
Earthquake
Extreme Cold
Extreme Heat
Flooding- Flash
Flooding- Riverine
Freezing Rain/Ice Storm
Hail
High Winds
Landslide/Rockfall
Subsidence(Mine)
Thunderstorm/lightning
Tornado
Wildfire
Winter Storm/Blizzard

Amesville Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	0	0	0	0.0%
Drought	2	3	6	4.7%
Earthquake	1	4	4	3.1%
Extreme Cold	3	3	9	7.0%
Extreme Heat	3	3	9	7.0%
Flooding- Flash	5	4	20	15.6%
Flooding- Riverine	5	4	20	15.6%
Freezing Rain/Ice Storm	3	3	9	7.0%
Hail	3	2	6	4.7%
High Winds	3	3	9	7.0%
Landslide/Rockfall	1	3	3	2.3%
Subsidence (Mine)	0	0	0	0.0%
Thunderstorm/lightning	3	2	6	4.7%
Tornado	3	4	12	9.4%
Wildfire	2	3	6	4.7%
Winter Storm/Blizzard	3	3	9	7.0%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
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2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
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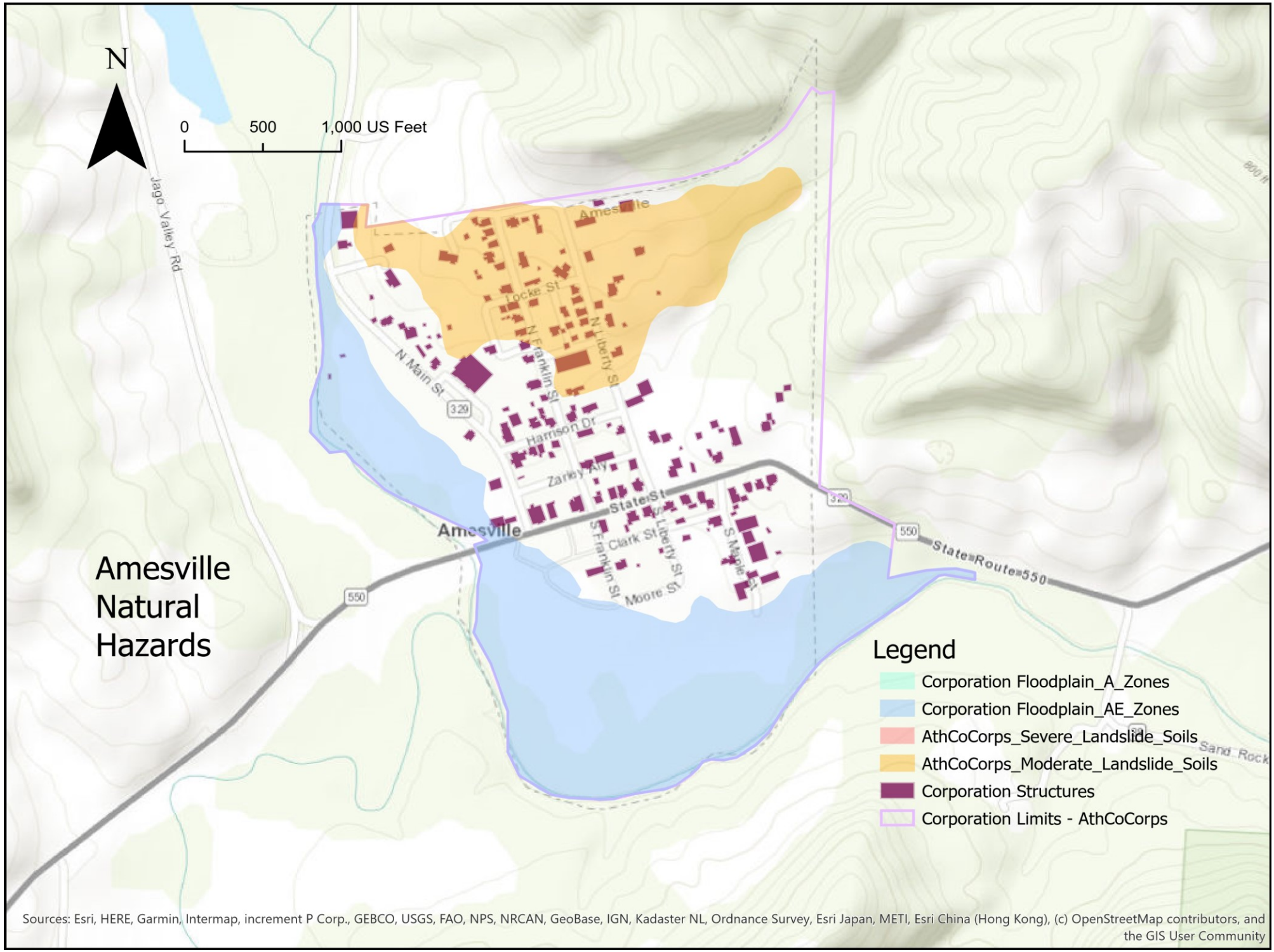

N
0
500
1,000 US Feet
Amesville Natural Hazards
Legend
Corporation Floodplain_A_Zones
Corporation Floodplain_AE_Zones
AthCoCorps_Severe_Landslide_Soils
AthCoCorps_Moderate_Landslide_Soils
Corporation Structures
Corporation Limits - AthCoCorps
Jago Valley Rd
Amesville
Locke St
N Franklin St
N Liberty St
N Main St
329
Harrison Dr
Zarley Ally
State St
Clark St
S Franklin St
S Liberty St
Moore St
S Maple St
550
State Route 550
Sand Rock
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.5 Athens City

Key Facts

- Home to Ohio University with a population of approximately 20,000 students, most of whom live within the City limits.
- Athens City has 7,937 residents living in non-institutionalized group quarters (primarily students in dormitories)
- The City has not experienced a 1%-chance flood since the channelization project was constructed. The channel is not designed to convey a 1%-chance flood event.
- 23% of the City's structures are in the floodplain.
- 39% of the City's structures are in severe landslide areas.
- Athens City has no repetitive loss properties.

Assets

The City of Athens is the county seat and key center of activity in Athens County and the region. The City has 5,779 structures and a developed parcel value of $2,426,411,340. Additionally, The Community Center located on East State Street in Athens serves as an emergency shelter and heating or cooling station when needed.

Critical Facilities

- ODOT facility
- W. Union St. bridge
- Richland Ave. bridge
- Old Richland Ave. bridge
- Stimson Ave. bridge
- Ohio Highway Patrol
- Athens P.D.
- Athens Co. Sheriff/EOC
- O.U. campus security
- Fire stations 1 and 2
- EMS
- Southeastern Psychiatric Hospital
- O'Bleness Hospital
- City-County Health Dept.
- Holzer Clinic
- Frontier Communications

Hazard	Potential $ Damages	Injury/ Death
Dam Failure	$148,975,526	None
Drought	Minor <$10,000	Unlikely
Earthquake	$349,403,233	Likely
Extreme Cold	$30,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	Minor < $25,000	Unlikely
Flooding (Riverine)	$135,432,297	None
Freezing Rain/Ice Storm	$30,000	Possible
Hail	$30,000	Unlikely
High Winds	$75,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$1,288,500	Unlikely
Land Subsidence (mines)	None	None
Thunderstorms/Lightning	$30,000	Possible
Tornado	$21,631,839	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$75,000	Possible

- AEP substation on The Ridges
- Kimes reservoir
- Longview water tower
- Curtis St. pumping station
- Ridges water tower
- O.U. physical plant
- AEP substation on Curran Dr.
- Frontier switching station – downtown
- AEP substation – campus
- City wellfield
- Currier St. and Kimes Nursing home pumping station
- Highland reservoir
- Athens WWTP
- Athens WTP
- Columbus Rd. water pumping station
- Microwave Communication System throughout the city
- Richland Avenue and Depot Street Lift Stations

Vulnerabilities

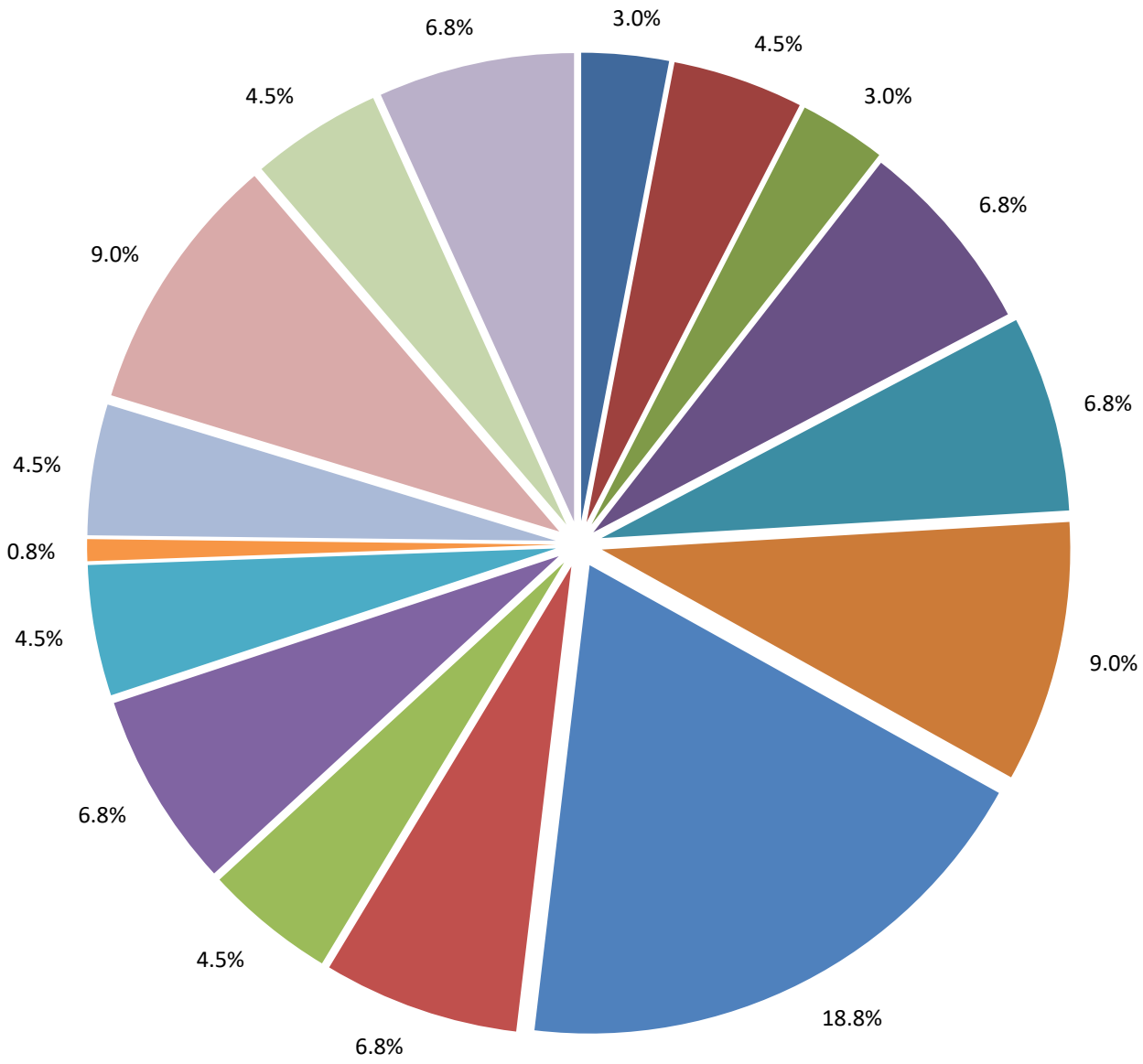
The City of Athens has 1023 residents aged 65+ years and an institutional population of 139.

New Development

- A large home and building supply store is being built on the east side of the City in the floodplain. Necessary permits were obtained.
- The City has made improvements to its WWTP.

ATHENS CITY									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	6057.1	1671.7	28%	1752.6	29%	819.7	14%	250.1	4.1%
Population[1]	24,688								
Residential Parcels	3594	578	16%	112	3%	1064	30%	0	0.0%
Commercial Parcels[2]	761	313	41%	46	6%	166	22%	1	0.1%
Industrial Parcels	8	3	38%						
600-880									
Structures[3]	5779	1344	23%	580	10%	2699	47%	0	
Developed Parcel Value	$2,426,411,340	$2,114,695,880	87%	$67,169,840	3%	$436,674,500	18%	$101,220	0.0%
Institutional Population[4]	139								
Elderly 65+[4]	1023		**Tornado**	$14,421,226			NOTES		
Repetitive Loss Properties	0		**Tornado Contents**	$7,210,613			1. 2018 estimate		
Critical Facilities	31		**Total Tornado**	$21,631,839			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$349,403,233			4. 2010 census		

Athens City Natural Hazards
Relative Risk



- Dam Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding- Flash
- Flooding- Riverine
- Freezing Rain/Ice Storm
- Hail
- High Winds
- Landslide/Rockfall
- Subsidence(Mine)
- Thunderstorm/lightning
- Tornado
- Wildfire
- Winter Storm/Blizzard

Athens Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	4	4	3.0%
Drought	2	3	6	4.5%
Earthquake	1	4	4	3.0%
Extreme Cold	3	3	9	6.8%
Extreme Heat	3	3	9	6.8%
Flooding- Flash	4	3	12	9.0%
Flooding- Riverine	5	5	25	18.8%
Freezing Rain/Ice Storm	3	3	9	6.8%
Hail	3	2	6	4.5%
High Winds	3	3	9	6.8%
Landslide/Rockfall	2	3	6	4.5%
Subsidence (Mine)	1	1	1	0.8%
Thunderstorm/lightning	3	2	6	4.5%
Tornado	3	4	12	9.0%
Wildfire	2	3	6	4.5%
Winter Storm/Blizzard	3	3	9	6.8%

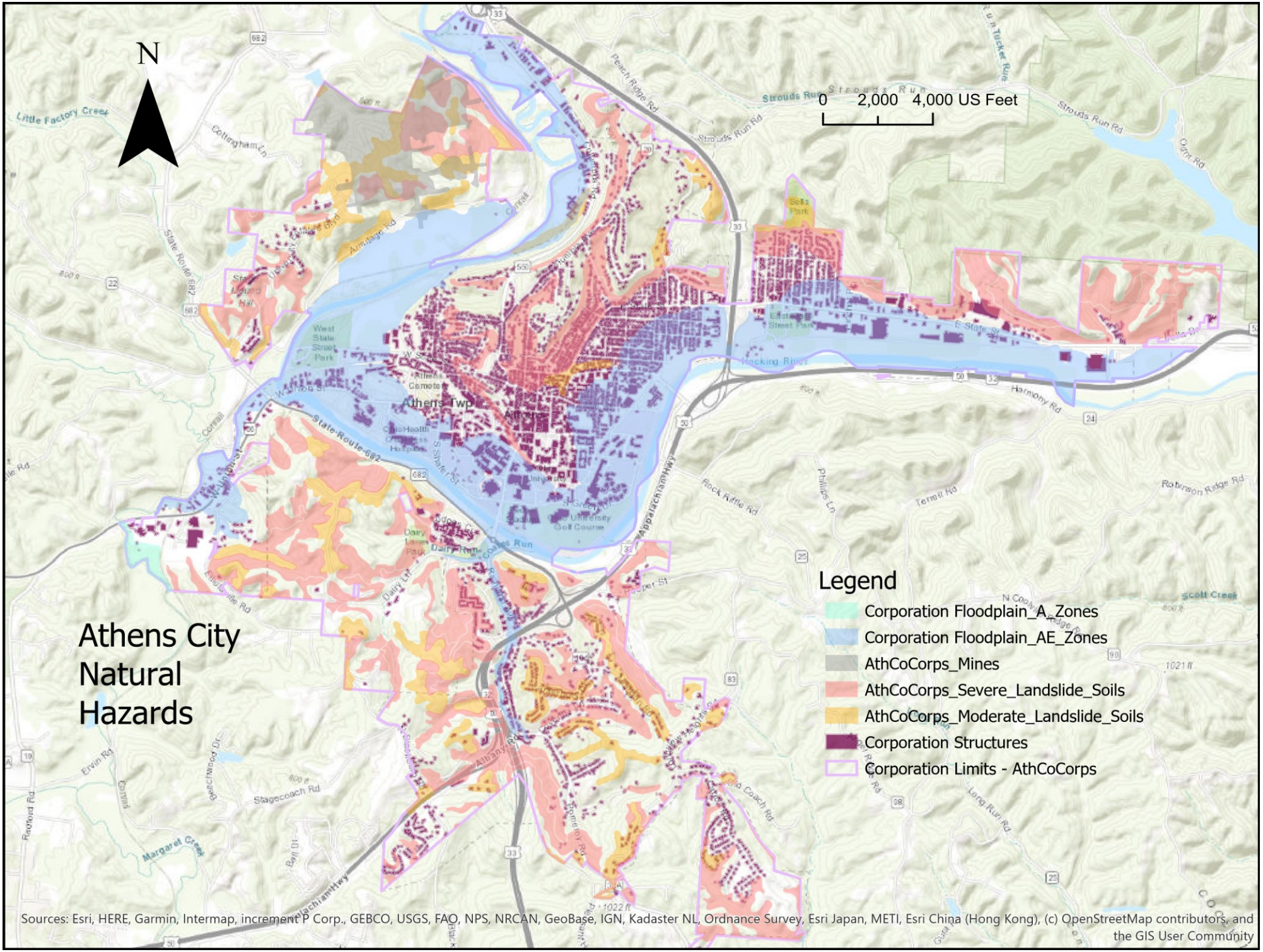
*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
3 - Casualties and extensive property damage likely occurs to target groups or injuries and property damage require multi agency/jurisdictional response and assistance
2 - Casualties may occur and property damage would occur as a local emergency
1 - No casualties will occur and property damage is unlikely to occur, a local emergency
0 - Conditions make it highly improbable that this event would occur


N
0 2,000 4,000 US Feet
Athens City
Natural
Hazards
Legend
Corporation Floodplain_A_Zones
Corporation Floodplain_AE_Zones
AthCoCorps_Mines
AthCoCorps_Severe_Landslide_Soils
AthCoCorps_Moderate_Landslide_Soils
Corporation Structures
Corporation Limits - AthCoCorps
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.6 Athens County (unincorporated)

Key Facts

- Athens County is rural with a low population density and land cover that is primarily forest.
- Athens County has 2,284 structures (5.8%) in the floodplain.
- 42% of the land in Athens County is in moderate landslide areas and 17.6 % in in severe landslide areas.
- 11.4 % of the land area in Athens County is in subsidence zones. 4,714 structures are in subsidence zones.
- Athens County completed two mitigation projects: one for $226,479 in Sugar Creek that was used for acquisition and dry floodproofing and one for $841,429 in Doanville (York Township) for acquisition.

Assets

The unincorporated region of Athens County contains 39,116 structures and a developed parcel value of $1,451,730,790.

Critical Facilities

- York Twp. VFD
- Leax WTP and wellfield
- Burr Oak Lake dam
- GTJ WWTP
- Sunday Creek WTP and wellfields
- Waterloo VFD
- Fox Lake dam
- Richland Area VFD
- AEP substation on Strouds Run Rd.
- Dow Lake dam
- Rome Twp. VFD
- Township garages in Waterloo, Dover, Bern, York, Canaan, Rome, Alexander, Lodi, and Carthage Townships
- Nesbitt dam
- Lake Snowden dam
- Oxley Rd. Lake dam

Hazard	Potential Damages	Injury/ Death
Dam Failure	$24,285,424	Likely
Drought	$2,286,400	Unlikely
Earthquake	$209,049,234	Likely
Extreme Cold	$40,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$100,000	Possible
Flooding (Riverine)	$22,077,659	Likely
Freezing Rain/Ice Storm	$40,000	Possible
Hail	$40,000	Unlikely
High Winds	$100,000	Possible
Invasive Species	Moderate	None
Landslide/Rockfall	$6,395,000	None
Land Subsidence (mines)	Moderate $10,000-$50,000	Possible
Thunderstorms/Lightning	$40,000	Possible
Tornado	$250,617 (may be much higher if in a populated area)	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$100,000	Possible

- Fisher Rd. Lake dam
- Meek's Lake dam
- Tennessee Gas pumping station and pipelines
- Texas Eastern pumping station and pipelines
- Carthage VFD

Vulnerabilities

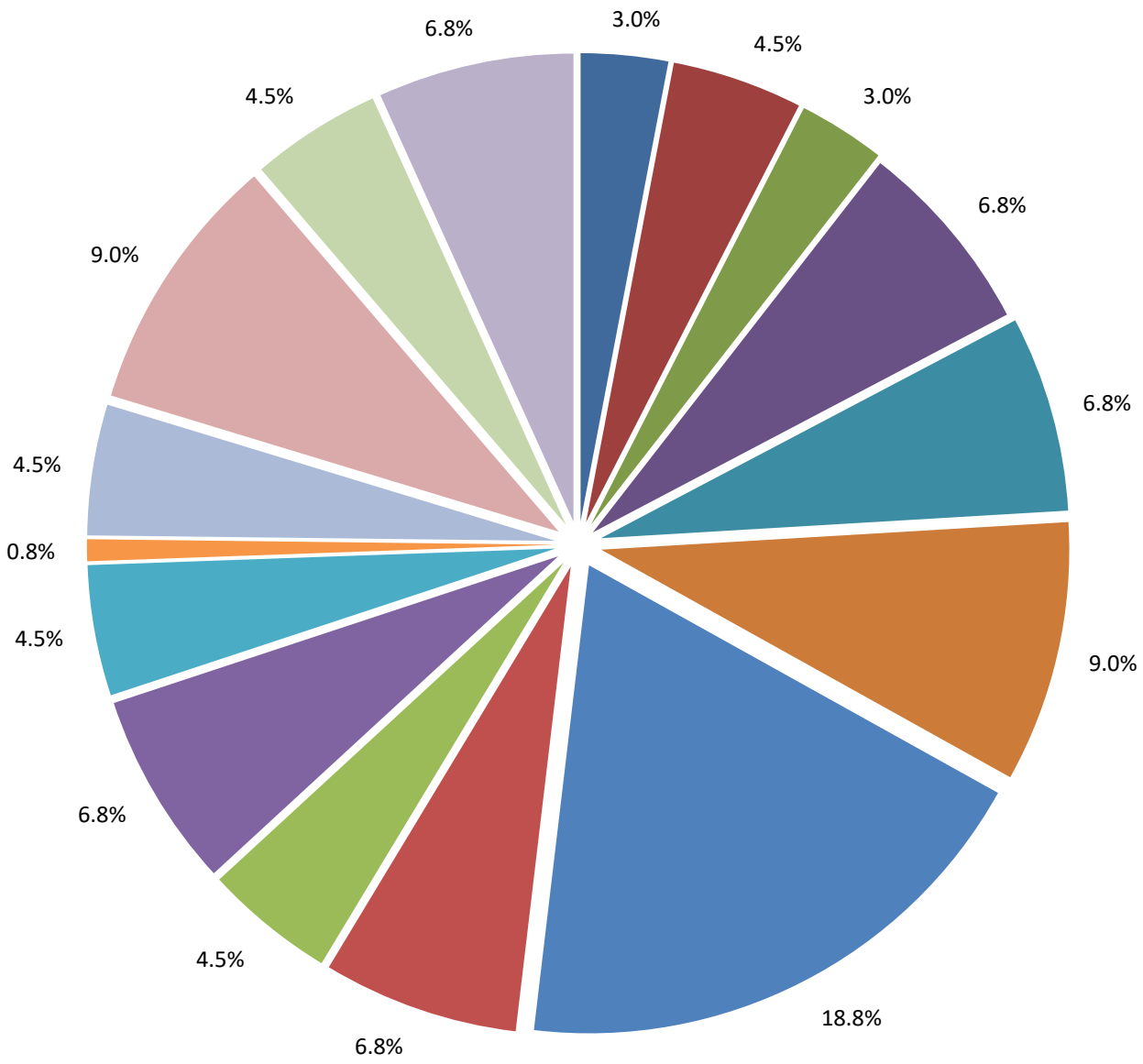
Unincorporated Athens County has 4,208 residents aged 65+ years and an institutional population of 218.

New Development

- A 1.3 mile extension to the Hockhocking Adena Bikeway was completed in 2019.
- ODOT has a new county highway garage in the same location as the old one.

ATHENS COUNTY (UNINC.)									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/ Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	312,801.80	16,127.10	5.2%	131353.4	42.0%	55108.1	17.6%	35558.8	11.4%
Population[1]	30,109		0.0%		0.0%		0.0%		0.0%
Residential Parcels	9917	1106	11.2%	1589	16.0%	4626	46.6%	2051	20.7%
Commercial Parcels[2]	410	117	28.5%	32	7.8%	60	14.6%	95	23.2%
Industrial Parcels	12	3	25.0%	5	41.7%	3	25.0%	1	8.3%
600-880									
Structures[3]	39116	2284	5.8%	2978	7.6%	4906	12.5%	4714	12.1%
Developed Parcel Value	$1,451,730,790	$345,620,150	23.8%	$488,332,730	33.6%	$1,361,412,230	93.8%	$496,741,760	34.2%
Institutional Population[4]	218								
Elderly 65+[4]	4208		**Tornado**	$167,078			NOTES		
Repetitive Loss Properties	17		**Tornado Contents**	$83,539			1. 2018 estimate		
Critical Facilities	20		**Total Tornado**	$250,617			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$209,049,234			4. 2010 census		

Athens County Natural Hazards
Relative Risk



- Dam Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding- Flash
- Flooding- Riverine
- Freezing Rain/Ice Storm
- Hail
- High Winds
- Landslide/Rockfall
- Subsidence(Mine)
- Thunderstorm/lightning
- Tornado
- Wildfire
- Winter Storm/Blizzard

Athens County Unincorporated

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	4	4	2.8%
Drought	2	3	6	4.2%
Earthquake	1	5	5	3.5%
Extreme Cold	3	3	9	6.3%
Extreme Heat	3	3	9	6.3%
Flooding- Flash	5	4	20	14.1%
Flooding- Riverine	5	5	25	17.6%
Freezing Rain/Ice Storm	3	3	9	6.3%
Hail	3	2	6	4.2%
High Winds	3	3	9	6.3%
Landslide/Rockfall	2	3	6	4.2%
Subsidence (Mine)	1	1	1	0.7%
Thunderstorm/lightning	3	2	6	4.2%
Tornado	3	4	12	8.5%
Wildfire	2	3	6	4.2%
Winter Storm/Blizzard	3	3	9	6.3%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
3 - Casualties and extensive property damage likely occurs to target groups or injuries and property damage require multi agency/jurisdictional response and assistance
2 - Casualties may occur and property damage would occur as a local emergency
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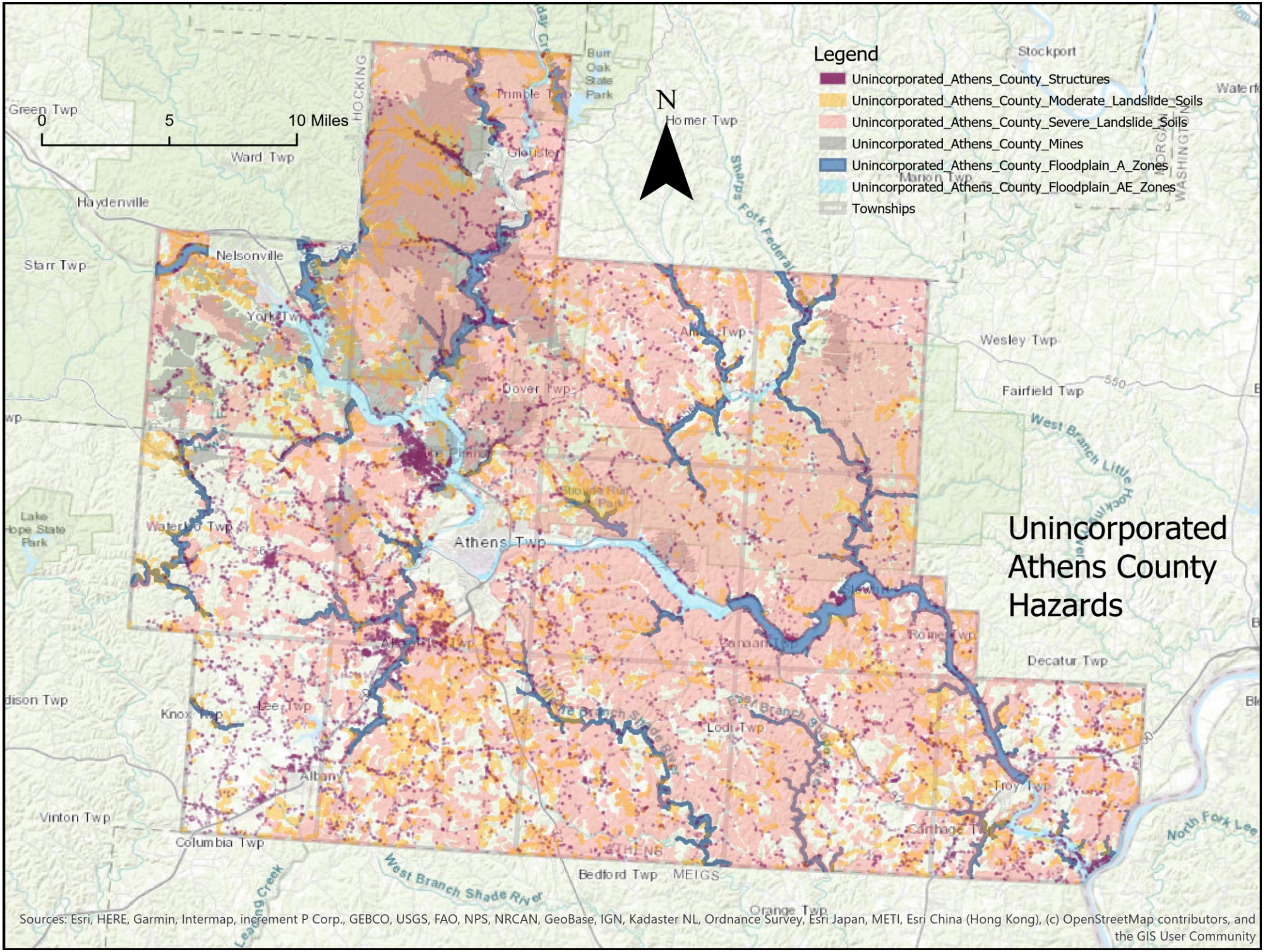


2.3.7 Buchtel Village

Key Facts

- Buchtel has 45.8% of its land and 50.7% of its structures in the floodplain.
- Buchtel only has A-zone status for its floodplain areas and an updated flood map is needed.
- 23.4% of Buchtel lies in a subsidence zone, but only 4 structures are built in this zone.

Assets

The Village of Buchtel has 894 structures and developed parcels that total $13,834,840.

Critical Facilities

- SR 685 bridge Village hall and yard
- Happy Hollow bridge

Vulnerabilities

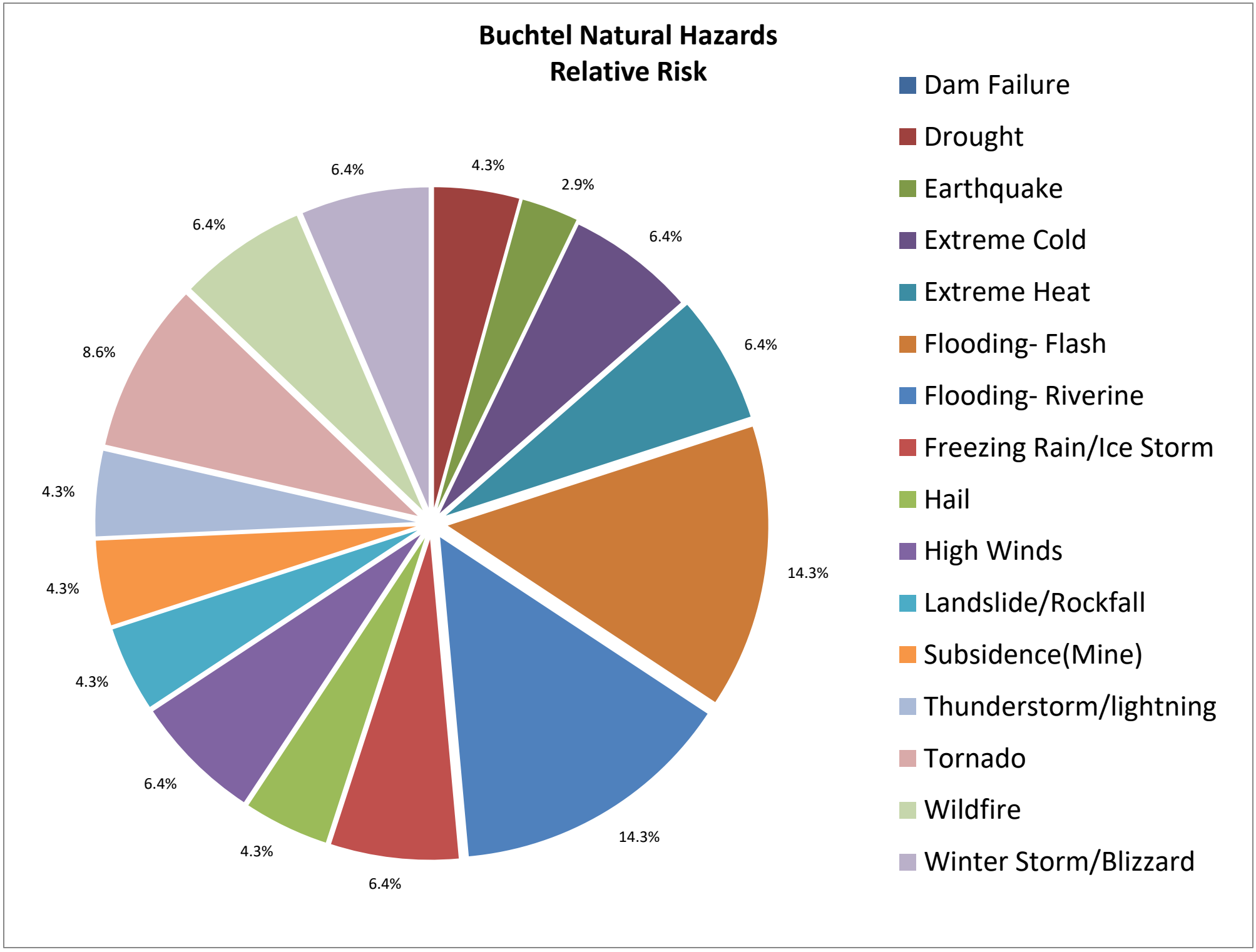
Buchtel has a population of 82 aged 65+ years and 1 repetitive loss property.

New Development

There is no new development in Buchtel.

Hazard	Potential Damages	Injury/ Death
Dam Failure	No hazard	None
Drought	Minor <$10,000	Unlikely
Earthquake	$1,992,217	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	$1,957,765	Possible
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$47,000	None
Land Subsidence (mines)	Moderate $10,000-$50,000	Unlikely
Thunderstorms/Lightning	$10,000	Possible
Tornado	$1,974,468	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

BUCHTEL									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/ Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	272.9	125.1	45.8%	41.9	15%	2.9	1.1%	63.9	23.4%
Population[1]	551								
Residential Parcels	194	108	55.7%	0	0%	28	14.4%	21	10.8%
Commercial Parcels[2]	7	6	85.7%	0	0%	0	0.0%	0	0.0%
Industrial Parcels									
600-880									
Structures[3]	894	453	50.7%	0		47	5.3%	4	0.4%
Developed Parcel Value	$13,834,840	$9,453,770	68.3%	$ -		$1,588,360	11.5%	$1,963,250	14.2%
Institutional Population[4]	0								
Elderly 65+[4]	82		**Tornado**	$1,825,043			NOTES		
Repetitive Loss Properties	1		**Tornado Contents**	$912,522			1. 2018 estimate		
Critical Facilities	3		**Total Tornado**	$1,974,468			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$1,992,217			4. 2010 census		


Buchtel Natural Hazards
Relative Risk
4.3%
2.9%
6.4%
6.4%
14.3%
14.3%
6.4%
4.3%
6.4%
4.3%
4.3%
4.3%
8.6%
6.4%
6.4%
Dam Failure
Drought
Earthquake
Extreme Cold
Extreme Heat
Flooding- Flash
Flooding- Riverine
Freezing Rain/Ice Storm
Hail
High Winds
Landslide/Rockfall
Subsidence(Mine)
Thunderstorm/lightning
Tornado
Wildfire
Winter Storm/Blizzard

Buchtel Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	0	0	0	
Drought	2	3	6	4.3%
Earthquake	1	4	4	2.9%
Extreme Cold	3	3	9	6.4%
Extreme Heat	3	3	9	6.4%
Flooding- Flash	5	4	20	14.3%
Flooding- Riverine	5	4	20	14.3%
Freezing Rain/Ice Storm	3	3	9	6.4%
Hail	3	2	6	4.3%
High Winds	3	3	9	6.4%
Landslide/Rockfall	3	2	6	4.3%
Subsidence (Mine)	2	3	6	4.3%
Thunderstorm/lightning	3	2	6	4.3%
Tornado	3	4	12	8.6%
Wildfire	3	3	9	6.4%
Winter Storm/Blizzard	3	3	9	6.4%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
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1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
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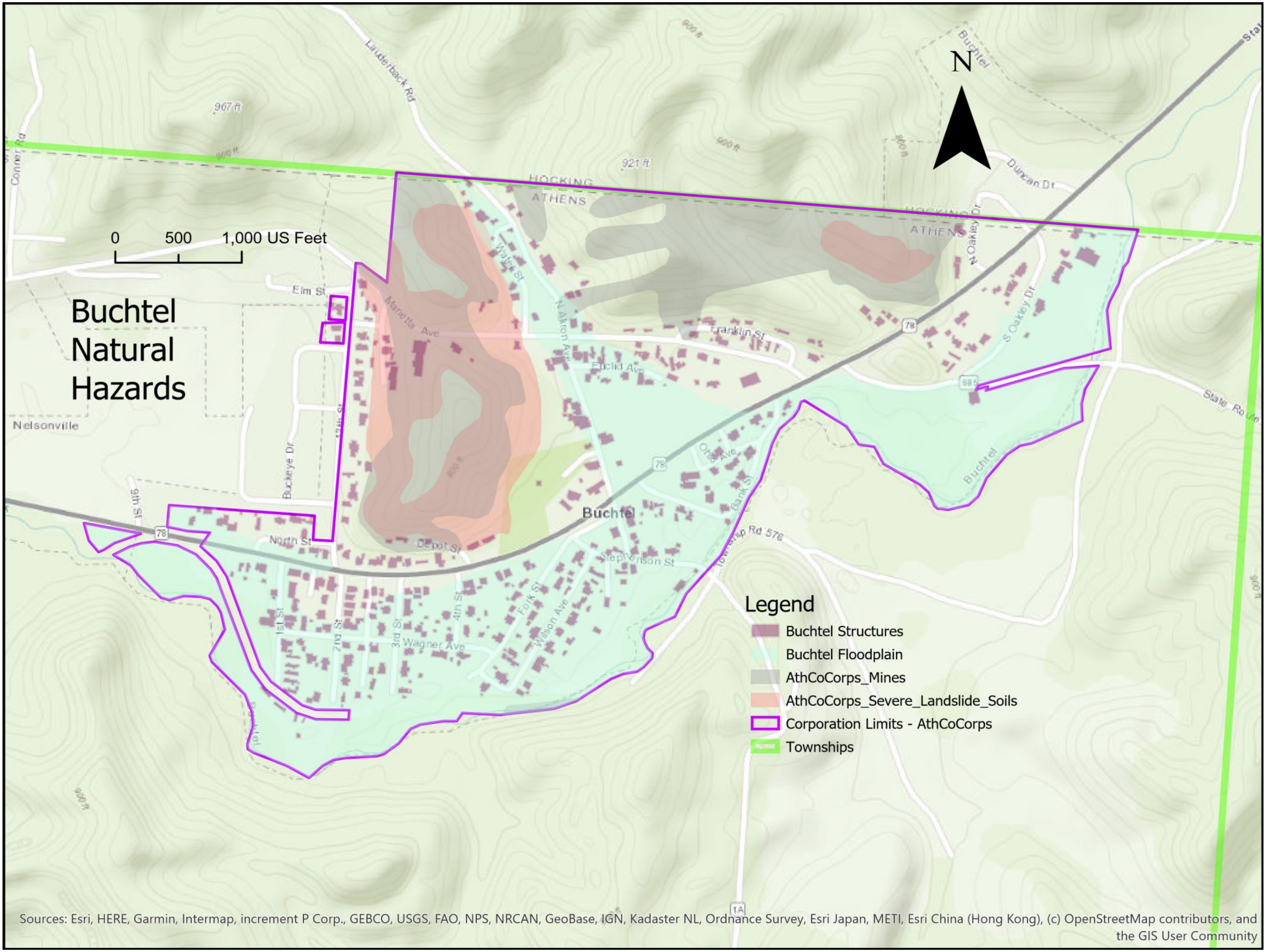

Buchtel
Natural
Hazards
0
500
1,000 US Feet
N
Legend
Buchtel Structures
Buchtel Floodplain
AthCoCorps_Mines
AthCoCorps_Severe_Landslide_Soils
Corporation Limits - AthCoCorps
Townships
Buchtel
Nelsonville
HOCKING
ATHENS
Franklin St
Marietta Ave
Euclid Ave
Water St
N Akron Ave
Elm St
North St
Depot St
Wagner Ave
Stephenson St
Buckeye Dr
Lauderback Rd
Duncan Dr
S Oakley Dr
N Oakley Dr
Conner Rd
1st St
2nd St
3rd St
4th St
Fork St
Wilson Ave
Bank St
Township Rd 576
State Route
967 ft
921 ft
900 ft
78
685
1A
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.8 Chauncey Village

Key Facts

- Chauncey has 62.2% of its land and 53.8% of its structures in the floodplain.
- Chauncey does not participate in the National Flood Insurance Program.
- Chauncey has 11 repetitive loss properties.

Assets

The Village of Chauncey has 842 structures and a developed parcel value of $18,719,520.

Critical Facilities

- Chauncey WWTP
- Chauncey WTP
- Dover VFD
- Water tower

Vulnerabilities

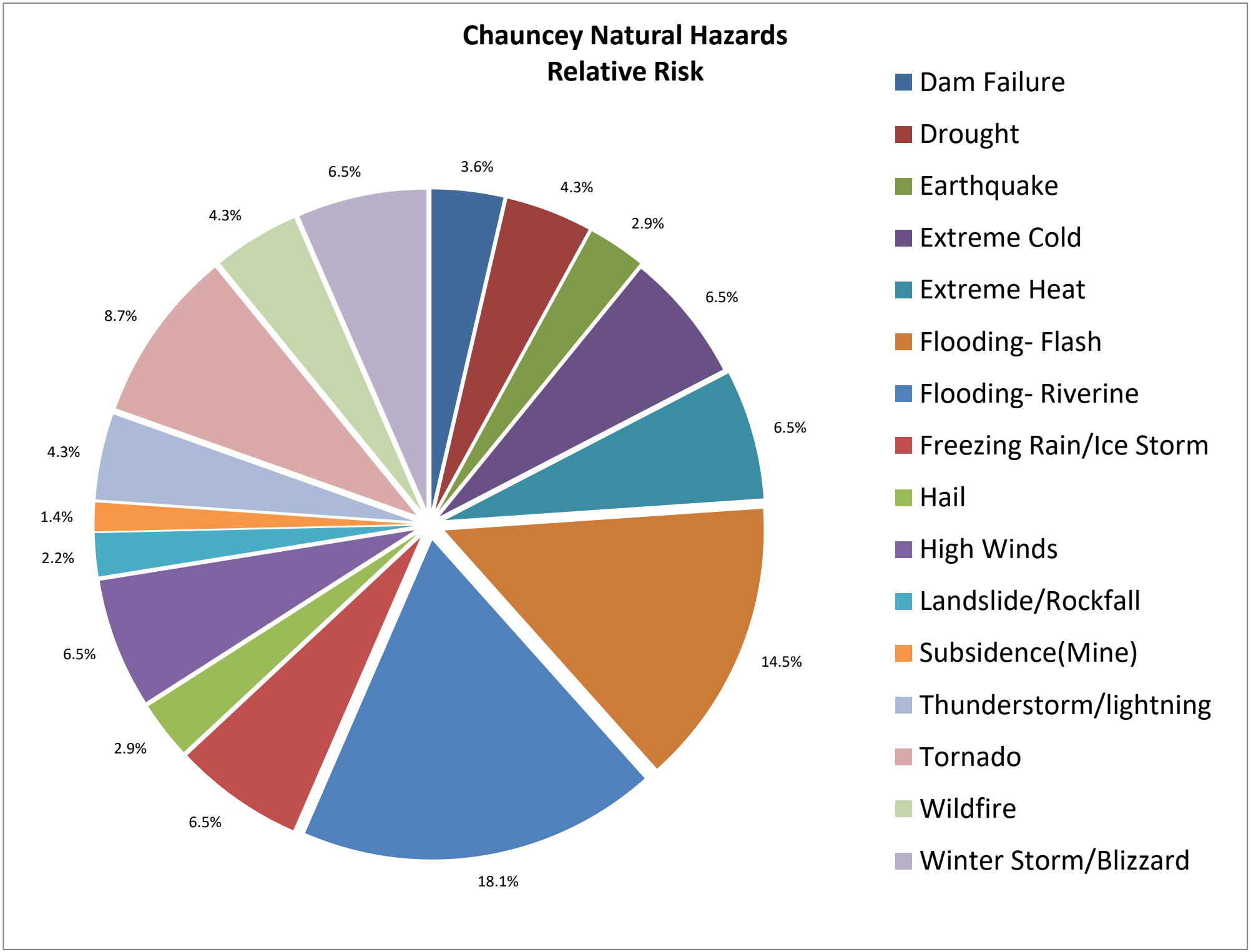
Chauncey has a population of 139 aged 65+ years and 11 repetitive loss properties.

Hazard	Potential Damages	Injury/ Death
Dam Failure	$3,565,743	None
Drought	Minor <$10,000	Unlikely
Earthquake	$ 2,695,611	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	$2,971,452	None
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$0	None
Land Subsidence (mines)	Moderate $10,000-$50,000	Unlikely
Thunderstorms/Lightning	$10,000	Possible
Tornado	$3,023,793	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

New Development

Chauncey is going to be the staging/access point for a new mountain bike facility on neighboring Wayne National Forest.

CHAUNCEY									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	334.3	207.9	62.2%	3.4	1%	6.9	2%	8.9	2.7%
Population[1]	1,045								
Residential Parcels	330	191	57.9%	0	0%	0	0%	2	0.6%
Commercial Parcels[2]	15	9	60.0%	0	0%	0	0%	1	6.7%
Industrial Parcels									
600-880									
Structures[3]	842	453	53.8%					4	0.5%
Developed Parcel Value	$18,719,520	$11,267,980	60.2%	$ -	0%	$ -	0%	$219,790	1.2%
Institutional Population[4]	0								
Elderly 65+[4]	139		**Tornado**	$2,015,862			NOTES		
Repetitive Loss Properties	11		**Tornado Contents**	$1,007,931			1. 2018 estimate		
Critical Facilities	4		**Total Tornado**	$3,023,793			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$2,695,611			4. 2010 census		


Chauncey Natural Hazards
Relative Risk
3.6%
4.3%
2.9%
6.5%
6.5%
14.5%
18.1%
6.5%
2.9%
6.5%
1.4%
2.2%
4.3%
8.7%
4.3%
6.5%
Dam Failure
Drought
Earthquake
Extreme Cold
Extreme Heat
Flooding- Flash
Flooding- Riverine
Freezing Rain/Ice Storm
Hail
High Winds
Landslide/Rockfall
Subsidence(Mine)
Thunderstorm/lightning
Tornado
Wildfire
Winter Storm/Blizzard

Chauncey Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	5	5	3.6%
Drought	2	3	6	4.3%
Earthquake	1	4	4	2.9%
Extreme Cold	3	3	9	6.5%
Extreme Heat	3	3	9	6.5%
Flooding- Flash	5	4	20	14.5%
Flooding- Riverine	5	5	25	18.1%
Freezing Rain/Ice Storm	3	3	9	6.5%
Hail	2	2	4	2.9%
High Winds	3	3	9	6.5%
Landslide/Rockfall	1	3	3	2.2%
Subsidence (Mine)	1	2	2	1.4%
Thunderstorm/lightning	3	2	6	4.3%
Tornado	3	4	12	8.7%
Wildfire	2	3	6	4.3%
Winter Storm/Blizzard	3	3	9	6.5%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
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2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
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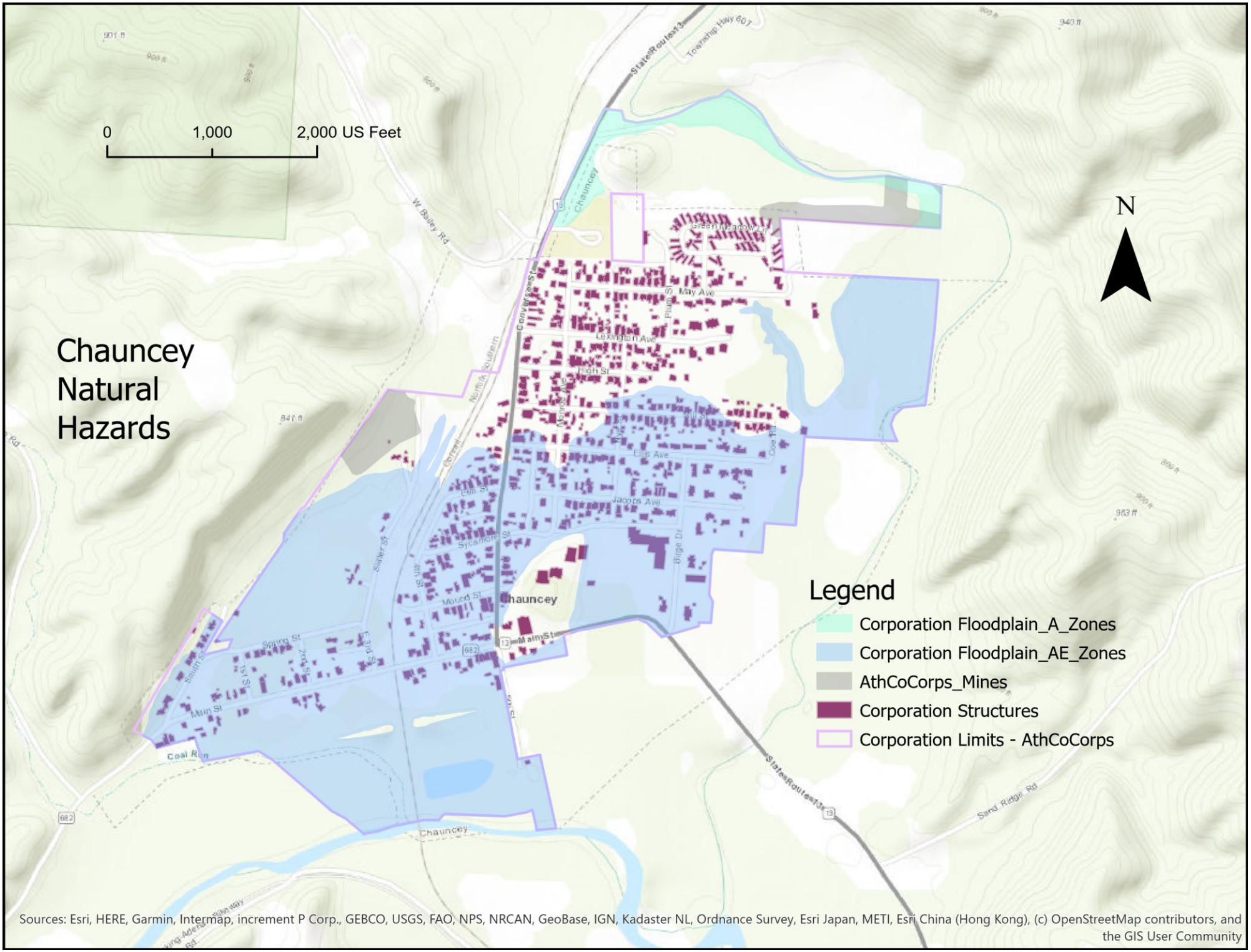

Chauncey
Natural
Hazards
0
1,000
2,000 US Feet
N
Legend
Corporation Floodplain_A_Zones
Corporation Floodplain_AE_Zones
AthCoCorps_Mines
Corporation Structures
Corporation Limits - AthCoCorps
Chauncey
Main St
Coal Run
Sand Ridge Rd
W Bailey Rd
State Route 13
Township Hwy 607
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.9 Coolville Village

Key Facts

- Coolville Village only has 5.4% of its land and 0% of its structures in the floodplain.
- 124 structures (23%) are in a severe landslide soil area.
- Coolville does not have any repetitive loss properties.

Assets

The Village of Coolville is fortunate to have been sited outside of flood zones and in an area that was never underground mined for coal. The Village contains 544 structures and has an improved parcel value of $21,872,900.

Critical Facilities

- Troy Township garage and yard
- EMS
- Wastewater treatment system
- Water storage tank
- Coolville Health Clinic
- Telephone switching station
- Coolville Town Hall
- Coolville VFD

Hazard	Potential Damages	Injury/ Death
Dam Failure	No hazard	None
Drought	Minor <$10,000	Unlikely
Earthquake	$3,016,882	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	Minor < $10,000	Unlikely
Flooding (Riverine)	None	None
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$39,000	None
Land Subsidence (mines)	None	None
Thunderstorms/Lightning	$10,000	Possible
Tornado	$1,761,923	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

Vulnerabilities

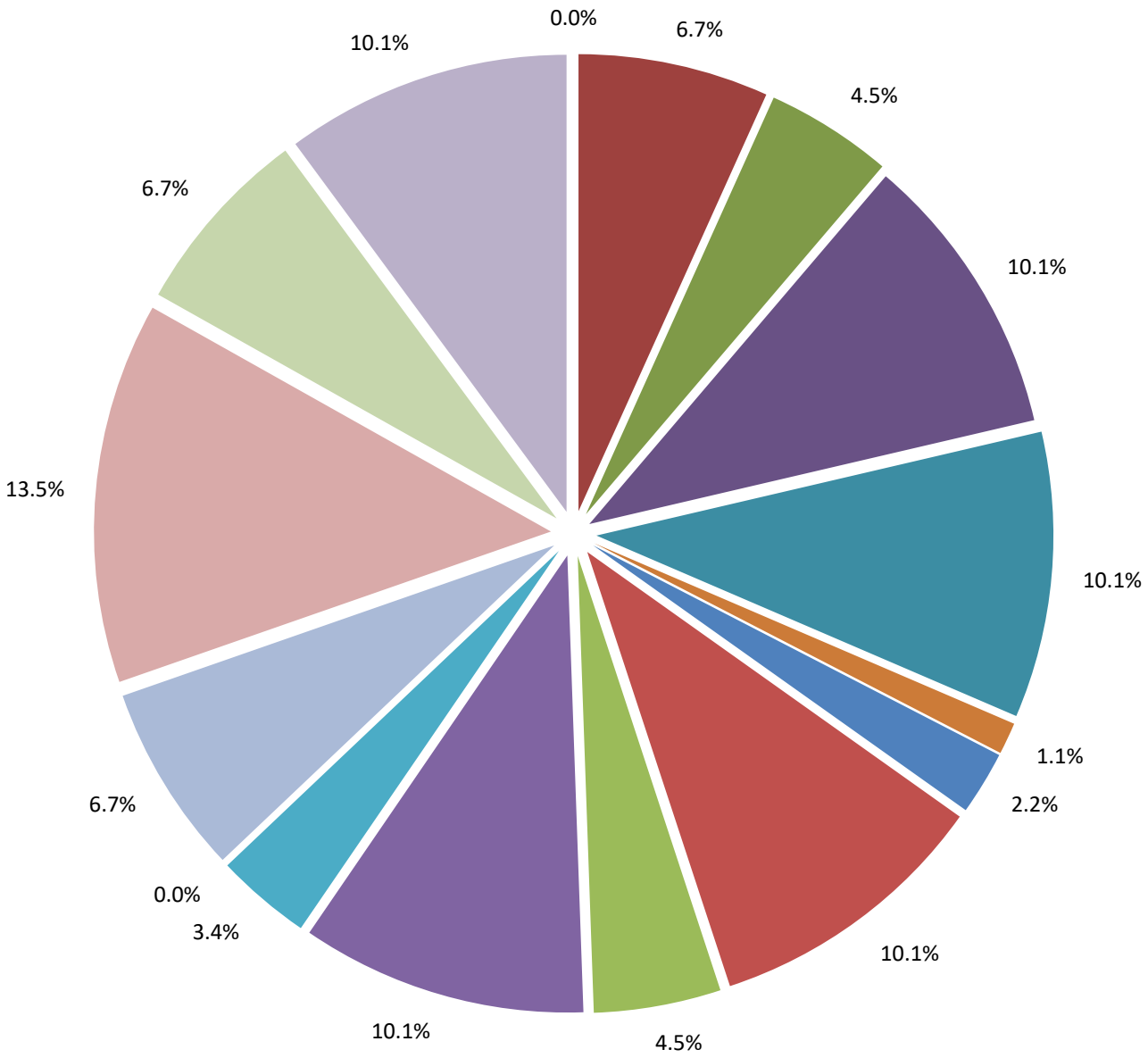
Coolville has a population of 63 aged 65+ years.

New Development

Coolville has a new wastewater treatment system.

COOLVILLE									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	642.1	34.4	5.4%	156.2	24%	52.1	8%	0	0%
Population[1]	498								
Residential Parcels	214	0	0.0%	25	12%	14	7%	0	0%
Commercial Parcels[2]	28	0	0.0%	1	4%	1	4%	0	0%
Industrial Parcels	1			1	100%				
600-880									
Structures[3]	544	0	0.0%	48	9%	124	23%	0	0%
Developed Parcel Value	$21,872,900	$ -		$3,270,160	17%	$1,536,440	8%	$ -	0%
Institutional Population[4]	0								
Elderly 65+[4]	63		**Tornado**	$1,226,327			NOTES		
Repetitive Loss Properties	0		**Tornado Contents**	$613,163			1. 2018 estimate		
Critical Facilities	8		**Total Tornado**	$1,574,294			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$3,149,697			4. 2010 census		

Coolville Natural Hazards
Relative Risk



- Dam Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding- Flash
- Flooding- Riverine
- Freezing Rain/Ice Storm
- Hail
- High Winds
- Landslide/Rockfall
- Subsidence(Mine)
- Thunderstorm/lightning
- Tornado
- Wildfire
- Winter Storm/Blizzard

Coolville Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	0	0	0	0.0%
Drought	2	3	6	6.7%
Earthquake	1	4	4	4.5%
Extreme Cold	3	3	9	10.1%
Extreme Heat	3	3	9	10.1%
Flooding- Flash	1	1	1	1.1%
Flooding- Riverine	1	2	2	2.2%
Freezing Rain/Ice Storm	3	3	9	10.1%
Hail	2	2	4	4.5%
High Winds	3	3	9	10.1%
Landslide/Rockfall	1	3	3	3.4%
Subsidence (Mine)	0	0	0	0.0%
Thunderstorm/lightning	3	2	6	6.7%
Tornado	3	4	12	13.5%
Wildfire	2	3	6	6.7%
Winter Storm/Blizzard	3	3	9	10.1%

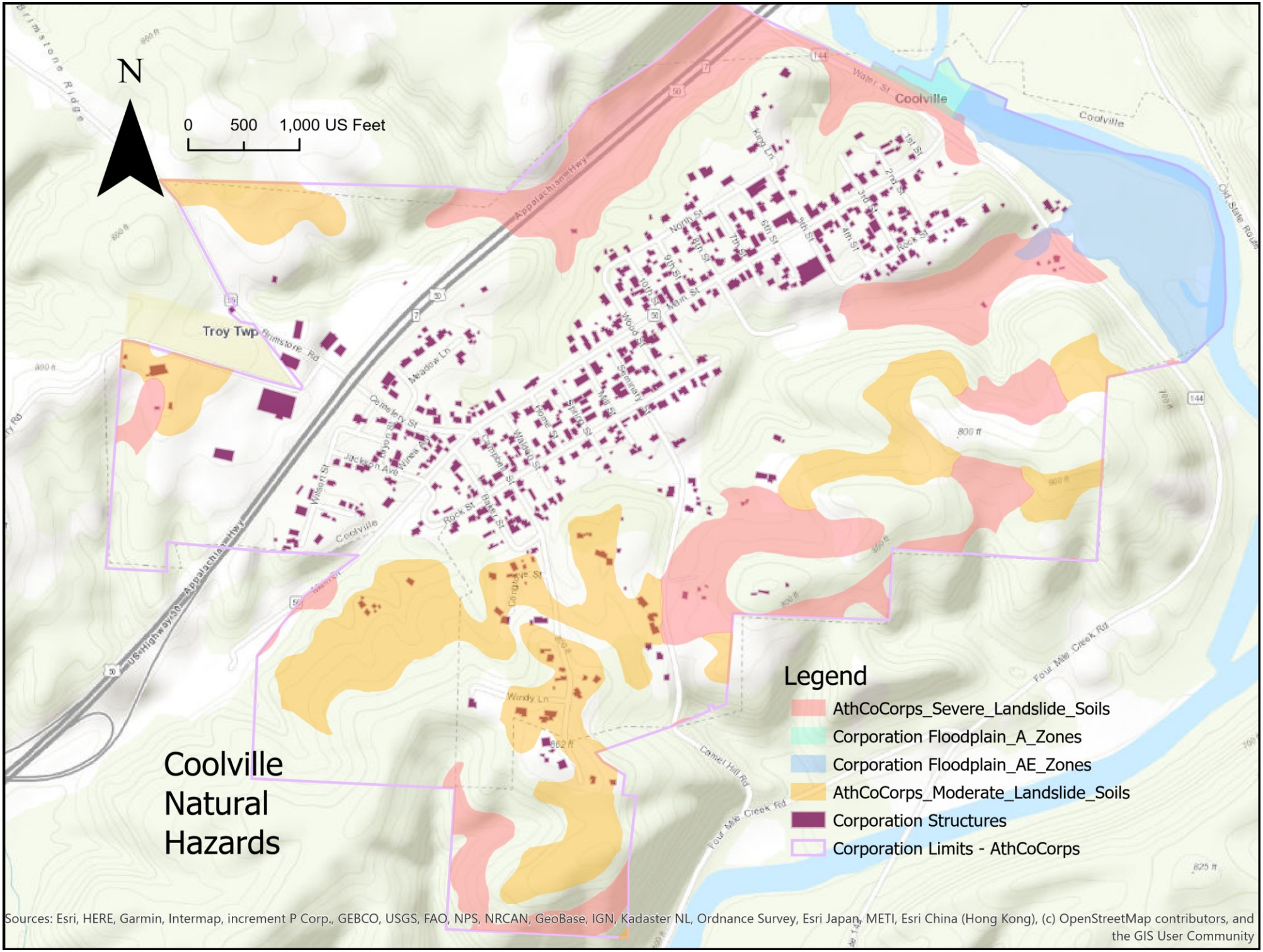
*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
3 - Casualties and extensive property damage likely occurs to target groups or injuries and property damage require multi agency/jurisdictional response and assistance
2 - Casualties may occur and property damage would occur as a local emergency
1 - No casualties will occur and property damage is unlikely to occur, a local emergency
0 - Conditions make it highly improbable that this event would occur



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.10 Glouster Village

Key Facts

- Glouster has 84.3% of its commercial parcels and 443 or 26.5% of its structures in the floodplain.
- Glouster has 54.4% of its land and 783 or 46.8% of its structures in a subsidence zone.
- Glouster successfully completed a mitigation project after flooding in 2005. $593,110 was awarded for acquisition.

Assets

The Village of Glouster has 1,672 structures and a developed parcel value of $57,236,210.

Critical Facilities

- Trimble Township building and yard
- Telephone switching station
- High St. bridge
- Madison St. bridge
- Glouster FD
- Water reservoir
- Village hall and PD
- Oak St. bridge
- Locust St. bridge
- Main St. bridge
- Embry Rd. bridge
- Allen St. bridge
- SR 78 bridge

Hazard	Potential Damages	Injury/ Death
Dam Failure	$5,341,070	None
Drought	Minor <$10,000	Unlikely
Earthquake	$8,242,014	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	$4,108,516	Likely
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$121,000	None
Land Subsidence (mines)	Moderate $10,000-$50,000	Unlikely
Thunderstorms/Lightning	$10,000	Possible
Tornado	$3,804,007	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

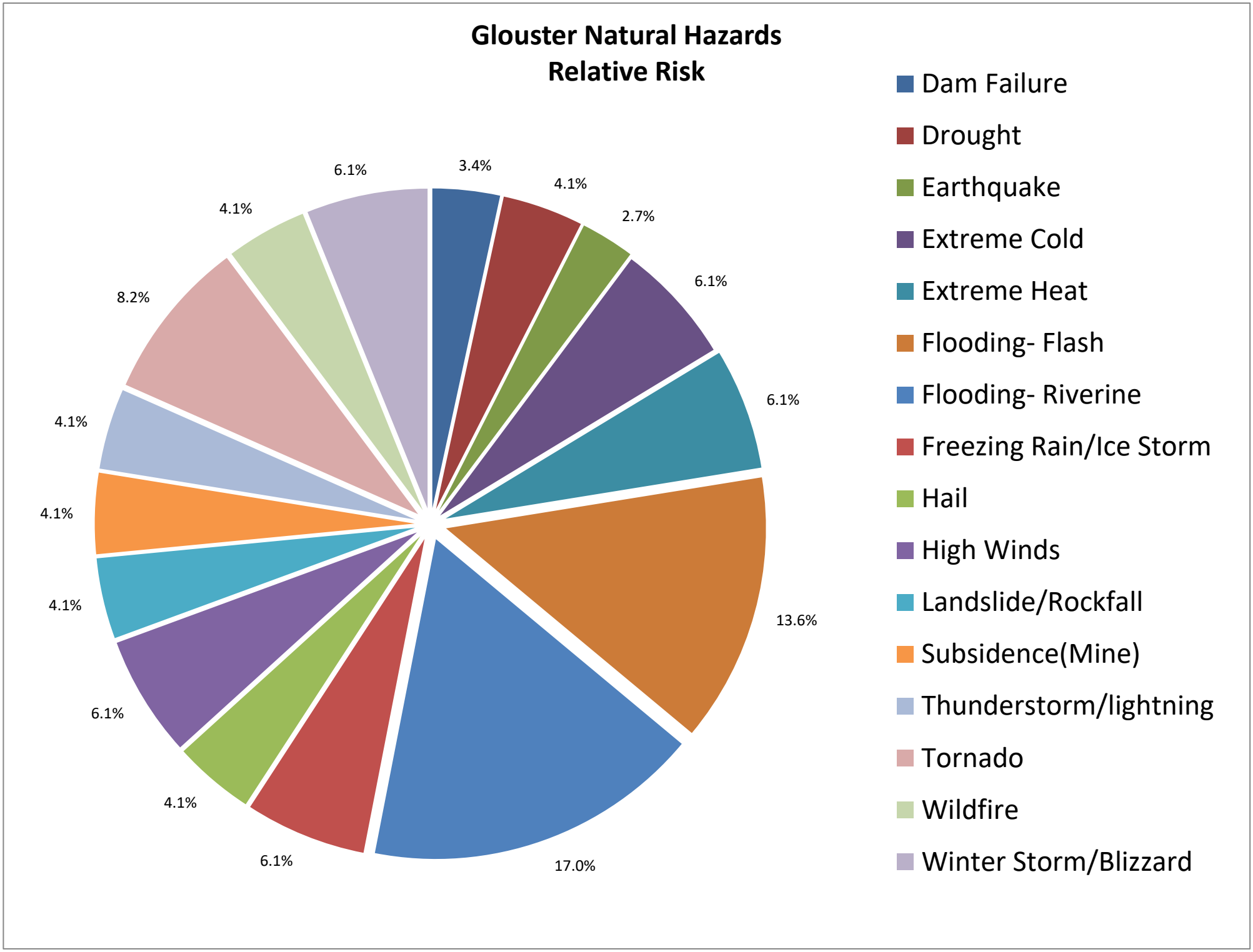
Vulnerabilities

Glouster has a population of 213 aged 65+ years old and 7 repetitive loss properties.

New Development

Locust St. bridge was replaced in 2019.

GLOUSTER									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/ Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	812.5	246.7	30.4%	213.5	26.3%	142	17.5%	441.8	54.4%
Population[1]	1,795								
Residential Parcels	810	291	35.9%	3	0.4%	156	19.3%	381	47.0%
Commercial Parcels[2]	89	75	84.3%	0	0.0%	2	2.2%	29	32.6%
Industrial Parcels	2	2	100.0%						
600-880									
Structures[3]	1672	443	26.5%	0	0.0%	121	7.2%	783	46.8%
Developed Parcel Value	$57,236,210	$42,354,190	74.0%	$226,250	0.4%	$6,931,320	12.1%	$47,186,650	82.4%
Institutional Population[4]	0								
Elderly 65+[4]	213		**Tornado**	$2,536,004			NOTES		
Repetitive Loss Properties	7		**Tornado Contents**	$1,268,002			1. 2018 estimate		
Critical Facilities	13		**Total Tornado**	$3,804,007			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$8,242,014			4. 2010 census		


Glouster Natural Hazards
Relative Risk
3.4%
4.1%
2.7%
6.1%
6.1%
6.1%
13.6%
17.0%
6.1%
4.1%
6.1%
4.1%
4.1%
4.1%
8.2%
4.1%
6.1%
Dam Failure
Drought
Earthquake
Extreme Cold
Extreme Heat
Flooding- Flash
Flooding- Riverine
Freezing Rain/Ice Storm
Hail
High Winds
Landslide/Rockfall
Subsidence(Mine)
Thunderstorm/lightning
Tornado
Wildfire
Winter Storm/Blizzard

Glouster Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	5	5	3.4%
Drought	2	3	6	4.1%
Earthquake	1	4	4	2.7%
Extreme Cold	3	3	9	6.1%
Extreme Heat	3	3	9	6.1%
Flooding- Flash	5	4	20	13.6%
Flooding- Riverine	5	5	25	17.0%
Freezing Rain/Ice Storm	3	3	9	6.1%
Hail	3	2	6	4.1%
High Winds	3	3	9	6.1%
Landslide/Rockfall	2	3	6	4.1%
Subsidence (Mine)	2	3	6	4.1%
Thunderstorm/lightning	3	2	6	4.1%
Tornado	3	4	12	8.2%
Wildfire	2	3	6	4.1%
Winter Storm/Blizzard	3	3	9	6.1%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
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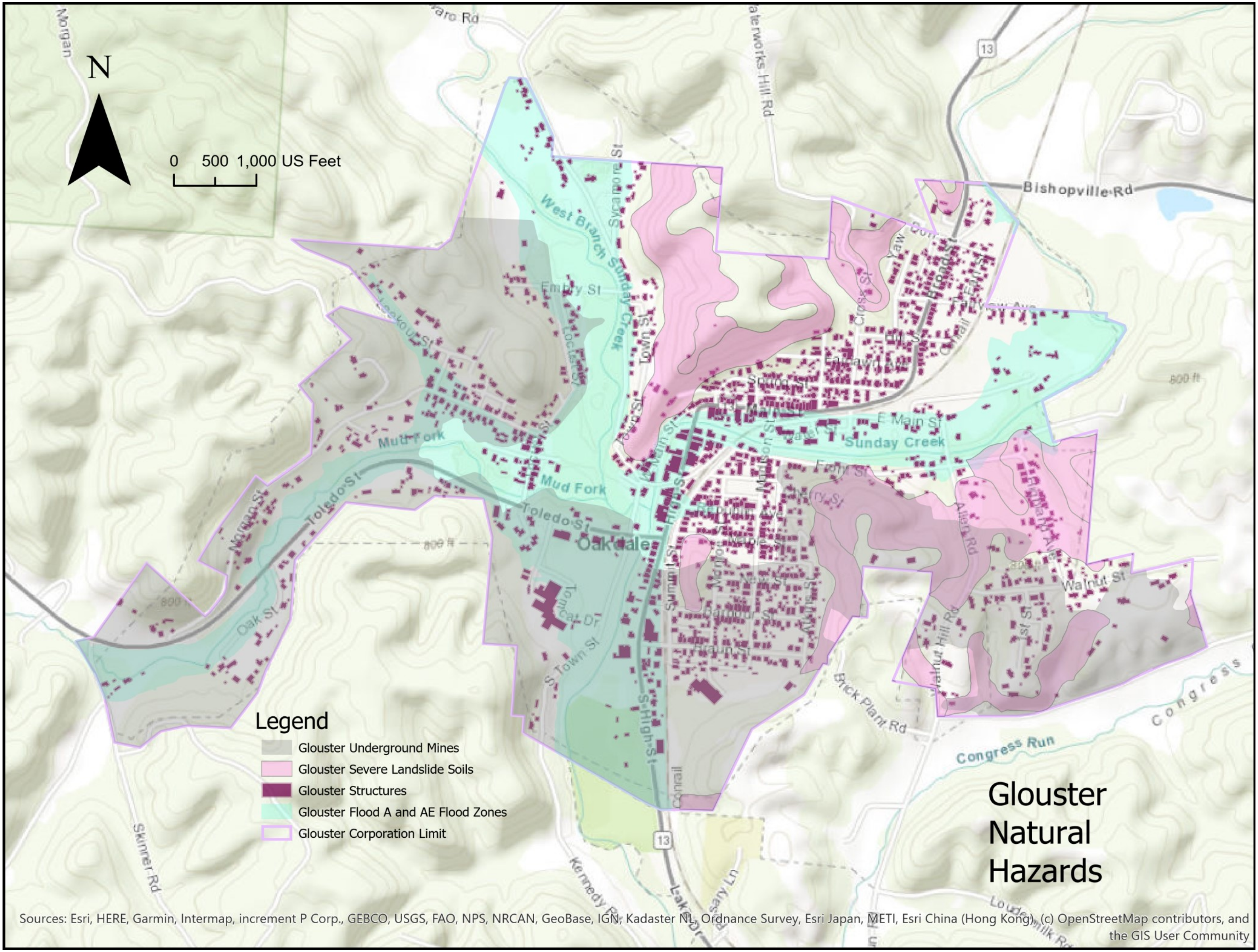
1 - No casualties will occur and property damage is unlikely to occur, a local emergency
0 - Conditions make it highly improbable that this event would occur


Glouster
Natural
Hazards
Legend
Glouster Underground Mines
Glouster Severe Landslide Soils
Glouster Structures
Glouster Flood A and AE Flood Zones
Glouster Corporation Limit
N
0 500 1,000 US Feet
West Branch Sunday Creek
Sunday Creek
Mud Fork
Congress Run
Oakdale
Toledo St
Bishopville Rd
E Main St
S High St
Brick Plant Rd
Walnut St
Embry St
Sycamore St
Town St
Tomcat Dr
Oak St
Skinner Rd
Kennedy Rd
Summit St
Braun St
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.11 Jacksonville Village

Key Facts

- Jacksonville has 33.8% of its land, five of its seven commercial properties, and 155 or 30.4% of its structures in the floodplain.
- Jacksonville needs to have its flood maps updated to show AE zones and a floodway.
- Jacksonville has 48% of its land and 64% of its structures located in a subsidence zone.

Assets

Jacksonville has 510 structures and a developed parcel value of $10,003,250.

Critical Facilities

- Jacksonville VFD
- Water tank

Vulnerabilities

Jacksonville has a population of 88 aged 65+ years old and 2 repetitive loss properties.

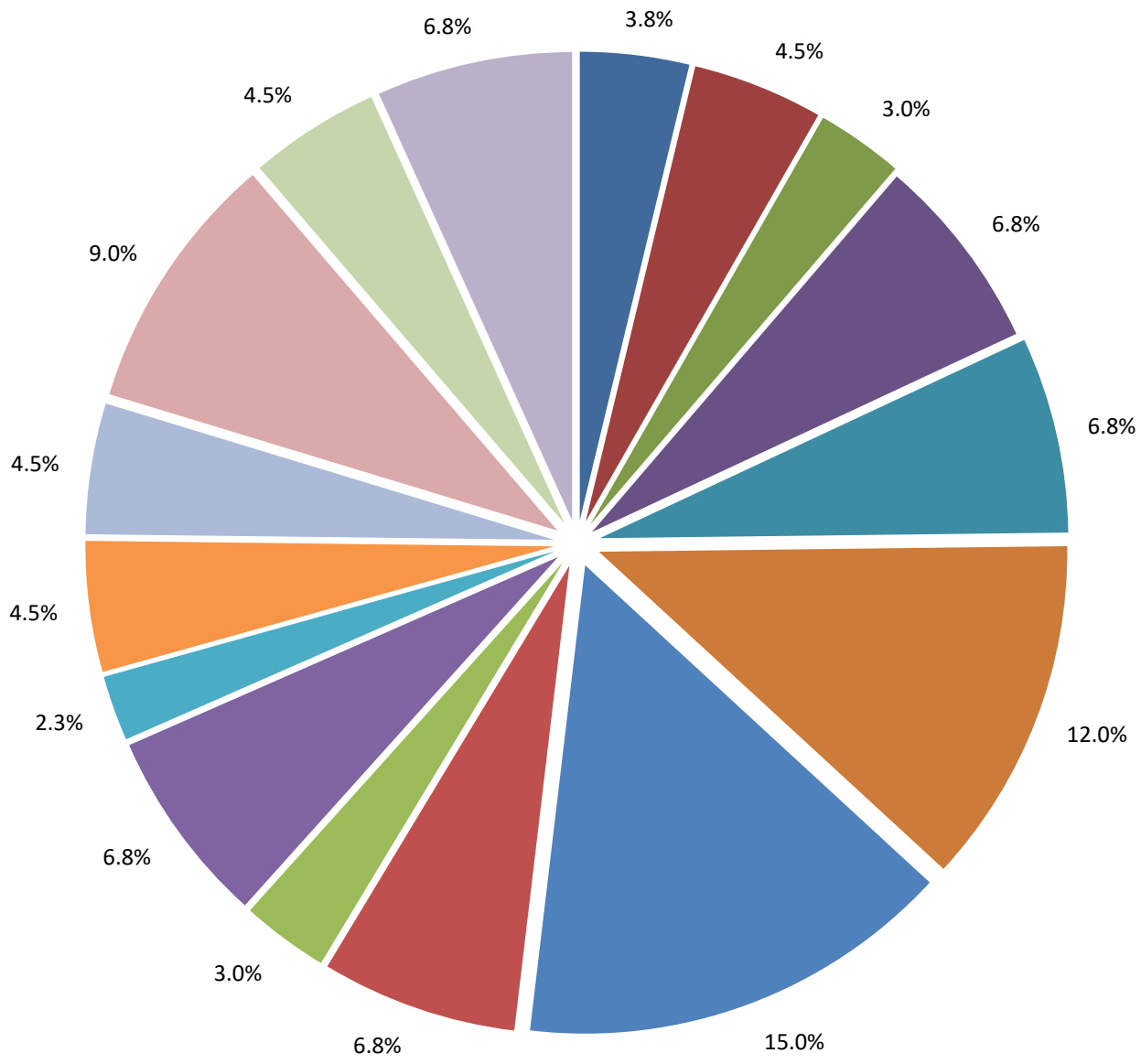
New Development

There is no new development in Jacksonville.

Hazard	Potential Damages	Injury/ Death
Dam Failure	$1,138,660	Likely
Drought	Minor <$10,000	Unlikely
Earthquake	$1,440,468	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	$875,892	Likely
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$0	None
Land Subsidence (mines)	Moderate $10,000-$50,000	Unlikely
Thunderstorms/Lightning	$25,000	Possible
Tornado	$3,471,565	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

JACKSONVILLE									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	155.6	52.6	33.8%	17	11%	32.9	21.1%	74.7	48%
Population[1]	488								
Residential Parcels	253	82	32.4%	0	0%	8	3.2%	179	71%
Commercial Parcels[2]	7	5	71.4%	0	0%	0	0.0%	4	57%
Industrial Parcels									
600-880									
Structures[3]	510	155	30.4%					323	63%
Developed Parcel Value	$10,003,250	$3,392,990	33.9%	$ -	0%	$668,070	6.7%	$7,404,670	74%
Institutional Population[4]	0								
Elderly 65+[4]	88		**Tornado**	$2,314,377			NOTES		
Repetitive Loss Properties	2		**Tornado Contents**	$1,157,188			1. 2018 estimate		
Critical Facilities	2		**Total Tornado**	$3,471,565			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$1,440,468			4. 2010 census		

Jacksonville Natural Hazards
Relative Risk



Jacksonville Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	5	5	3.8%
Drought	2	3	6	4.5%
Earthquake	1	4	4	3.0%
Extreme Cold	3	3	9	6.8%
Extreme Heat	3	3	9	6.8%
Flooding- Flash	4	4	16	12.0%
Flooding- Riverine	5	4	20	15.0%
Freezing Rain/Ice Storm	3	3	9	6.8%
Hail	2	2	4	3.0%
High Winds	3	3	9	6.8%
Landslide/Rockfall	1	3	3	2.3%
Subsidence (Mine)	2	3	6	4.5%
Thunderstorm/lightning	3	2	6	4.5%
Tornado	3	4	12	9.0%
Wildfire	2	3	6	4.5%
Winter Storm/Blizzard	3	3	9	6.8%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
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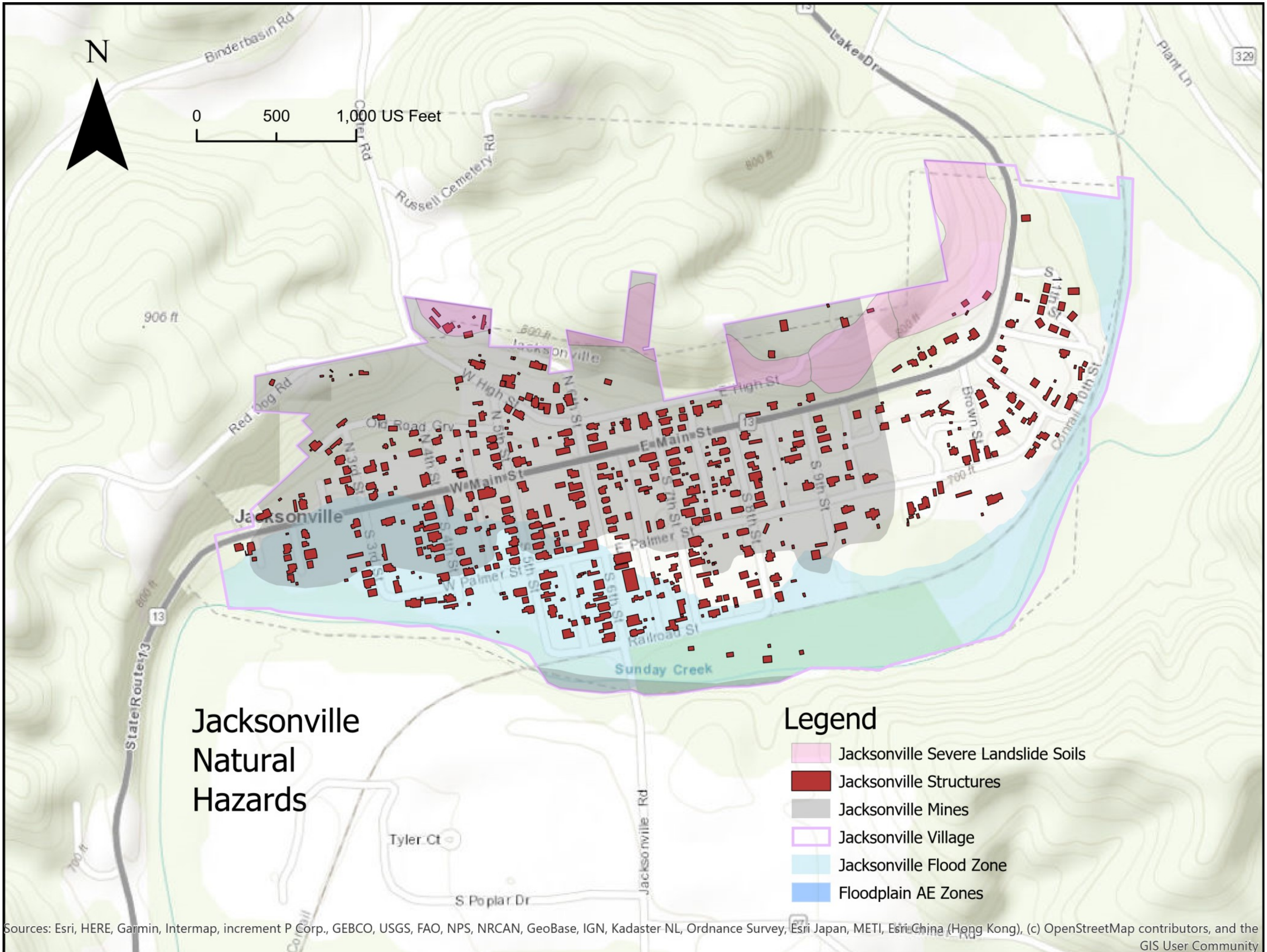

Jacksonville
Natural
Hazards
N
0
500
1,000 US Feet
Legend
Jacksonville Severe Landslide Soils
Jacksonville Structures
Jacksonville Mines
Jacksonville Village
Jacksonville Flood Zone
Floodplain AE Zones
Binderbasin Rd
Russell Cemetery Rd
Lake Dr
Plant Ln
329
906 ft
800 ft
700 ft
Red Dog Rd
Old Road Grv
W High St
E High St
W Main St
E Main St
E Palmer St
W Palmer St
Railroad St
N 3rd St
N 4th St
N 5th St
N 6th St
S 3rd St
S 4th St
S 5th St
S 6th St
S 7th St
S 8th St
S 9th St
S 10th St
S 11th St
Brown St
Conrail
Jacksonville
Sunday Creek
State Route 13
13
Tyler Ct
S Poplar Dr
Jacksonville Rd
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.12 Nelsonville City

Key Facts

- Nelsonville has 34.2% of its land and 42.8% of its structures in the floodplain.
- Nelsonville has 20.0% of its land but only 1.2% of its structures in a subsidence zone.
- Nelsonville is home to Hocking College. There is a group quarters, non-institutionalized population of 691, primarily due to dormitories on campus.
- Nelsonville just acquired five flood mitigation parcels through Project 4098.15R.

Assets

Nelsonville has 2,965 structures and a developed parcel value of $243,868,050.

Critical Facilities

- Nelsonville FD, PD, and City Hall
- 911 radio tower
- Nelsonville WTP
- Nelsonville WWTP
- Columbia Gas transmission
- EMS
- SR 278 bridge
- Hospital
- Water storage tank
- Hocking Parkway bridge
- SR 691 bridge

Hazard	Potential Damages	Injury/ Death
Dam Failure	No hazard	None
Drought	Minor <$10,000	Unlikely
Earthquake	$35,116,999	Likely
Extreme Cold	$20,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$50,000	Possible
Flooding (Riverine)	$27,215,590	None
Freezing Rain/Ice Storm	$20,000	Possible
Hail	$20,000	Unlikely
High Winds	$50,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$634,500	None
Land Subsidence (mines)	None	None
Thunderstorms/Lightning	$20,000	Possible
Tornado	$4,355,795	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$50,000	Possible

Vulnerabilities

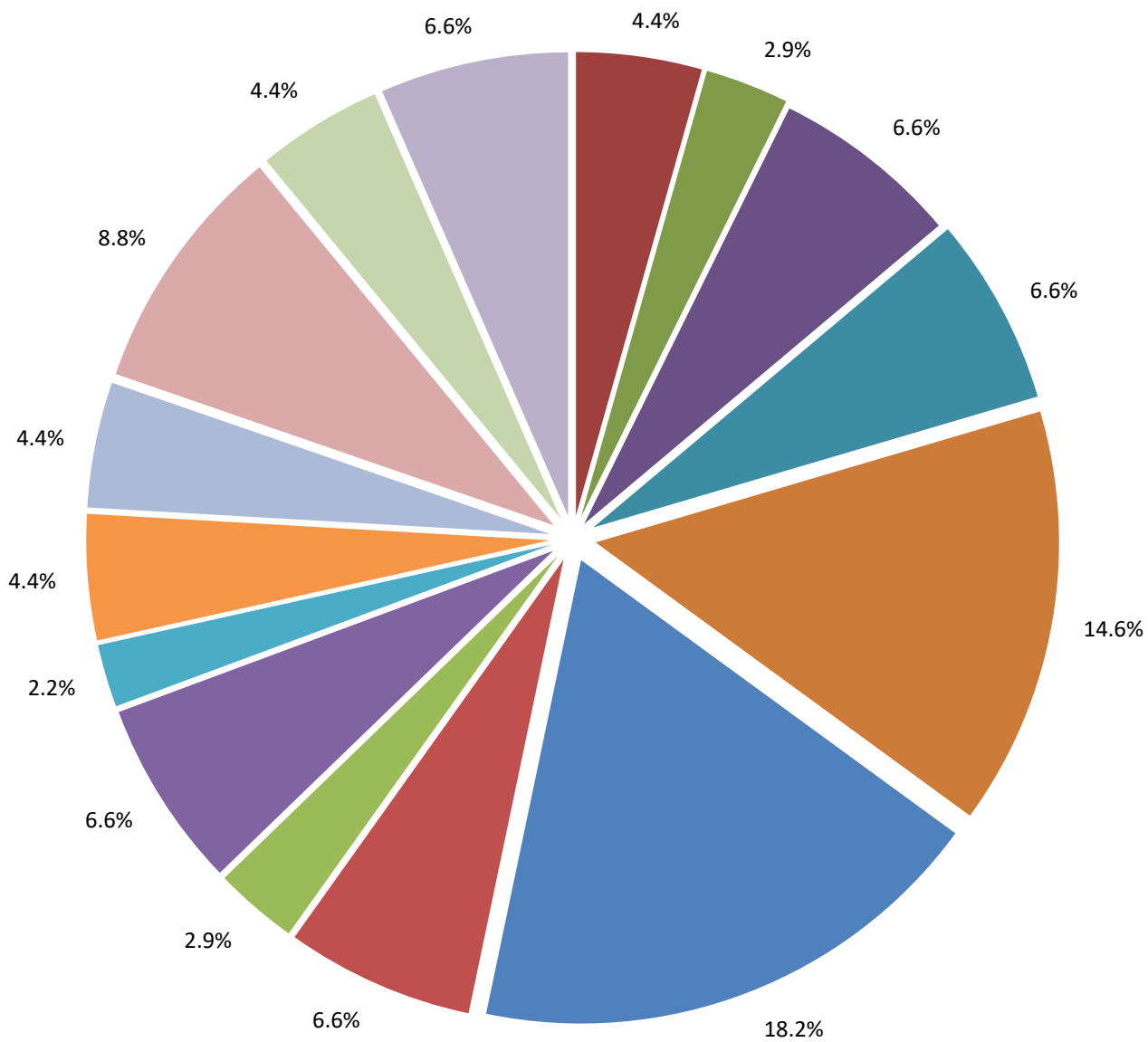
Nelsonville has a population of 484 aged 65+ years and 3 repetitive loss properties.

New Development

The state of Ohio recently closed a medium security prison in Nelsonville so the census figure of 300 institutionalized residents is no longer valid.

NELSONVILLE									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	3023.3	1034.2	34.2%	597.8	19.8%	73.9	2.4%	606.1	20.0%
Population[1]	5,183								
Residential Parcels	1557	597	38.3%	335	21.5%	390	25.0%	26	1.7%
Commercial Parcels[2]	277	210	75.8%	20	7.2%	15	5.4%	12	4.3%
Industrial Parcels	1								
600-880									
Structures[3]	2965	1268	42.8%	395	13.3%	437	14.7%	36	1.2%
Developed Parcel Value	$243,868,050	$201,912,820	82.8%	$110,628,060	45.4%	$83,505,890	34.2%	$136,677,770	56.0%
Institutional Population[4]	300								
Elderly 65+[4]	484		**Tornado**	$2,903,863			NOTES		
Repetitive Loss Properties	3		**Tornado Contents**	$1,451,932			1. 2018 estimate		
Critical Facilities	11		**Total Tornado**	$4,355,795			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$35,116,999			4. 2010 census		

Nelsonville Natural Hazards
Relative Risk



- Dam Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding- Flash
- Flooding- Riverine
- Freezing Rain/Ice Storm
- Hail
- High Winds
- Landslide/Rockfall
- Subsidence(Mine)
- Thunderstorm/lightning
- Tornado
- Wildfire
- Winter Storm/Blizzard

Nelsonville Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	0	0	0.0%
Drought	2	3	6	4.4%
Earthquake	1	4	4	2.9%
Extreme Cold	3	3	9	6.6%
Extreme Heat	3	3	9	6.6%
Flooding- Flash	5	4	20	14.6%
Flooding- Riverine	5	5	25	18.2%
Freezing Rain/Ice Storm	3	3	9	6.6%
Hail	2	2	4	2.9%
High Winds	3	3	9	6.6%
Landslide/Rockfall	1	3	3	2.2%
Subsidence (Mine)	2	3	6	4.4%
Thunderstorm/lightning	3	2	6	4.4%
Tornado	3	4	12	8.8%
Wildfire	2	3	6	4.4%
Winter Storm/Blizzard	3	3	9	6.6%

*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
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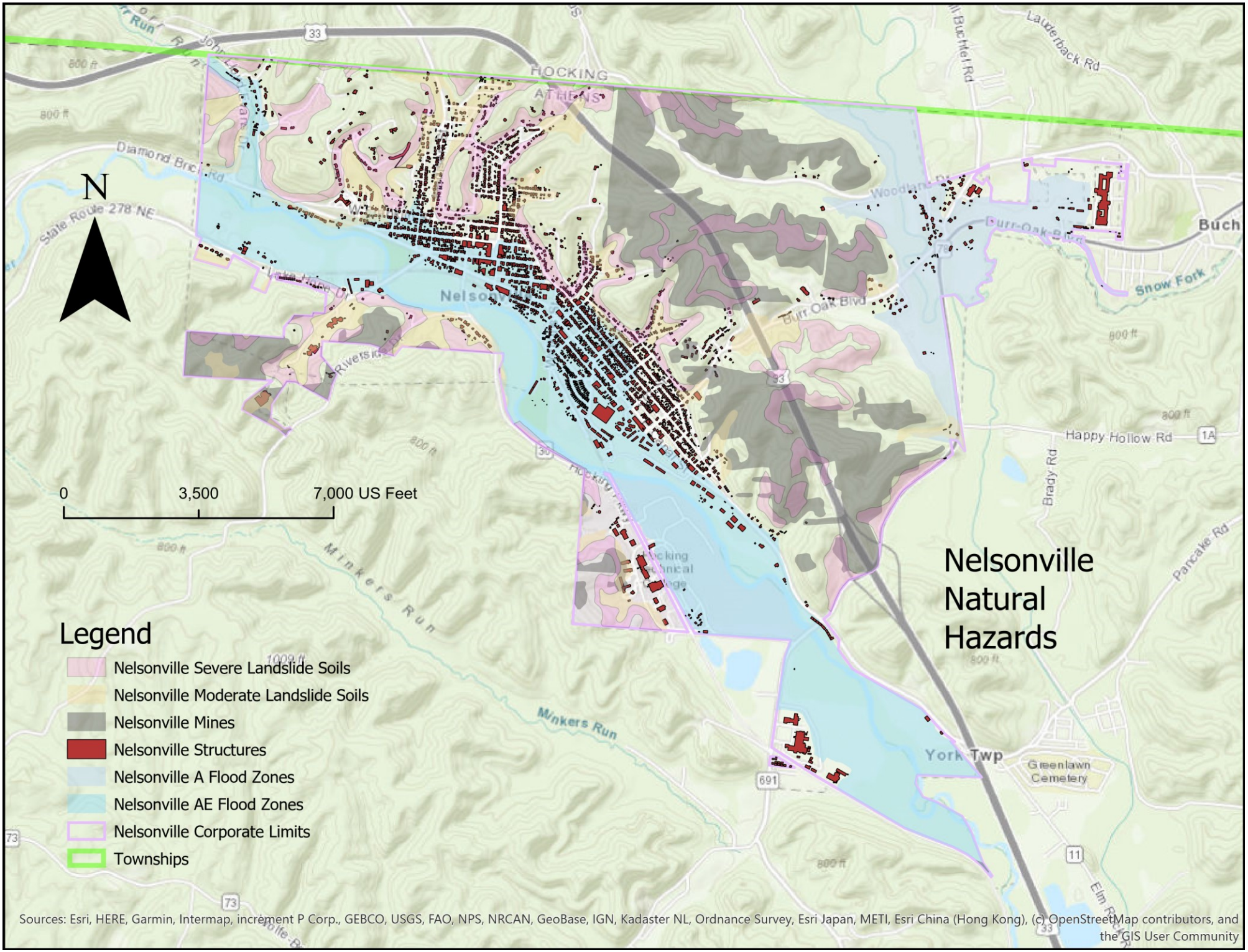


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.3.13 Trimble Village

Key Facts

- Trimble has 35% of its land, 13 or 100% of its commercial parcels, and 50.1% of its structures in a flood zone.
- 43.3% of its land and 83 or 18% of its structures are located in a moderate landslide soil.
- 83.7% of its land and 439 or 95.2% of its structures are located in a subsidence zone.
- Trimble was awarded and is in the process of completing a flood acquisition project for a total of 16 properties.

Assets

The Village of Trimble has 461 structures and an improved parcel value of $7,953,460.

Critical Facilities

- Water tank
- Congress Run bridges 1 and 2
- Walnut St. bridge
- E. Sycamore St. bridge
- Center St. bridge
- AEP substation
- SR 13 bridge

Vulnerabilities

Trimble has 62 persons aged 65+ years old and 14 repetitive loss properties.

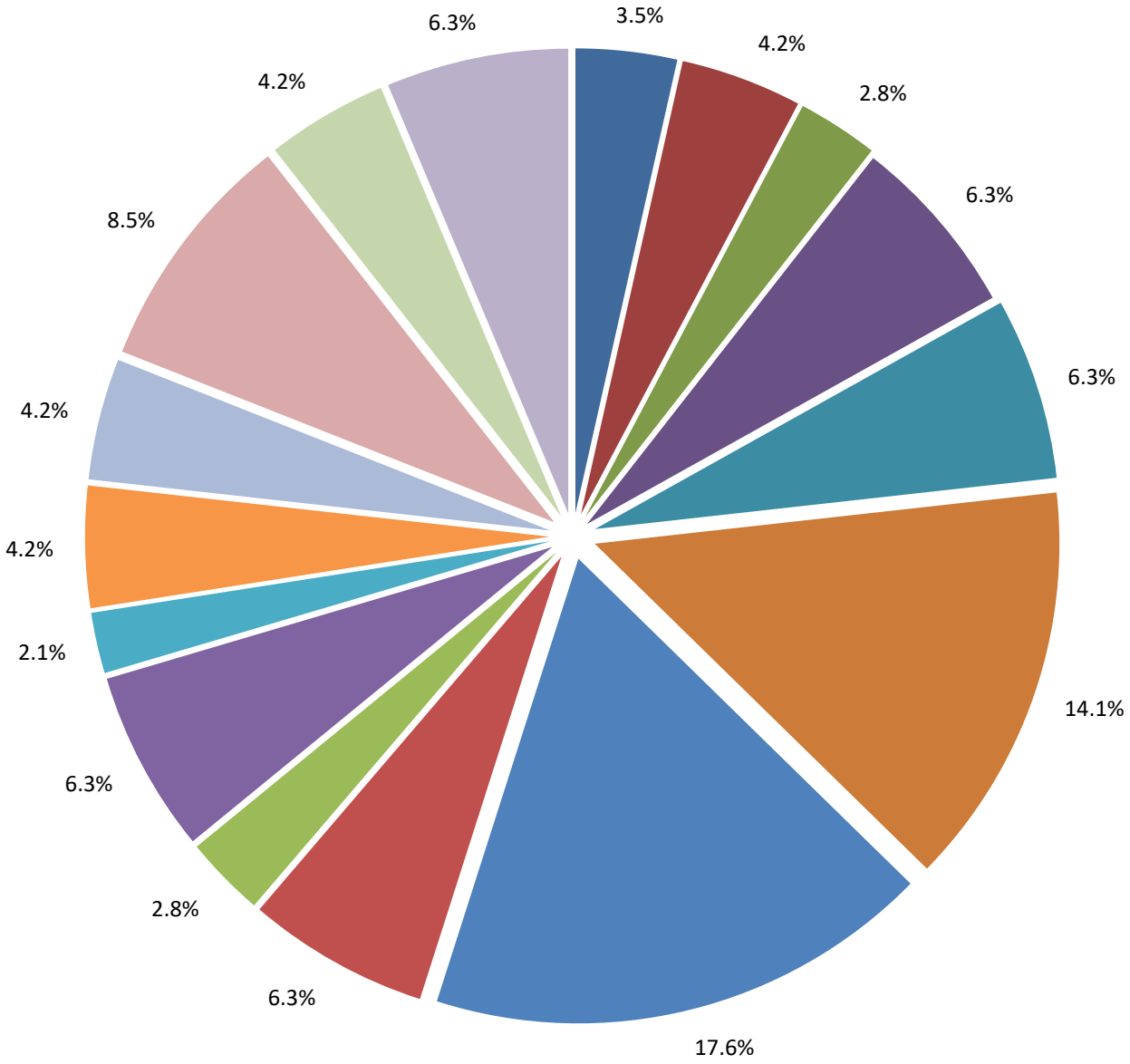
Hazard	Potential Damages	Injury/ Death
Dam Failure	$1,525,448	Likely
Drought	Minor <$10,000	Unlikely
Earthquake	$1,145,298	Likely
Extreme Cold	$10,000	Possible
Extreme Heat	Minor <$10,000	Likely
Flooding (Flash)	$25,000	Unlikely
Flooding (Riverine)	$1,173,421	Possible
Freezing Rain/Ice Storm	$10,000	Possible
Hail	$10,000	Unlikely
High Winds	$25,000	Possible
Invasive Species	Minor	None
Landslide/Rockfall	$57,500	Unlikey
Land Subsidence (mines)	Moderate $10,000-$50,000	Unlikely
Thunderstorms/Lightning	$10,000	Possible
Tornado	$967,749	Likely
Wildfire	Minor	Unlikely
Winter Storms/Blizzard	$25,000	Possible

New Development

There is no new development in Trimble Village.

TRIMBLE									
Asset	Total	# in Floodplain	% in Floodplain	# in Landslide/ Moderate	% in Landslide/ Moderate	# in Landslide/ Severe	% in Landslide/Severe	# in Subsidence	% in Subsidence
Land (acres)	443.8	155.5	35.0%	192.2	43.3%	52	11.7%	371.5	83.7%
Population[1]	403								
Residential Parcels	193	129	66.8%	49	25.4%	43	22.3%	188	97.4%
Commercial Parcels[2]	13	13	100.0%	0	0.0%	1	7.7%	13	100.0%
Industrial Parcels									
600-880									
Structures[3]	461	231	50.1%	83	18.0%	16	3.5%	439	95.2%
Developed Parcel Value	$7,953,460	$5,115,000	64.3%	$1,890,760	23.8%	$2,714,420	34.1%	$7,807,900	98.2%
Institutional Population[4]	0								
Elderly 65+[4]	62		**Tornado**	$645,166			NOTES		
Repetitive Loss Properties	14		**Tornado Contents**	$322,583			1. 2018 estimate		
Critical Facilities	7		**Total Tornado**	$967,749			2. includes apartments with 4+ rental units		
							3. County LIDAR		
			Earthquake	$1,145,298			4. 2010 census		

Trimble Natural Hazards
Relative Risk



- Dam Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding- Flash
- Flooding- Riverine
- Freezing Rain/Ice Storm
- Hail
- High Winds
- Landslide/Rockfall
- Subsidence(Mine)
- Thunderstorm/lightning
- Tornado
- Wildfire
- Winter Storm/Blizzard

Trimble Natural Hazard Risk Assessment

Hazard	Probability	Impact	Priority Score (Risk)*	Relative Risk %
Dam Failure	1	5	5	3.5%
Drought	2	3	6	4.2%
Earthquake	1	4	4	2.8%
Extreme Cold	3	3	9	6.3%
Extreme Heat	3	3	9	6.3%
Flooding- Flash	5	4	20	14.1%
Flooding- Riverine	5	5	25	17.6%
Freezing Rain/Ice Storm	3	3	9	6.3%
Hail	2	2	4	2.8%
High Winds	3	3	9	6.3%
Landslide/Rockfall	1	3	3	2.1%
Subsidence (Mine)	2	3	6	4.2%
Thunderstorm/lightning	3	2	6	4.2%
Tornado	3	4	12	8.5%
Wildfire	2	3	6	4.2%
Winter Storm/Blizzard	3	3	9	6.3%

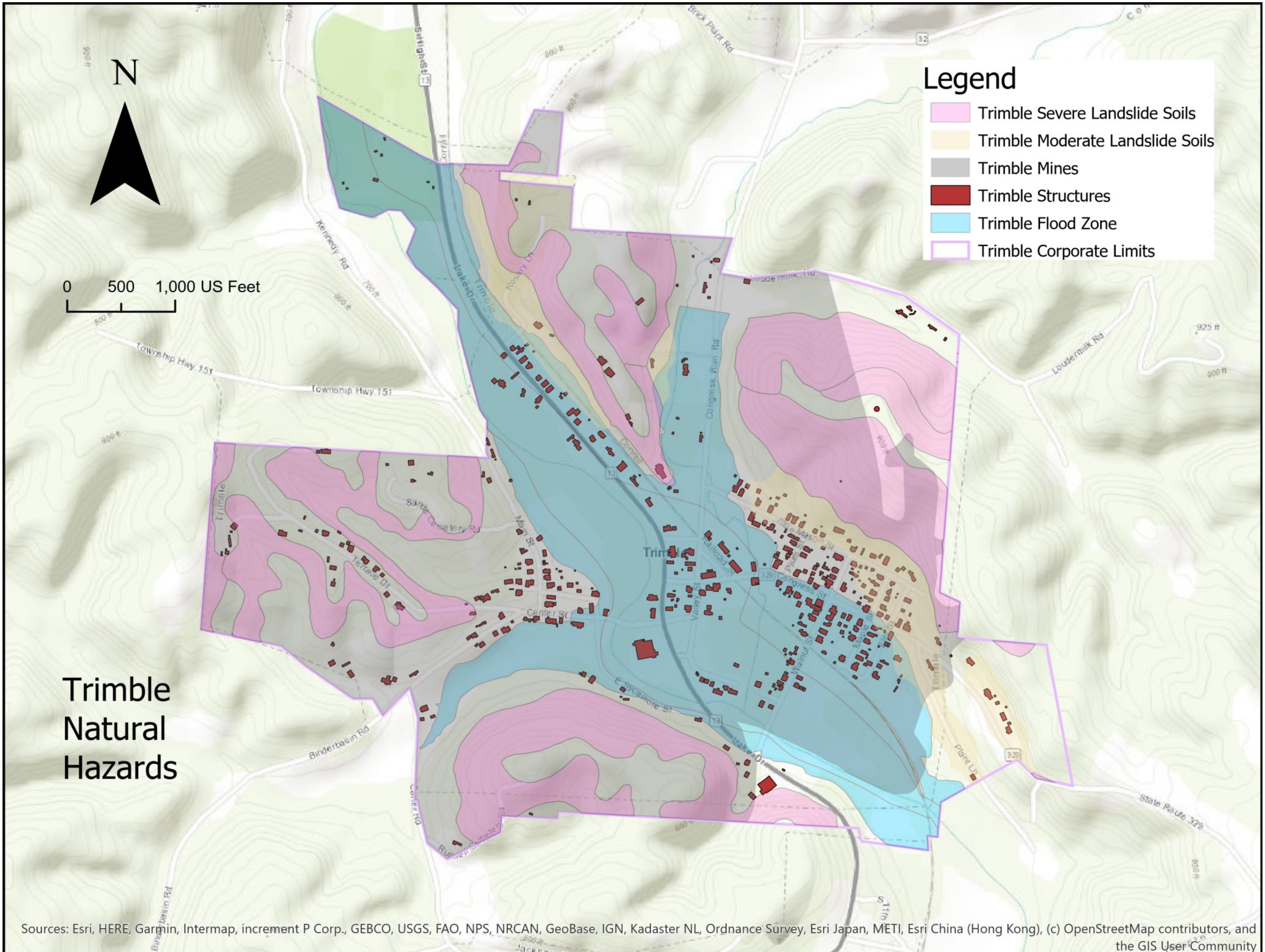
*High is risk of 17-25, medium is risk of 9-16, and low is risk of 1-8

Probability

5 (Nearly Certain) - frequent occurrences in past 100 years, some of which caused a disaster and others could have with more time
4 (High Probability) - frequent occurrences in past 100 years that could have escalated to a disaster
3 (Low Probability) - periodic occurrences in past 100 years that could have escalated to a disaster
2 (Low Probability) - periodic occurrences with no disasters and extraordinary circumstances needed to escalate to a disaster
1 (Not Probable) - No emergencies have occurred and highly unlikely that an event would occur
0 (Not applicable in this community)

Impact

5 - Casualties including injury and death, regional property damage in millions of $ does occur, outside assistance likely needed, critical facility damage may create other hazards
4 - Casualties including injury and death, regional property damage in millions of $ could occur, outside assistance likely needed, critical facility damage may create other hazards
3 - Casualties and extensive property damage likely occurs to target groups or injuries and property damage require multi agency/jurisdictional response and assistance
2 - Casualties may occur and property damage would occur as a local emergency
1 - No casualties will occur and property damage is unlikely to occur, a local emergency
0 - Conditions make it highly improbable that this event would occur


Trimble Natural Hazards
Legend
Trimble Severe Landslide Soils
Trimble Moderate Landslide Soils
Trimble Mines
Trimble Structures
Trimble Flood Zone
Trimble Corporate Limits
N
0 500 1,000 US Feet
Township Hwy 151
Kennedy Rd
Congress Run Rd
Loudermilk Rd
Binderbasin Rd
State Route 329
Trimble
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

2.4 Future Potential Areas of Risk

The state of Ohio recognizes four areas of risk concern that merit some discussion:

- Future growth
- Harmful algal bloom
- Hydraulic fracturing
- Climate change

2.4.1 Future Growth

Rapid growth in portions of the state has led to concern because public services can be overwhelmed and hazard mitigation principles can be overlooked or downplayed in the effort to get more growth and development. Growth in population in Athens County is expected to be slow and with enrollment at Ohio University expected to decrease over the next several years, it is possible for Athens County to experience a no growth period. There is only one large development for the near term and that is construction of a public sewer to the southwest of the City of Athens. While it may encourage slight growth, most of this area is not in a floodplain and the terrain is relatively level so that landslides are minimal. There are no underground mines in this area.

2.4.2 Harmful Algal Bloom (HAB)

While this issue is primarily related to Lake Erie and the Lake Erie watershed, there is some applicability to southeastern Ohio because Lake Hope, in Vinton County, has experienced an HAB and there are other large, freshwater bodies in Athens County that may have a HAB given the necessary ingredients.

The State of Ohio Hazard Mitigation Plan Draft 2019 states, “The Ohio Sea Grant Program states Harmful Algal Blooms (HAB) are caused by a combination of warm water temperatures (above 60 degrees Fahrenheit) and high concentrations of phosphorus in the water. Typically, a high concentration of phosphorus and nitrogen in cold weather will produce a bloom of diatoms, in cool weather we would expect a bloom of green algae, and in warm weather we often see blue-green algae.

One of the main focuses on reducing the number of HABs is to reduce the amount of phosphorus, which is one of the three major components in most fertilizers, followed by nitrogen and potassium. Phosphorus entering natural water ways is a major issue in the state. In Lake Erie, more than 65% of the phosphorus that causes HABs comes from agricultural fertilizer and manure runoff. Some phosphorus also comes from sewage treatment plants, combined sewer overflows, water treatment plants, cleaning products, faulty septic tanks and residential lawn fertilizers. The largest phosphorus load, about 80-90%, happens during heavy rain storms when fertilizer and other phosphorus sources are quickly washed into rivers and streams that flow into Lake Erie.

HABs can produce toxins that are capable of causing illness and sometimes even death. Microcystin is the most concerning toxin as it causes skin rashes, GI problems and varying degrees of nervous system, liver and kidney damage. While most healthy adults recover from

contact with the toxin, it can be more problematic to children, the elderly and people with pre-existing conditions that weaken their systems. Exposure has also killed people in other parts of the world. The toxin can also be fatal to pets that drink or come in contact with contaminated water."

2.4.3 Hydraulic Fracturing

Drilling for oil and gas has been an extractive industry in Athens County since the nineteenth century. The natural gas boom of this century is due to advancing technology that allows for hydraulic fracturing to be used on a large scale. Hydraulic fracturing is the fracturing of oil and gas bearing bedrock by the injection of a mix of water, sand, and chemical additives under high pressure. This fracturing releases the bound-up gas and oil and allows for extraction.

The SOHMP Draft 2019 states, "Some citizens and local governments are becoming aware and concerned about the potential environmental and societal impacts of drilling activity in their communities. The primary concerns noted in "Drilling for Natural Gas in the Marcellus and Utica Shales: Environmental Regulatory Basics" by ODNR & OEPA dated January 2014 are:

- The possible impacts of brine or flowback water on ground water resources
- The hydraulic fracturing fluid compositions and their possible health effects
- Increased road traffic and higher road maintenance costs
- Method of disposal for the brine, hydraulic fracturing fluid and other substances related to the drilling
- Possible increase in seismic activity from injection wells
- Possible increase in air pollution from the drilling related activities"

The State Plan goes on to say, "As the number of oil, gas, and injection wells in the state increases, so does the potential for environmental impacts. The state is mitigating this risk by enhancing regulatory and monitoring programs for well drilling and waste disposal operations. Additional information on these efforts can be found at the ODNR Division of Oil and Gas website: http://oilandgas.ohiodnr.gov. The state's direction will be to continue to take steps to ensure that oil and natural gas development benefits the citizens of the state and does not adversely impact human health and the environment."

Athens County will continue to monitor drilling activity in the area and will continue to address citizen concerns that surface around deep well injection of hydraulic fracking fluids that takes place at a deep well injection site in southeastern Athens County.

2.4.4 Climate Change

Climate change is defined by the National Oceanic and Atmospheric Administration as a non-random change in climate that is measured over several decades or longer. The change may be due to natural or human-induced causes. The SOHMP Draft 2019 says, "While the impacts of climate change may vary by regions and jurisdictions throughout the state, it is clear that the potential consequences of climate change will have significant impacts on all the citizens of the state." The State Plan stresses the need for local governments and local institutions to prepare

for more intense storm-related problems such as flash flood drainage issues. Utilities also need to be prepared for more intense weather-related hazards.

Climate Change: A non-random change in climate that is measured over several decades or longer. The change may be due to natural or human-induced causes.

Global Warming, now more commonly referred as Climate Change has altered climatic normality well out of historic proportion. The primary cause of climate change is an increase of heat-trapping (greenhouse) gases in the atmosphere. The increased heat contained in the atmosphere has disrupted the earth's circulatory pattern. The three cell pattern (Polar, Ferrel, and Hadley Cells) as depicted in the image below, works much like atmospheric cogs to keep thermal distribution in balance between polar and equator extremes. The increase of greenhouse gasses have allowed for the Hadley Cell to expand poleward.

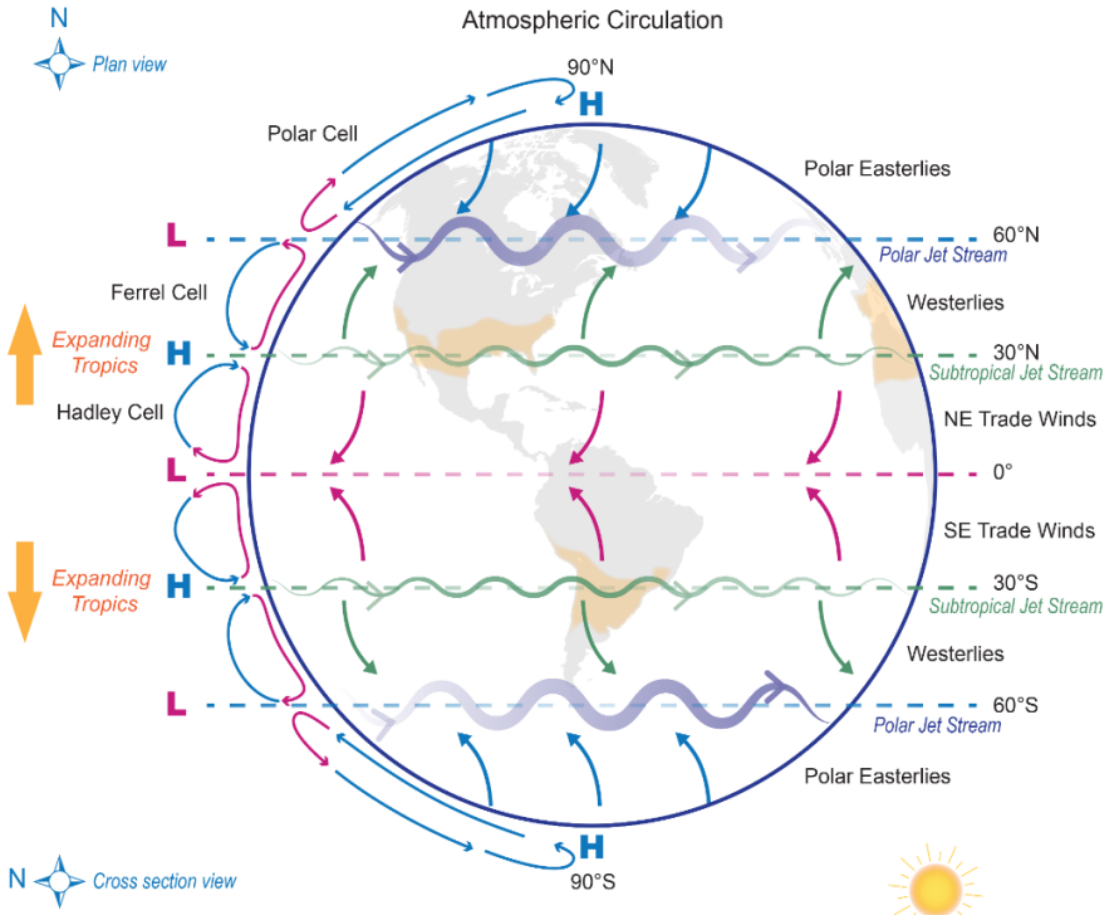


Figure 5 Atmospheric Circulation

The Hadley Cell's poleward expansion has disrupted earth's semi-permanent pressure systems across the globe and brought increased water vapor poleward in both hemispheres. The combination has altered storm track normality and annual climatic precipitation amounts. The results across the nation are geographically defined due to direct alteration of semi-permanent pressure systems and their geographic source regions. The following image collectively defines both geographic and climatic impact seen across the nation.

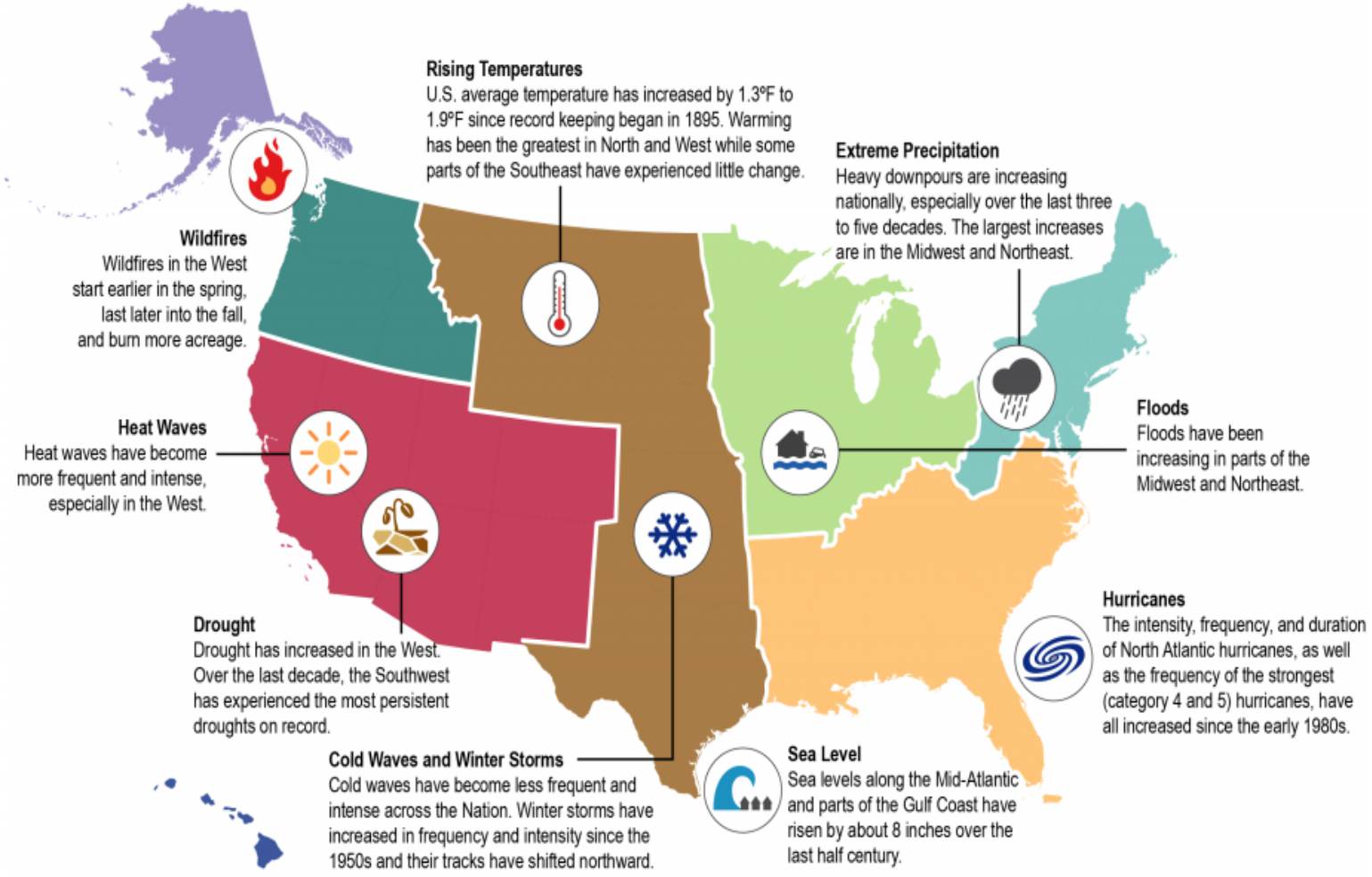
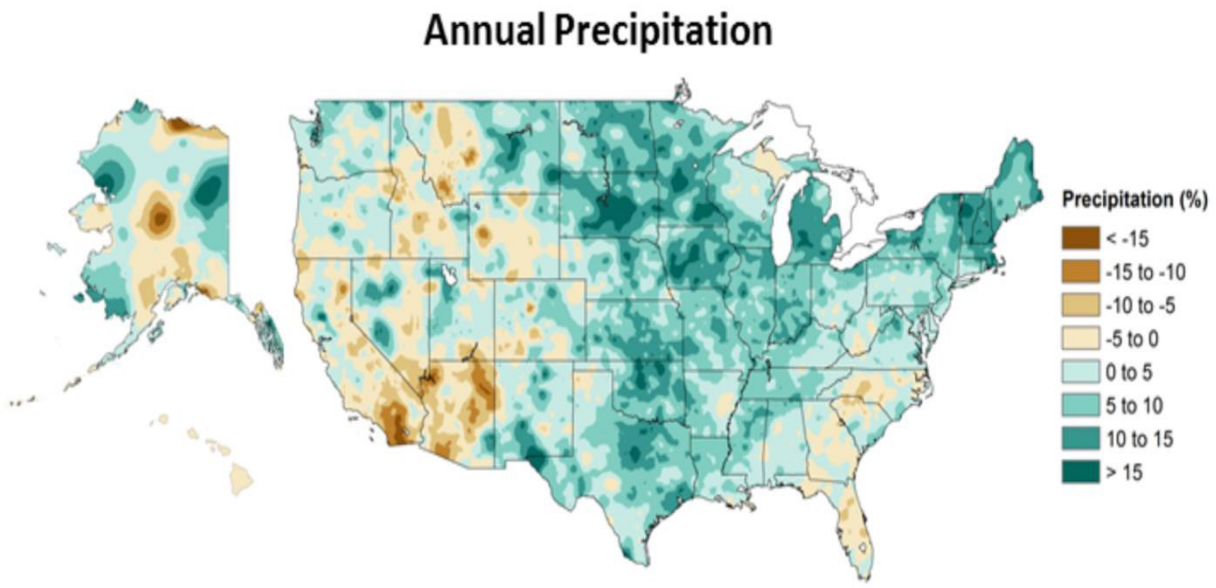


Figure 6 Climate Impact Across the Nation



Map 10 Annual Precipitation

Nationally, annual precipitation has decreased in much of the West, Southwest, and Southeast, and increased in most of the Northern and Southern Plains, Midwest, and Northeast. As a whole, a national average increase of 4% in annual precipitation has occurred since 1901, Mostly a result of large precipitation increases in the fall season.

Ohio, which has only experienced about a one degree (F) warming in the last century has experience most of climate change in the form of increased precipitation. According to a study conducted by the EPA, most of the Midwest has seen an annual increase of 5 to 10 percent in the last half century. But rainfall during the four wettest days of the year has increased about 35 percent, and the amount of water flowing in most streams during the worst flood of the year has increased by more than 20 percent. During the next century, spring rainfall and average precipitation are likely to increase, and severe rainstorms are likely to intensify. Each of these factors will tend to further increase the risk of flooding.

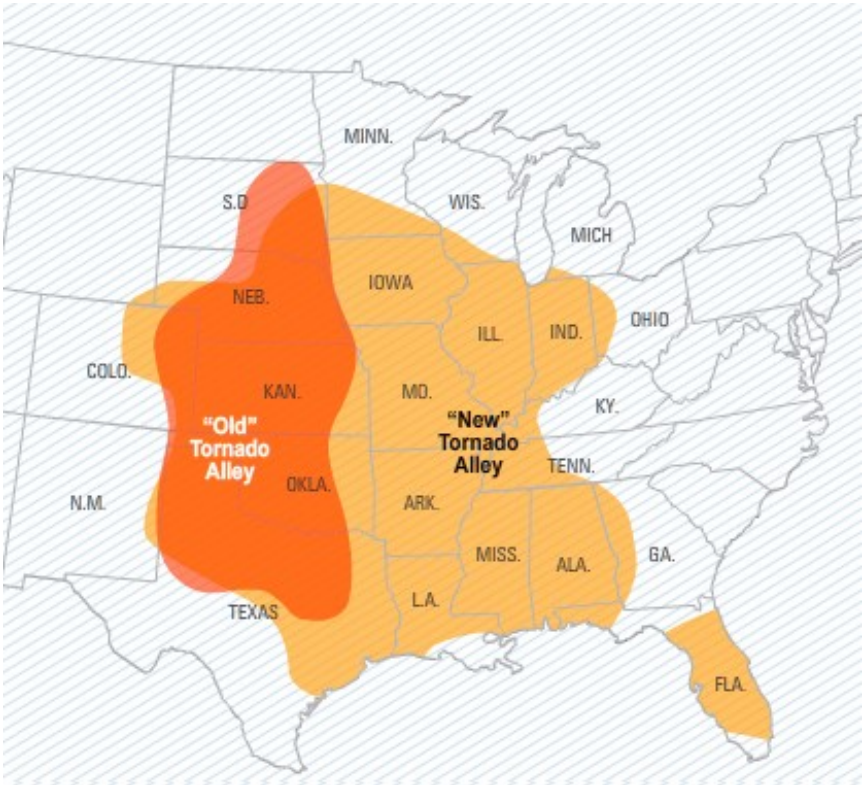
Beyond obvious impacts of flooding to a community, the excessive rainfall amounts in the spring and fall has rendered many older storm water systems antiquated. Their volume capacity is now undersized due to excessive rainfall and water shed amounts received. This of course contributes to or compounds flash flooding effects.

Climate change has brought other local risk. Ohio is experiencing increased pressure from invasive plant and insect species. Both can alter Ohio's eco-system and threaten human health through disease transmission and allergic reaction as well as impact Ohio's agriculture vitality. Ohio's agricultural seasons may be at further risk due to rapid advancement of its phenological state, such as early plant gestation and migratory waterfowl. Climate change may also bring a

reduction in quality of sensitive crops, reduced chilling hours needed for production, or the lack of needed frost season for certain crops to gestate.

Athens County, with its diverse and rugged Appalachian topography, coupled with sedimentary composition of Pennsylvanian and Permian (southeast corner) geologic periods, has not been immune to climate change. This combination of clay underneath the topsoil layer is prone to hillside slippage during high precipitation periods. In recent years, Athens County has seen increased monetary loss due to such slippages impacting the road system.

As with much of the state, many of Athens County's storm water detention systems are antiquated and undersized. Their inability to handle current water shed amounts has resulted in further erosion from overflow effects. Many jurisdictions have experienced clay tile systems collapsing from superfluous water volume, contributing to accelerated road erosion from overspill.



Map 11 Tornado Alley

Climate change has also altered and increased the size of Tornado Alley. The intrusion of tornado alley into western Ohio has elevated likelihood of tornado occurrence in Athens County. Undoubtedly, one of nature's most hazardous and violent storms, tornadoes threaten the unprepared and unprotected. However, through a myriad of warning systems, sub-terrain sheltering, proper education and response, tornadoes bring more material damage than life loss.

To conclude, climate change has brought new concern and hazards to Athens County. It's imperative that Athens County takes pro-active measures to mitigate damage inflicted by climate change. The old adage, "we have always done it this way" no longer applies. Within the past decade, climate change has proven to be formidable and deep reaching.

Chapter 3 - Mitigation Plan

3.1 Background on Mitigation Strategies

This section describes the mitigation strategy process and mitigation action plan for the Athens County Hazard Mitigation Plan 2019. This process included a thorough review of the mitigation plan from the 2014 update. Each goal, policy, and action was analyzed to see what has been achieved, what is still relevant, and what needs to be accomplished in an ongoing effort to achieve the goals. The process followed in 2014 was deemed appropriate and there was no need to devise a different method. For the purposes of this Update 2019, it was deemed more important to focus on making the Plan truly multi-jurisdictional rather than devising a new approach to formulate mitigation actions.

The Executive Committee of the larger NHMP 2019 Planning Committee used the STAPLEE Criteria to evaluate each action item. Efforts were made to assess the needs of specific jurisdictions and to customize the actions as much as possible. The County Emergency Management Agency and the Regional Planning Commission will continue to take leadership roles in action plan implementation with the County EMA being the lead agency.

The mitigation strategy recommendations are organized in four levels: foundations, goals, polices, and activities. For the purpose of this plan the following definitions will be used:

Foundations – The basis which guides the development of goals, policies and objectives.

Goal – The purpose or end that provides general guidelines and direction for community decisions.

Policies – Procedures and actions that are used to guide the community.

Activities – Specific, attainable, and measurable statements of the actions the community will take to carry out the plan.

3.1.1 Foundations

The basis and purpose of this plan includes pursuing resilience and encouraging partnerships between County and local governments, businesses, and community service providers. Resilience is a key foundation because the ability to survive a hazard without debilitating consequences is crucial to small, rural communities. Jurisdictions with large percentages of land in floodplain areas are particularly at risk and this Plan helps them continue strides towards mitigation and resilience. Establishment of public-private partnerships is the second foundation and is central to the County's hazard mitigation strategy. Governments, businesses, community service agencies, and residents all have a stake in reducing our vulnerability to natural hazards; therefore members of all sectors served on the 2019 Plan Update Planning Committee, were invited and/ or provided responses to the 2019 Update's Key Stakeholder Survey, and stakeholders and the public were invited to review the draft plan online.

3.1.2 Goals

Goals were defined for the purpose of this mitigation plan as broad-based statements that:

Represent basic desires of the community;

- Encompass all aspects of the community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard for implementation. Cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that the goals are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals.

The first three goals in the Mitigation Action Plan discuss stakeholder involvement and citizen awareness. Several conclusions can be drawn from Information and feedback provided by the surveys. Action steps involving reaching out to citizens and being receptive to their comments and concerns and also steps involving work with other stakeholders will consider these conclusions derived from the surveys:

- Citizen awareness about hazards and how they can be impacted is fairly high because many have experienced hazards first hand.
- Many citizens have taken personal steps to reduce the impacts of hazards, but many do not have the financial resources to do everything they would like to do. Past power outages lead many people to purchase generators.
- More awareness about having a personal emergency plan and what makes up a personal emergency plan is needed.
- Hazards that are the most concerning are: flooding, high winds, windstorm/blizzard, ice storm, tornado, extreme heat, and extreme cold.
- More education and awareness is needed about flooding frequency, weather and climate science, and that dredging waterways for flood control is not a sustainable action that leads to resiliency.
- Inability to communicate during a disaster is a major concern. Cell service in parts of the County is poor so that need is to be addressed further.
- Many key persons have assets available in the event of an emergency. They are willing to help.
- Leaders recognize that flash flooding has become more of an issue in recent years.
- Effective communication is an ongoing and crucial issue.

Objectives and Actions

Objectives define strategies to attain the goals and are more specific and measurable. In many hazard mitigations plans specific mitigation “actions” are developed to meet the objectives. The objectives recommended in this Plan were prioritized by the planning team and staff in

accordance with input that has been received throughout the planning process. Hazard characteristics, the vulnerability analysis, the hazard ranking, survey responses and personal experience as well as several other criteria guided the prioritization of the objectives.

The prioritization criteria included the following:

- Objective requires no more technology or technical expertise than what is currently available.
- Objective requires no more staff or governmental resources than what is already available or with the possibility of additional grant requests.
- Objective is expected to have wide political support.
- Objective can be legally implemented by the lead jurisdiction or agency.
- Objective is cost-effective. There is no other effective, cheaper alternative, and there is no other objective that pursues the same specific result.
- Objective makes progress toward sustainability in mitigating impacts of natural hazards.
- Objective makes significant progress toward mitigating natural hazards.
- Objective correlates with vulnerability analysis and problem statements.

The following criteria were used to establish priorities for the activities/tasks:

- Does the activity address a critical need that currently has a population at risk?
- What is the activity's cost in terms of funding and staff time availability?
- Has the activity already been started or will significant work on a similar project make implementation or startup easier?
- Did the activity generate particular interest from committee members or members of the public?

The prioritization also utilized the STAPLEE approach recommended by FEMA. STAPLEE is an acronym representing the following elements that should be considered when evaluating project feasibility:

- Social: Does the measure treat people fairly?
- Technical: Will it work? (Does it solve the problem? Is it feasible?)
- Administrative: Is there capacity to implement and manage the project?
- Political: Who are the stakeholders? Did they get to participate? Is there public support? Is political leadership willing to support the project?
- Legal: Does your organization have the authority to implement? Is it legal? Are there liability implications?
- Economics: Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development? Does it reduce direct property losses or indirect economic losses?
- Environmental: Does it comply with environmental regulations or have adverse environmental impacts?

Additional prioritization criteria could include:

- Does the action protect lives or property?
- Does the action address hazards or areas with the highest risk?
- Does the action protect critical facilities, infrastructure or community assets?
- Does the action meet multiple objectives?

STAPLEE Criteria	
S Social	Is the action unfair to one section of the community over others? If yes, it is a social cost associated with the action. If the implementation of the action helps achieve a social goal of the community, it is a social ***benefit*** associated with the action.
T Technical	Is the action a good technical solution to the problem? If yes, it is a ***benefit*** associated with the action. The better the solution, the higher the ***benefits***.
A Administrative	Is the action difficult to implement because of the administrative problems associated? If yes, it is an administrative ***cost***.
P Political	Is the action politically favored? If yes, it is a ***benefit.*** If the action is likely to be politically unacceptable, it is a ***cost*** associated with the action.
L Legal	Are there perceived legal problems in implementing the action? If yes, it is a ***cost*** associated with the action.
E Economic	Does implementing the action make economic sense? Are the ***costs*** too prohibitive? If yes, it is a cost associated with the action.
E Environmental	Does the action have adverse environmental effects? If yes, it is a ***cost*** associated with the action.

Table 6 STAPLEE Criteria

3.2 Mitigation Matrix

The action plan consists of the specific objectives and activities that are designed to meet the plan's goals. Over time the implementation of these projects will be tracked as a measure of demonstrated progress on meeting the overall goals of the Plan.

The action plan provides a summary of each objective and includes the primary goals addressed, the hazards mitigated, and the relative priority. Many of the mitigation items have been carried

from the previous Plan and have been revised to reflect a multi-jurisdictional approach to Natural Hazard Mitigation Planning. Action items level of priority reflect all the criteria listed above. However, for purposes of this plan high priority items are essential for preserving life, educating the public and officials, establishing key facts, improving flood mitigation (area's most common hazard), establishing partnerships, or accessing funds critical to mitigation project implementation. Medium priority action items provide additional training or interaction with field experts. These items may also involve policy promotion, systems change, lower risk hazards, multiple partners, and may be time consuming or expensive. Low priority action items involve lowest risk hazards, existing functioning systems, duplicated efforts, and are unlikely to have significant preservation of life benefits.

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
Goal 1: Facilitate and coordinate solutions to multijurisdictional issues that involve government, citizens, stakeholders, and policy makers at all levels.												
1. Efforts will be made to provide information about natural hazards and risk reduction to elected officials and to 100% of the citizens that may be affected.	1. Coordinate a seasonal hazard awareness campaign. Develop brochures and social media spots. Brochures will be designed with checklists. (all hazards and all buildings/infrastructure)	X	X	X	X	X	200 hrs. X $15/hr. = $3000	In kind	County EMA, RPC, and Mitigation Committee	County-wide	high	Several focus areas are flood insurance, wildfire defensible space, floodplain rules and permitting, sheltering from a tornado, protecting vulnerable populations, and utilizing weather radios as an advance warning system.
	2. Prepare a county-scale GIS wildfire risk map. OU intern based on any existing maps from ODNR or WNF.			X			GIS Intern supervised by EMA	In kind	County GIS, County EMA, and County RPC	County-wide	low	The County EMA Director and County GIS Coordinator will design a map using GIS.
	3. The NHMP shall provide a comprehensive packet of information to each mayor and village council member. These will be presented at a Village Council meeting	X	X	X	X	X	10 meetings X 4hrs/meeting=40 hrs.X $30/hr.=$1200	In kind	County RPC and mitigation committee	County-wide	high	The packet will include risk maps, contact information, checklists, and information and expectations about implementation of this Plan.
	4. Provide hazard risk maps on the County GIS page.	X	X	X	X	X	8 hrs. for website maintenance=$240	In kind	County GIS and County RPC	County-wide	high	Maps were produced during the creation of this Update 2019 and will be posted concurrent with Update 2019 approval.
	5. Create a High Road Map for the County that shows evacuation routes and roads affected by the 1%-chance flood as well as flash floods. Print map on road signs and install maps on frequently used flood routes.	X		X		X	200 hrs GIS Intern supervised by RPC signs approx $3,000	Grant, In kind	County GIS, County EMA, County RPC, County Engineer	County-wide	medium	The County EMA Director and County GIS Coordinator will design a map using GIS. Athens County Engineering Department staff will identify known routes and may assist in mapping.

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
2. Establish methods to coordinate information sharing with municipalities, townships, Ohio University, Hocking College, the business community, and other agencies or organizations.	1. Keep the natural hazard mitigation committee to implement the Plan.	X	X	X	X	X	180 hrs. of county staff time over a 5 yr. period	In kind	RPC and EMA + all participating jurisdictions	County-wide	high	Meetings will be held quarterly. It is anticipated that there will be one countywide committee for all jurisdictions in order to increase efficiency. Meetings will be held after the regular RPC meeting.
	2. An article will be written annually for the Chambergram.	X		X		X	4 hrs/$120	In kind	EMA, NHMP Committee	County-wide	medium	
	3. Invite utilities once per year to one of the quarterly NHMP Committee meetings.	X		X		X	4 hrs/$120	In kind	Mayors, County EMA & 911	County-wide	medium	Build on the success of the initial meeting held in 2010. Utilities can be the meeting focus when they attend.
	4. Review notification procedures concerning water releases from the Tom Jenkins Dam.			X			4 hrs/$120	In kind	EMA	County-wide	low	
	5. Coordinate emergency equipment needs and availability.	X	X	X	X	X	80 hrs.	In kind	EMA	County-wide	high	Update list annually.
	6. Improve communications with the business community by ensuring that a Chamber member is invited to sit on the NHMP Committee.			X			2 hrs/yr	In kind	RPC, Natural Hazard Mitigation Committee, EMA	County-wide	low	
	7. Ensure that an after-action report is presented to all interested parties whenever the EOC is activated.	X	X	X	X	X	16 hrs.	In kind	EMA	County-wide	high	
	8. Review emergency preparedness systems for large assemblies of people trapped by a natural disaster.	X	X	X	X	X	16 hrs.	In kind	EMA and NHMP Committee	County-wide	high	

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
Goal 2: Minimize human, economic, and environmental disruption from natural hazards.												
1. Improve the County's ability to notify every citizen of an impending natural hazard and to improve citizen safety during and after a hazard event.	1. Promote weather radio usage in Athens County. The NHMP should seek grant funding and establish priorities for weather radio placement.	X		X		X	40 hrs.	PDM, In-kind	EMA, NHMP Committee, all jurisdictions	County-wide	medium	Ideally, every household and business in the county will have a weather radio.
	2. The NHMP will support the Red Cross and 9-1-1 with efforts to keep data about vulnerable populations current. NHMP will work to provide information about how neighbors can help protect vulnerable populations during a disaster.	X	X	X	X	X	80 hrs.	In-kind	County EMA and 911	County-wide	high	Additional information will be provided through Municipalities utility billing programs. Buckeye Hills Regional Development District has a lot of info as an Area Agency on Aging.
	3. Utilize vulnerable population maps to formulation Emergency Action Plans for hazard events. Potentially create more detailed maps for municipalities.	X	X	X	X	X	80 hrs.	In-kind	EMA, County GIS	County-wide	high	Buckeye Hills Regional Development District has provided vulnerable population maps for Athens County.
	4. Analyze whether existing warning sign program on local roads is adequate or whether additional signage and maintenance is required.	X	X	X	X	X	16 hrs.	In-kind	EMA, County Engineer	County-wide	high	
	5. Analyze existing siren warning systems and see where additional coverage would be beneficial. Apply for grant funding as needed.	X	X	X	X	X	40 hrs.	In-kind	EMA, NHMP Committee	County-wide	high	
	6. Provide information on EMA website concerning tornado and weather alert sirens and what the warnings mean.	X	X	X	X	X	8 hrs.	In-kind	EMA, NHMP Committee	County-wide	high	

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
	7. Utilize GIS to map flash flood watersheds and identify residents whose homes and property lie within areas that may have flash flooding.	X		X		X	200 hrs.	In-kind	intern with EMA and County GIS	County-wide	medium	
	8. Prepare a flash flood emergency plan.	X		X		X	200 hrs.	In-kind	intern with EMA and County GIS	County-wide	medium	
	9. Analyze status and effectiveness of wide area rapid notification systems.			X			4hrs	In-kind	EMA and 9-1-1	County-wide	low	
c	10. Conduct PSA's via radio for various natural hazards.	X	X	X	X	X	10 hrs. per season, 40 hrs. per year	In-kind	EMA and NHMP Committee	County-wide	high	
	11. Ensure there are enough emergency shelters throughout the county. Provide upgrades to existing facilities that could be converted to emergency shelters during or following a hazard event.	X	X	X	X	X	10 hrs. per season, 40 hrs. per year	In-kind, Grant	EMA, NHMP Committee , and all jurisdictions	County-wide	high	Athens County DJFS is a large facility, which could double as an emergency shelter with purchase and installation of an appropriate generator. The Village of Albany also identified purchase of a generator for the same purpose as a priority. This is applicable at multiple locations throughout the county.
2. Utilize data gathered during the mitigation planning process to develop a mitigation project for submittal to OEMA	1. Research eligible projects. Additional mitigation efforts are still needed in several jurisdictions where residents and property are at risk from the flood hazard. Elevation and/or buy-out programs will be researched and proposed for those considered competitive.	X	X	X	X	X	40 hrs. consultant and 20 hrs. RPC	In-kind	Consultant, Mitigation Committee and County RPC	County-wide	high	Project will require a consultant to be paid from a mitigation grant.
	2. Mitigate repetitive loss and other loss properties in the floodplain.	X	X	X	X	X	100 hrs. consultant and 20 hrs. RPC	Hazard Mitigation Grant Program (HMGP)	Consultant, Mitigation Committee and County RPC	County-wide, excluding Albany and Coolville	high	Assumes an eligible project can be created. Albany and Coolville have no or very minimal mapped floodplain in their jurisdiction.
3. Maintain the flow-carrying capacity of drainage systems	1. Explore creative solutions for stormwater detention.	X		X		X	20 hrs.SWCD and 20 hrs. County RPC	In-kind	EMA and SWCD	County-wide	medium	Many villages expressed numerous shortcomings of their stormwater systems that result in standing water or ice during winter.

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Action Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdictions	Priority	Notes
		20	21	22	23	24						
	2. Find funding for stormwater solutions identified in 3 (1) above.	X		X		X	40 hrs EMA and 40 hrs. SWCD	In-kind	EMA and SWCD	County-wide	medium	
	3. Encourage solid waste enforcement staff to focus on and disseminate information about areas where illegal waste dumping poses the most threat.	X		X		X	16 hrs.	In-kind	EMA and Health Department	County-wide	medium	
4. Seek community involvement in hazard mitigation activities and planning.	1. Conduct 10 presentations about hazard planning to interested groups in the County.			X			20 hrs.	In-kind	EMA	County-wide	low	
	2. Discuss and potentially formulate policy or guidance for dissemination to inform local government and area stakeholders about the benefits of preservation and /or restoration of high hazard area natural buffers.	X		X		X	8 hrs. EMA and RPC	In-kind	EMA, NHMP Committee, all jurisdictions	County-wide	medium	Provide assistance to incorporate land use planning or development standards to provide natural systems protection. Additionally, it would be beneficial for jurisdictions to have a list of hazard prone areas in need of clean up in the event a local nonprofit can employ more flood cleanup crews.
	3. Establish public-private partnerships with governments, businesses, community service agencies, and residents.	X	X	X	X	X	40 hrs.	In-kind	NHMP Committee	County-wide	high	Explore land bank issues. Assess best information to provide business community. Utilities are important partners.

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
Goal 3: Improve the disaster resistance of existing buildings, structures, critical facilities, as well as infrastructure whether new construction, expansion, or renovation.												
1. Improve the ability to offer services that were hampered by a natural hazard event.	1. Explore the viability of creating temporary emergency services outside the hazard event area. Insure VFD's receive special training where needed.	X		X		X	20 hrs. Committee and 20 hrs. Red Cross	In-kind	Mayors, Mitigation Committee, and Red Cross	County-wide	medium	Specialized training should include proper siting of helicopter landing zones.
	2. Assess what services would be impacted including education by long-term recovery efforts.	X		X		X	16 hrs.	In-kind	Mitigation Committee and Red Cross	County-wide	medium	Analyze previous table top exercise results. Rehearse various flood scenarios. Pay particular attention to business impacts.
	3. Analyze replacement costs for high priority, critical facilities in the floodplain.	X	X	X	X	X	40 hrs.	In-kind	NHMP Committee, all jurisdictions, and County GIS	County-wide, excluding Albany and Coolville	high	Albany and Coolville have no or very minimal mapped floodplain in their jurisdiction.
2. Identify and protect historic resources in hazard zones.	1. Define what historic resources will be included.			X			20 hrs.	In-kind	RPC, NHMP Committee, and SE Ohio History Center	County-wide	low	
	2. Use GIS to map the resources.			X			20 hrs.	In-kind	RPC Intern and SE Ohio History Center	County-wide	low	
	3. Devise a mitigation plan to protect the resources.			X			20 hrs.	In-kind	RPC Intern and SE Ohio History Center	County-wide	low	
3. Design the built and landscaped environment to minimize loss or damage from natural hazards.	1. Invite design professionals to two meetings where experts will discuss designing and building for resilience against hazards. Include landscaping and natural systems in discussion.	X		X		X	8 hrs.	In-kind	EMA, RPC, and NHMP Committee	County-wide	medium	Safe room design, floodproofing, wind resistance, defensible space, landscaping, expansion or improvement of natural systems,etc. Provide FEMA brochures that cover the topics.
	2. Update the Homebuyers/Builder's Guide produced by the Athens SWCD.			X			20 hrs. RPC and 40 hrs. SWCD	In-kind	SWCD	County-wide	low	
	3. Exchange information with utility companies at a special meeting of the NHMP Committee designed for such interaction.	X		X		X	8 hrs. EMA and RPC	In-kind	EMA	County-wide	medium	

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
Goal 4: Encourage hazard mitigation planning and incorporate that planning into other related plans.												
1. Review and coordinate processes and regulations pertaining to natural hazard planning and risk reduction.	1. Review subdivision regulations to ensure compliance with natural hazard mitigation principles. Provide information to villages about subdivision regulations.			X			16 hrs.	In-kind	RPC	Villages of: Amesville, Buchtel, Coolville, Chauncey, Glouster, Trimble, Jacksonville	low	Cities of Athens and Nelsonville and the Village of Albany have their own regulations in place.
	2. Finalize the application for the County to become a Storm Ready community.	X	X	X	X	X	16 hrs.	In-kind	EMA	County-wide	high	
	3. Review the Emergency Operations Plan to ensure compliance with natural hazard mitigation principles.	X	X	X	X	X	40 hrs.	In-kind	EMA	County-wide	high	Reviewed for compliance by OEMA in 2013. Consideration should be given to developing a flow chart to highlight the four core missions of emergency management.
	4. Conduct an annual meeting and or trainings for floodplain managers to discuss issues and ways to manage, preserve, or restore the floodplain.	X		X		X	4 hrs, annually	In-kind	RPC, NHMP Committee, County EMA	County-wide	medium	February 20, 2020 RPC hosted ODNR's Floodplain Management Workshop for Local Officials at the Athens County OSU Extension Office in Athens, Ohio.
	5. Share information on EMA website about what other communities in Athens County do to reduce hazard risk.	X		X		X	16 hrs.annually	In-kind	EMA	County-wide	medium	
	6.Produce structure and value lists and map floodplain and "at-risk" properties in the villages of Chauncey, Glouster, Jacksonville, and Trimble.	X	X	X	X	X	GIS Intern supervised by EMA	HMGP	County GIS, County EMA	Villages of: Chauncey, Glouster, Trimble, Jacksonville	high	
	7. Perform a HAZUS flood scenario for Athens County	X	X	X	X	X	GIS Intern supervised by EMA	HMGP	County GIS, County EMA, and RPC	County-wide	high	
	8. Apply for Pre-Disaster Mitigation funding to update this Plan.	X	X	X	X	X	20 hrs.	In-kind	EMA	County-wide	high	Intention is to continue to utilize multi-jurisdictional plan format.

Mitigation Action Plan 2020-2024

Objective	Activity/Task	Time Frame for Implementation					Time/Cost	Funding Source	Responsible Party	Applicable Jurisdiction	Priority	Notes
		20	21	22	23	24						
Goal 5: Reduce long-term vulnerabilities from high-hazard potential dams that pose an unacceptable risk to the public.												
1. Review and coordinate processes, regulations and or funding applications pertaining to reduction of risk from dams.	1.Obtail EAP's and dam failure inundation data for each class 1 dam. Review plans and provide action recommendations to NHMP Committee.	X	X	X	X	X	30hrs.	In-kind	EMA	County-wide	high	EAP's and dam failure plans should be available for all class 1 dams.
	2.Rehabilitate high hazard potential dams. Seek grant funding to finance this work.	X	X	X	X	X	45hrs.	In-kind, Grant	EMA, Consultants, and RPC	County-wide	high	Athens County has eight class 1 dams all except two have EAPs.

Chapter 4 - Plan Adoption and Maintenance

4.1 Plan Adoption

The purpose of formally adopting this Plan is to secure buy-in from Athens County and participating jurisdictions, raise awareness of the Plan, and formalize the Plan's implementation. Following state and federal approval, Athens County and its participating jurisdictions intend to formally implement the Plan and be full participants in its activities.

4.2 Implementation

Implementation and maintenance of the Plan is critical to the overall success of hazard mitigation planning. The following sections outline how this plan will be implemented and updated. There are three main components for implementation of the Plan. These components are:

- IMPLEMENT the action plan recommendations of this plan;
- UTILIZE existing rules, regulations, policies and procedures already in existence; and
- COMMUNICATE the hazard information collected and analyzed through this planning process so that the community better understands what can happen, where it can happen, and what they can do themselves to be better prepared. Also, publicize the "success stories" that are achieved through the Hazard Mitigation Committee's ongoing efforts.

One of the key activities is the continuation of the natural hazard planning committee. The Athens County Regional Planning Commission, the Athens County Emergency Management Agency, the City-County Health Department and the County 9-1-1 Office will work cooperatively and utilize assistance from institutions and organizations such as the Red Cross, Ohio University, Buckeye Hills Regional Development District, Hocking-Athens-Perry Community Action Program, ODOT, Hocking College, and the Wayne National Forest to implement the County mitigation plan.

Athens County adopted its Comprehensive Plan in 2010. Several components of the Comprehensive Plan support natural hazard mitigation planning. Athens County will implement the Natural Hazard Mitigation Plan through existing programs by continuing to involve local government departments and leadership on the natural hazard mitigation planning committee. Many of the local government entities that influence mitigation efforts are identified as the responsible party for implementing activities listed in the Mitigation Action Plan Table.

Athens County has several planning and plan implementation mechanisms in place. An active Regional Planning Commission meets monthly and has active participation from the Health Department, the County Engineer, County Commissioners, economic development organizations, and incorporated jurisdictions. Specific examples of the County's role in planning include:

- The Regional Planning Commission employs a full time planner and administrative assistant.
- The Regional Planning Commission considers floodplain, drainage, and landslip issues when it reviews new development proposals.
- The Regional Planning Commission has made floodplain management a major priority for its staff.
- The County Auditor oversees an active geographic information system that provided the data for preparation of this mitigation plan.
- The County Engineer provides information and data concerning the County and Township road networks. The County Engineer regularly plans for and deals with natural hazard events and mitigation efforts.

Through the countywide planning process, this Mitigation Plan presents multi-faceted solutions to multi-faceted problems. Implementation will be accomplished by adhering to the schedules and priorities identified for each objective outlined in the Mitigation Action Table for the County. The Plan describes a wide range of possible methods and projects and provides general guidelines for assigning priorities. As solutions and more specific projects are identified, each must be subjected to an analysis of feasibility and cost effectiveness. This is a necessary condition for obtaining FEMA or other federal or state funding assistance. FEMA has a strict set of requirements for mitigation project funding:

- Projects must be technically feasible and ready to implement.
- Structural projects must include engineering studies with the project application so that FEMA can independently evaluate the effectiveness and feasibility of the proposed project.
- All projects must be cost effective and substantially reduce the risk of future damage, hardship, loss, or suffering. All projects must have a benefit-cost ratio of 1.0 or greater in FEMA's Benefit-Cost Analysis (BCA).
- All projects must be in conformance with the current natural hazard mitigation plan.
- All flood-related projects must be located in a community that is participating in and in good standing with the National Flood Insurance Program.

Technical assistance on completing the analysis and submitting project grant applications is available from FEMA. These considerations must be included in the on-going project analysis that will take place as this Plan is implemented. Even without the FEMA project requirements, an evaluation of cost effectiveness and technical feasibility is necessary to assure the success of the project. However, a 1.0 or greater BCA result is not the only measure of the value of a project. Some projects such as public education campaigns or ordinance review and updates are difficult to quantify cost effectiveness, but are intuitively seen as valuable and viable mitigation alternatives. Some of these projects can be accomplished with existing staff and funding resources. Low or no-cost projects most easily demonstrate progress toward successful plan implementation. However, staffing resources in a small, rural county are quickly overtaxed so time management and choosing actions that yield the greatest effectiveness are important.

Another important implementation mechanism that is highly effective and low-cost is incorporation of the Hazard Mitigation Plan recommendations and their underlying principles into other County and municipal plans and mechanisms. Mitigation is most successful when it is incorporated into

the day-to-day functions and priorities of government and development. As stated previously, implementation through existing plans and/or programs is recommended, where possible. This point is re-emphasized here. The County and participating entities already have existing policies and programs to reduce losses to life and property from natural hazards. These are summarized in this Plan's capability assessment and in the jurisdictional annexes. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing projects through these other program mechanisms. These existing mechanisms include:

- Athens County Comprehensive Plan
- Local Floodplain Ordinances
- Local Comprehensive Plans
- Stormwater Master Plans (City of Athens)
- Soil and Water Conservation Plans and Programs
- Budgets
- Capital Improvement Plans

Opportunities to link this updated Natural Hazard Mitigation Plan with the Comprehensive Plan should be explored. One possibility is to make this Plan an additional element to the nine comprehensive planning elements that currently include:

- Transportation;
- Environment and Natural Resources;
- Economic Development;
- Utilities and Infrastructure;
- Housing;
- Heritage, Arts, and Culture;
- Parks and Recreation;
- Community Facilities; and
- Land Use.

Implementation and incorporation into existing planning mechanisms will require both interdepartmental coordination and inter-governmental coordination. The purpose of interdepartmental coordination is to tap into the experience and expertise of professionals in multiple departments in order to avoid redundancy of effort and capitalize with on-going efforts. Through the planning process it became clear that multi-jurisdictional hazard problems, such as flooding, are pervasive throughout the County. Flooding, and most hazards, do not respect municipal boundaries and many of the most severe flooding problems are cross-boundary ones.

Coordination between jurisdictions will help Athens County avoid the site specific, individualized actions that are relatively unsuccessful. Additionally, by combining projects under the auspices of a single Plan, projects may be able to obtain funding without having to compete against other jurisdictions within the County. Involving different levels of government also allows for the pooling of resources, thereby increasing the chance of project completion and success.

4.3 Maintenance and Plan Updates

An annual review of the mitigation action plan will consider the following:

1. A review of the goals, policies, and objectives to determine whether they remain an appropriate approach to the problems they are intended to address.

2. The progress of the program activities toward achieving the specific mitigation objectives.

3. The problems encountered in the implementation of the specific activities.

4. Evaluation and refinement of the specific activities based on the evaluation of the problems encountered.

5. Review of possible funding sources that could be applied to future efforts.

6. Review of the public input process to ensure that citizens' concerns are heard in the implementation and evaluation process.

It is the intent of Athens County to update the Natural Hazard Mitigation Plan every five years. The subsequent 5-year Plan updates will be a joint effort between the Directors of the Emergency Management Agency and the Regional Planning Commission. The Hazard Mitigation Planning Committee and the responsible governing body will formally approve the updated Plan before it takes effect. This will be an ongoing process that includes the following:

1. Quarterly meetings of the Natural Hazard Plan Committee. More meetings or subcommittee meetings will be held as needed (this may be required in the first year in order to get the program off the ground). Progress on Plan implementation will be a regular agenda item at Plan Committee meetings.

2. Ensuring that the County EMA, Regional Planning Commission, and County 9-1-1 Office coordinate mitigation planning with villages and cities. A subcommittee of the Hazard Planning Committee will evaluate the Plan on an annual basis. Evaluation criteria will include:

    - How have activities in the Plan improved situations during and after hazard events?
    - Have there been improvements in communication between parties responsible for implementing the Plan?
    - What hazard mitigation programs have been started or improved as a result of Plan implementation?
    - Are the activities and tasks on schedule and, if not, what are the reasons?

3. An annual report to the County Commissioners by the natural hazard planning committee will keep the elected officials updated and be an opportunity to publicize the committee's work. The report will focus on accomplishments, the next year's work plan, and recommended changes to the Plan. This will serve as an opportunity for public participation as the meeting will be announced in the media. A written report will also be

available and accompany the meeting presentation. Public participation will be enhanced with public notices of the quarterly meetings of the Natural Hazard Mitigation Plan Committee. The Regional Planning Commission's website maintained by the Planning Commission's staff will provide notices of meetings, minutes, and other pertinent hazard planning information. Any public comments will be maintained in a database at the Regional Planning Commission's office and will be utilized when the Plan is updated.

4.3.1 National Flood Insurance Program (NFIP)

Athens County recognizes the importance of the availability of flood insurance to citizens. The County will remain in good standing with the National Flood Insurance Program (NFIP). The County will continue to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining the floodplain ordinance requirements. Proactive flood mitigation efforts already in effect support Athens County's continued compliance. The County will also continue to provide assistance to jurisdictions, as needed to assure continued local compliance with NFIP standards. There are several objectives identified in this plan that address specifics related to NFIP continued compliance.

Athens County began its floodplain modernization with ODNR in Fiscal Year 2007. This process began with a scoping meeting held on June 5, 2007 and culminated with revised maps becoming effective on December 18, 2009 when they were formally adopted by the County. The Athens County Regional Planning Commission administers the Floodplain Regulations currently in effect. Section 3.0 designates a Floodplain Administrator and duties of that Office to include updating regulations and enforcement of such regulations under Section 6.0. Additionally, the Floodplain Administrator routinely monitors flood hazard areas to enforce regulations and provide community assistance such as encouraging owners to maintain flood insurance policies.

Continued compliance with the NFIP will be maintained with the following strategy:

- The Athens County Regional Planning Commission will continue to be the permitting and enforcement entity for the County's (unincorporated areas) floodplain management program.
- County staff will attend continuing education seminars to stay up to date with floodplain management.
- Post-disaster substantial damage assessments will be performed in a timely and thorough fashion.
- An ongoing information and education program will keep citizens informed about the flood hazard and how to minimize it.
- For each of the incorporated villages the mayors, or designees, act as floodplain managers for their communities. This should be continued with additional assistance.

CID	NAME	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg - Emer Date	Sanction Date	Does Not Participate
390760	Athens County	12/9/1977	5/2/1991	12/18/2009	10/31/1991		
	higher standards: -0.5 foot freeboard -no accessory structures in floodway unless meet 4.9						
390016	City of Athens	6/27/1975	3/28/1980	12/18/2009	3/28/1980		
390020	City of Nelsonville	5/10/1974	1/17/1986	12/18/2009	1/17/1986		
	Village of Albany						X
390015	Village of Amesville	7/25/1975	9/29/1989	12/18/2009	9/29/1989		
390728	Village of Buchtel	2/7/1975	3/1/1995	12/18/09(M)	3/1/1995		
390017	Village of Chauncey	6/21/1974	1/17/1986	12/18/2009		11/06/09(S)	
390822	Village of Coolville	11/3/1978	12/18/2009	12/18/2009		11/3/1979	
390018	Village of Glouster	5/17/1974	7/19/2001	12/18/2009	7/19/2001		
390019	Village of Jacksonville	5/17/1974	6/3/1986	12/18/2009	6/3/1986		
390021	Village of Trimble	10/1/1976	11/1/1995	12/18/2009	11/1/1995		
(M) =	No Elevation Determined - All Zone A, C and X						
(S) =	Suspended Community						

Table 7 Athens County Flood Insurance

Glossary of Terms and Definitions

Acre-foot

An amount of water one acre in extent and one foot deep or approximately 326,000 gallons.

Asset

People, structures, facilities, and systems that have value to a community.

Blizzard

An extreme winter storm that has snowfall, high winds, and extreme cold. The high winds in blizzard conditions create poor visibility and dangerous driving conditions.

Climate Change

A non-random change in climate that is measured over several decades or longer. The change may be due to natural or human-induced causes.

Dam Failure

Any condition resulting in the uncontrolled release of water other than over or through a spillway or outlet works.

Downburst or Straight-line Wind

Downbursts are defined as strong winds produced by a downdraft over a horizontal area up to 6 miles (10 kilometers).

Drought

A deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.

Earthquake

An earthquake is the shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves.

Extreme Heat

Temperatures that hover 10 degrees or more above the average high temperature for the region, last for prolonged periods of time, and are often accompanied by high humidity that the body cannot tolerate.

Flash Flood

A flood that begins within 6 hours, and often within 3 hours, of the heavy rainfall (or other cause).

Flood

A flood is a natural occurrence when streams or lakes overflow their banks and spill onto the adjoining land area, which is called a floodplain.

Invasive Species

Any living organism, whether amphibian, plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs, that is not native to an ecosystem and causes harm.

Land Subsidence

The settling of the Earth's surface due to the loss of underground geologic support.

Landslide

The downward and outward movement of soil and rock material on slopes usually caused by moisture from rain or snow melt which acts as a lubricant.

Mitigation

Sustained actions taken to reduce or eliminate long-term risk to life and property from hazards.

Probable Maximum Flood

Flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that is reasonably possible in the drainage basin.

Resilient

The characteristic of an individual or society to recover after a disaster strike.

Tornado

A narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground.

Vulnerability

Characteristics of community assets that make them susceptible to damage from a given hazards.

Wildfire

An uncontrolled fire that burns an area of combustible vegetation and typically occurs in rural areas.

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Appendix

Appendix 1 – Athens County Census Data

CENSUS DATA FOR ATHENS COUNTY, OHIO

Fact	Fact Note	Athens County, Ohio
Population estimates, July 1, 2018, (V2018)		65,818
Population estimates base, April 1, 2010, (V2018)		64,764
Population, percent change - April 1, 2010 (estimates base) to July 1, 2018, (V2018)		1.60%
Population, Census, April 1, 2010		64,757
Persons under 5 years, percent		3.90%
Persons under 18 years, percent		14.50%
Persons 65 years and over, percent		13.20%
Female persons, percent		50.20%
White alone, percent		90.80%
Black or African American alone, percent	(a)	2.90%
American Indian and Alaska Native alone, percent	(a)	0.40%
Asian alone, percent	(a)	3.60%
Native Hawaiian and Other Pacific Islander alone, percent	(a)	Z
Two or More Races, percent		2.30%
Hispanic or Latino, percent	(b)	1.90%
White alone, not Hispanic or Latino, percent		89.30%
Veterans, 2013-2017		3,573
Foreign born persons, percent, 2013-2017		4.60%
Housing units, July 1, 2018, (V2018)		26,678
Owner-occupied housing unit rate, 2013-2017		56.80%
Median value of owner-occupied housing units, 2013-2017		$116,500
Median selected monthly owner costs -with a mortgage, 2013-2017		$1,093
Median selected monthly owner costs -without a mortgage, 2013-2017		$395
Median gross rent, 2013-2017		$754
Building permits, 2018		6
Households, 2013-2017		22,509
Persons per household, 2013-2017		2.48
Living in same house 1 year ago, percent of persons age 1 year+, 2013-2017		71.30%
Language other than English spoken at home, percent of persons age 5 years+, 2013-2017		5.60%
Households with a computer, percent, 2013-2017		84.70%
Households with a broadband Internet subscription, percent, 2013-2017		71.00%
High school graduate or higher, percent of persons age 25 years+, 2013-2017		89.60%

Bachelor's degree or higher, percent of persons age 25 years+, 2013-2017		29.60%
With a disability, under age 65 years, percent, 2013-2017		13.00%
Persons without health insurance, under age 65 years, percent		9.30%
In civilian labor force, total, percent of population age 16 years+, 2013-2017		52.70%
In civilian labor force, female, percent of population age 16 years+, 2013-2017		51.90%
Total accommodation and food services sales, 2012 ($1,000)	(c)	107,163
Total health care and social assistance receipts/revenue, 2012 ($1,000)	(c)	287,718
Total manufacturers' shipments, 2012 ($1,000)	(c)	D
Total merchant wholesaler sales, 2012 ($1,000)	(c)	D
Total retail sales, 2012 ($1,000)	(c)	695,105
Total retail sales per capita, 2012	(c)	$10,810
Mean travel time to work (minutes), workers age 16 years+, 2013-2017		20.2
Median household income (in 2017 dollars), 2013-2017		$37,191
Per capita income in past 12 months (in 2017 dollars), 2013-2017		$20,062
Persons in poverty, percent		28.80%
Total employer establishments, 2016		1,054
Total employment, 2016		12,856
Total annual payroll, 2016 ($1,000)		390,176
Total employment, percent change, 2015-2016		4.50%
Total nonemployer establishments, 2017		3,268
All firms, 2012		3,704
Men-owned firms, 2012		1,972
Women-owned firms, 2012		1,216
Minority-owned firms, 2012		184
Nonminority-owned firms, 2012		3,276
Veteran-owned firms, 2012		374
Nonveteran-owned firms, 2012		3,033
Population per square mile, 2010		128.6
Land area in square miles, 2010		503.6
FIPS Code		"39009"

NOTE: FIPS Code values are enclosed in quotes to ensure leading zeros remain intact.

Fact Notes

(a)	Includes persons reporting only one race
(b)	Hispanics may be of any race, so also are included in applicable race categories
(c)	Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ended distribution.

D	Suppressed to avoid disclosure of confidential information
F	Fewer than 25 firms
FN	Footnote on this item in place of data
NA	Not Available
S	Suppressed; does not meet publication standards
X	Not applicable
Z	Value greater than zero but less than half unit of measure shown

Link Source:

https://www.census.gov/quickfacts/athenscountyohio

Appendix 2 – Planning Committee Members Invitees and Schedule

Athens County Multi-jurisdictional Natural Hazard Mitigation Plan Update
Mitigation Planning Committee Members

Name		Organization Represented	Phone		E-Mail
Charles Barga		City of Nelsonville	(740) 753-1314		citymanager@cityofnelsonville.com
Ashley Stephens		US Army Corps of Engineers Huntington, WV	(304)-399-5947		ashley.l.stephens@usace.army.mil
JoAnn Combs		US Army Corps of Engineers Huntington, WV	(304)-399-5947		Joann.d.harmon@usace.army.mil
Bob Rymer		City of Athens Fire Chief	(740) 517-0234		rrymer@ci.athens.oh.us
Paul Logue*		City of Athens/ Athens County Regional Planning Commission	(740)-592-3338		plogue@ci.athens.oh.us
Alicia Lundy-Morse*		City of Athens Planning Intern	(740)-592-3338		
Jill Harris		Ohio University	(740) 593-9532		harrisj4@ohio.edu
Bob Eichenburg*		Round River Planning & Design	(740)591-2711		bobeichenburg@yahoo.com
Tim Warren		York Township, Athens County Regional Planning Commission, Hocking River Conservancy	(740) 591-3581		twarren@nelsonvilletv.com
Gary Goosman		Mayor, Village of Amesville	(740) 777-4621		amesvillemayor@gmail.com
Bret Allphin		Buckeye Hills Regional Council	(740) 374-9436		bretallphin@buckeyehills.org
Jamie Bielinste		National Weather Service	(304) 346-0173		Jamie.bielnsko@noaa.gov
Tony Edwards		National Weather Service	(304) 346-0173		tony.edwards@noaa.gov
Don Linder		LCR Realty	(740) 591-3738		don@lcrrealty.com
Tim Kirkendall		Mayor, Village of Albany	(740) 698-6127		mayorvillageofalbany@yahoo.com
Dustin Hube*		Athens City-County Health Department	(740) 637-8100		dhube@athenspublichealth.org
Jessie Powers*		Athens County	(740) 517-4543		jpowers@athensoh.org
Jessica Stroh		Community Services Division Director, Hocking Athens Perry Community Action	(740) 767-4500		jessica.stroh@hapcap.org
Don Gossel*		Athens County EMA Director	(740) 594-2261		dgossel@athensoh.org
Miles Wolf		Mayor, Village of Glouster	(740) 767-2824		glousterwe@nelsonvilletv.com
Rose Tyman		Mayor, Village of Coolville	(740) 667-7349		tymanhill@windstream.net

Athens County Multi-jurisdictional Natural Hazard Mitigation Plan Update
Mitigation Planning Committee Members

Name		Organization Represented	Phone		E-Mail
Samuel Smathers		Mayor, Village of Jacksonville	(740) 767-2480		Mrsam35@yahoo.com
Douglas Davis		Mayor, Village of Trimble	(740) 767-2341		douglasdavis42@outlook.com
Robert Mattey		Mayor, Village of Chauncey	(740) 797-20131		bmattey@utilityservice.com
John Sullivan		Mayor, Village of Buchtel	(740) 447-8203		psullivan@nelsonvilletv.com
Russ Norris		Mathews Insurance	(740) 593-5573		rnorris@mathewsinsurance.com
Jeff Maiden		Athens County Engineer	(740) 593-5514		jmaiden@athensoh.org
Scott Dunfee		Athens County Auditor's Office, GIS Department	(740) 592-3227		sdunfee@athensoh.org

Members of the Executive Natural Hazard Mitigation Planning Committee are indicated by a * by their name

Athens County Multi-jurisdictional Natural Hazard Mitigation Plan Update
Invitees for Mitigation Planning Committee and Key Person Survey

Name		Organization Represented	Phone		E-Mail
Dale Sinclair		Fire Assoc. President	(740) 818-6343		dailsinclair@yahoo.com
Melody Barnheart		O'Bleness Safety Officer	(740) 592-9501		Melody.Barnhart@ohiohealth.com
Rick Calebs		Athens County EMS Director			rcallebs@acems.org
Michelle Oestrike		Chamber of Commerce President			michelle@athenschamber.com
Dawn Worley		Chamber of Commerce Director of Opperations			dawn@athenschamber.com
Anthony Debord		AEP Community & Customer Experience Manager	(740) 774-7188		amdebord@aep.com
Mike Grub		Texas Eastern			william.grubb@enbridge.com
		Ohio State Patrol			Adpost05@dps.ohio.gov

Andy Stone		City of Athens Safety Service Director			astone@ci.athens.oh.us
James Gaskell		Health Commissioner			
Jack Pepper		Health Dpt Director			jpepper@health.athens.oh.us
Ben Abfall		Athens County Deputy Auditor			babfall@athensoh.org
Scott Sanders		Athens County ODOT Manager			ssande1@dot.state.oh.us
Mark Basinger		ODNR Wildlife	(740) 589-9980		Mark.basinger@dnr.state.oh.us
		Columbia Gas			Sent via wedsite
John White		CSX Railroad Real Estate Specialist	(904) 279-3895		John_C_White@csx.com
David Bradley		Red Cross Director	(740) 517-2015		David.bradley2@redcross.org
		Tennessee Gas	(713) 369-9000		Left Message 8.26.19
Rachel Neuenfeild		Partnership & Community Engagement Specialist Wayne National Forest			rneuenfeldt@fs.fed.us
Lelsie Lytle		Laurels Nursing Home Director	(740) 592-1000		Llytle1@laurelhealth.com
Laura Buckley		Kimes Nursing Home Administrator	(740) 593-3391		lbuckley@rrohio.com
Ashley Carpenter		Lindley Inn Health Manager	(740) 797-9701		acarpenter@chancellorhealth.com
Gerry Vannoy		Buckeye Hills Aging	(740) 374-9436		gvannoy@buckeyehills.org
Captain Kapple		OU Poliece Operations	(740) 593-1911		kapple@ohio.edu
		Hocking College Safety Officer	740.753.6598		hcpd@hocking.edu
Thomas Gibbs		Athens City School District Superintendent			tgibbs@athenscsd.org

Lindy Douglass		Alexander School District Superintendent	(740) 698-8831		ldouglas@alexanderschools.org
David Hanning		Federal Hocking School District Superintendent	(740) 662-6691		dhanning@fhlancers.com
John Hurd		Trimble Local School District Superintendent	(740) 767-4444		John.hurd@trimblelocalschools.org
Rick Edwards		Nelsonville York School District Superintendent	(740)753-4441		rickedwards@nybucks.org
Mark Seckinger		O'Bleness Hospital President			Mark.Seckinger@ohiohealth.com
Warden		Tri-County Jail			warden@seorj.com
Keith Andrews		Athens County Metropolitan Housing Authority			kca@athensmha.org
Ron Rees		Executive Director Corporation for Appalachian Development	(740) 594-8499		rrees@coadinc.org
Kelly Hatas		Executive Director Hocking Athens Perry Community Action	(740) 767-4500		kelly.hatas@hapcap.org
Kevin Davis		MRDD Superintendent Athens County	(740) 594-3539		kdavis@athenscbdd.org
Jon Dillard		Athens Post Office	(740) 593-5578		Jon.a.dillard@usps.gov
Ron Hood		State Representative			Sent via wedsite
Jay Edwards		State Representative			Sent via wedsite
Lenny Eliason		Athens County Commissioner			leliason@athensoh.org
Charlie Adkins		Athens County Commissioner			cadkins@athensoh.org
Chris Chmiel		Athens County Commissioner			cchmiel@athensoh.org
		Frontier			Sent via wedsite
Athens County Communities		Neighborhood Groups			Multiple individuals
Terry Moore		Director City of Athens Art Parks and Rec.			tmoore@ci.athens.oh.us

Zach Saunders		Athens County Assistant Prosecuting Attorney			zach@athenscountyprosecutor.org
Vicki Smith		Ohio University Airport Administrator	(740) 597-2602		smithv1@ohio.edu
Peter Gailbrith		Methodist Church Minister			pcgalbraith@gmail.com
Mark Holdcroft		Hocking River Conservancy	(740) 592-1792		Hcd-mccd@hocking.org

Planning Committees Meeting Schedule

Athens County 2019 Natural Hazard Mitigation Plan Update

Planning and Executive Planning Committee Meeting Schedule

Committee	Purpose of Meeting	Date
Executive	Organization	May 7, 2019
Full	Kick-off Meeting	June 26, 2019
Executive	Plan Update Development	July 24, 2019
Executive	Plan Update Development	August 14, 2019
Executive	Plan Update Development	August 28, 2019
Executive	Plan Update Development	September 11, 2019
Executive	Plan Update Development	September 25, 2019
Full	Discussion & Approval of Draft Plan	November 12, 2019
Most communications were conducted electronically throughout the process. These meetings do not include meetings and work of the consultant and Athens County Planning Director.		

Appendix 3 – Public Survey Questions and Responses

Constant Contact Survey Results

Survey Name: National Hazard Mitigation Plan Survey

Response Status: Partial & Completed

Filter: None

Sep 20, 2019 11:07:44 AM

1. Where do you live?

	Number of Response(s)	Response Ratio
Village of Albany	1	<1%
Village of Amesville	8	6.2%
Village of Buchtel	0	0.0%
Village of Chauncey	1	<1%
Village of Coolville	3	2.3%
Village of Glouster	9	6.9%
Village of Jacksonville	5	3.8%
Village of Trimble	0	0.0%
City of Athens	28	21.7%
City of Nelsonville	3	2.3%
Unincorporated Athens County	69	53.4%
No Responses	2	1.5%
Total	129	100%

2. If you selected Unincorporated Athens County in Question 1 which township do you live in?

	Number of Response(s)	Response Ratio
Alexander Township	8	6.2%
Ames Township	4	3.1%
Athens Township	14	10.8%
Bern Township	2	1.5%
Canaan Township	5	3.8%
Carthage Township	2	1.5%
Dover Township	8	6.2%
Lee Township	2	1.5%
Lodi Township	5	3.8%
Rome Township	2	1.5%
Troy Township	3	2.3%
Trimble Township	12	9.3%
Waterloo Township	13	10.0%
York Township	2	1.5%
No Responses	47	36.4%
Total	129	100%

3. Have you ever been impacted by a natural disaster (ie: flooding, ice storm, blizzard, landslide, etc.)

	Number of Response(s)	Response Ratio

Yes	96	74.4%
No	28	21.7%
Not sure	2	1.5%
No Responses	3	2.3%
Total	129	100%

4. If yes, check the impact(s) that apply:

	Number of Response(s)	Response Ratio
Property Damage or Loss	71	71.7%
Bodily Injury	0	0.0%
Loss of access to the home or business	41	41.4%
Emotional Stress	47	47.4%
Other	17	17.1%
Total	99	100%

Other Responses

	Response		Response
1.	Extended power outages, access restricted to foot or cross country ski only.	9.	Travel time increased.
2.	Power outage	10.	ongoing problems/contractor
3.	loss of use of home due to lack of utilities	11.	no power, limited access to reach home
4.	Loss of electricity for several days	12.	road wash outs and slips and large trees fallen in the roadways, power outages
5.	Road closures	13.	tearing up my car
6.	Not total lack of access, just had to go the long way around.	14.	Long-term power outage
7.	disrupted utilities	15.	Loss of everything IN our house.
8.	Loss of power for over a week	16.	Prolonged power outage

5. How concerned are you about the following natural hazards: - Comments

- Dam Failure
- Drought
- Earthquake
- Extreme Heat
- Extreme Cold
- Flooding
- Hail
- High Winds
- Ice Storms
- Landslide/Rockfall

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Dam Failure	9 7%	18 15%	20 17%	74 61%
Drought	19 15%	32 26%	34 28%	38 31%
Earthquake	5 4%	14 11%	44 35%	61 49%
Extreme Heat	45 36%	44 35%	21 17%	15 12%
Extreme Cold	42 34%	38 30%	24 19%	21 17%
Flooding	51 40%	42 33%	14 11%	19 15%

Hail	22 18%	42 34%	44 35%	16 13%
High Winds	58 46%	47 37%	14 11%	7 6%
Ice Storm	46 37%	49 39%	19 15%	12 10%
Landslide/Rockfall	18 15%	27 22%	34 28%	43 35%

6. How concerned are you about the following natural hazards: - Comments

- Land Subsidence (Mine Collapse)
- Thunderstorm and Lightning
- Tornado
- Winterstorm/Blizzard
- Wildfire

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Land Subsidence (mine collapse)	26 21%	25 20%	33 26%	41 33%
Thunderstorm and Lightning	30 24%	48 38%	30 24%	17 14%
Tornado	37 30%	42 34%	37 30%	7 6%
Winterstorm/Blizzard	46 36%	38 30%	31 24%	12 9%
Wildfire	21 17%	30 24%	54 44%	18 15%

7. If there is another natural hazard not listed above that you think is a threat to your neighborhood please explain here:

	Response		Response
1.	Invasive species including ticks	17.	Train derailment
2.	Roads caving in.	18.	too many deer!
3.	Strong winds that blow down trees. Also. In New Marshfield, the volunteer fire dept sets off a siren and we don't know if that means a tornado is coming or a bad rainstorm. So if it was a tornado I would know to get under the computer table which is huge or stay away from windows if it was a bad thunderstorm where trees are coming down.	19.	Water streaming off of PUBLIC roadways due to poor/absent drainage results in property loss and flooding of personal property for myself and many of my neighbors. ODOT refuses to help. Village states its homeowner's responsibility.
4.	Derecho	20.	Invasive species
5.	Natural gas explosions	21.	Airplane crash
6.	Proper maintenance of storage tanks throughout Athens county.	22.	Mostly events that impact access to electric power and road access between home, work and town.
7.	Toxic water from pollutants and air pollution from burning and chemical particulates	23.	A train wreck. We have lived in Millfield for 43 years and have dealt with two. Cars ended up off the track in our backyard. We also only have one way out of our street, it involves crossing the railroad track. The other crossing that we had was closed because the railroad did not want to put arms on it. We have to walk in the railroad ditch to get out.
8.	No.	24.	Hail damage. Damage to roadways due to excessive water flow.

9.	Rising greenhouse gas emissions- impacts on agricultural operations, food security and forest farm products. Invasive species. Climate refugees/ evacuees- lack of adequate planning/preparation. Climate induced system collapse Inadequate leadership with do the minimum standards to get funding	25.	flooding of property not covered by any insurance or county or state or federal program for individual homeowners; all dollars were sucked up by counties and didn't help the individual owner despite designation of presidential designation of emergency, very sad
10.	THE TWP RD NORTH TORCH ROAD IS FALLING APART AND I CANNOT AFFORD TO KEEP FIXING MY CAR AND I SPOKE TO THE CO WORKER THAT WAS OVER THE MOWERS AND HE SAID A PATCH CREW WOULD SOON BE OUT THERE BUT PATCH PATCH PATCH AINT GONNA CUT IT THIS TIME...	26.	I honestly believe that having to drive in UN-SAFE road conditions is a DEFINITE natural hazard! It not only puts OUR lives in danger, but those on the roads with us! Too many politics are put into place when it comes to the public's safety and that is JUST NOT RIGHT! Keep the politics out of our safety!
11.	THEY NEED A DEER CROSSING SIGN ALSO AND HIDDEN DRIVE SIGNS BUT THEY MUST RE DO THE ROAD	27.	power outages to water system due to mother nature's performance
12.	Fracking and any related activities.	28.	Ground water contamination
13.	straight line winds "water events" not covered by insurance caused by an excessive amount of water falling in a short period of time	29.	Poisoning of our watershed and soil due to fracking or industrial activity.
14.	Injection Wells - water shed destruction	30.	Landslides d/t excessive rains-live on a steep hill and beside a steep hill.
15.	Derecho	31.	Dead and falling trees
16.	EMERGENCY CANNOT DRIVE ON THIS ROAD SAFELY IT IS FALLING APART!!!! EMERGENCY HELP IS NEEDED TO REPAVE THIS ROAD	32.	YES, THIS IS AN EMERGENCY AT NORTH TORCH ROAD IN ATHENS COUNTY OHIO I HAVE JUST LEFT THE EXHAUST REPAIR SHOP AND HAVE A APPT FOR OCT 3 2019 TO REPAIR MY CAR FOR THE THIRD TIME FROM THE POTHOLES ON THIS ROAD!!!!

8. Do you live in a flood hazard area?		
	Number of Response(s)	**Response Ratio**
Yes	17	13.1%
No	98	75.9%
Not sure	13	10.0%
No Responses	1	<1%
Total	129	100%
9. Do you have flood insurance?		
	Number of Response(s)	**Response Ratio**
Yes	10	7.7%
No	110	85.2%
Not sure	7	5.4%
No Responses	2	1.5%
Total	129	100%

10. Have you taken any actions to make your home, neighborhood (including rural areas), or auto safe during a natural hazard event? If yes, please explain: - Comments	
Response	**Response**

1.	rafter ties during construction attempt to keep a fire safe zone around the house	27.	Purchase of generators, fans for cooling when power is out during extreme heat, space heaters for warm when power is
2.	Cut down trees	28.	House was raised ten feet in 2003. Flood prone houses in Amesville were demolished to create Gifford Park.
3.	Home safety plan	29.	Have the Frontier telephone service fined and made to improve their equipment and service in the area.
4.	I have had trees cut down that could land on my house but there are still more that need to come down. I just can't afford to have them cut down. I had my old antenna taken down which to me felt like it would attract lightening.	30.	Water and food storage for family and pets for several weeks. Wood burner with wood for two years. Generator. Medical supplies.
5.	Making sure to have plenty of stored potable water, a ceramic water filter, and non-grid dependent cooking and heating gear, since AEP has a poor track record in our area when severe weather happens.	31.	Shelter in place when at home, drive the vehicle into safe conditions to shelter.
6.	Whole house generator	32.	I had to put 12 basement jacks to stabilize my house after the spring flooding in 2/2018
7.	Solar radio/charger Flashlights	33.	I used to live along a creek that would rise. No major issues from it but had to move outside belongings as water rose.
8.	First aid kits in house and car Decluttered basement. Moved power and water lines out of flood risk as much as possible. Made most things still in basement into easily to move containers.	34.	thousands of dollars' worth of slip/water damage repair and prevention, has only prevented some of the ongoing slippage and damage
9.	I always carry water, a blanket, phone chargers, flashlights and food in my vehicle and also have a generator for my	35.	Yes, we have supplies stored for emergencies at our home along with plans should an event occur,
10.	home Installed a wood burner and got a generator	36.	Tree trimming, supplies in case of power outage and bug out pack.
11.	Primary danger here is landslide due to heavy rains - we are toward the bottom of a large and somewhat unstable hill. We are increasing permeability of the soil and managing trees and plantings with soil stability in mind.	37.	Back-up water supply, back-up heat source, back-up electric generator, reinforced storm shelter, and emergency response protocol and maintained emergency response equipment
12.	Whole house generator	38.	Cleared brush/dead trees near the house. Plan to complete installing metal roofing on the house.
13.	Built a shelter for tornado/storms; equipped with solar and other renewable energy not dependent on fossil fuels; good relationships with neighbors in case of loss of power, etc.; education about climate changed-caused storms and	39.	I've equipped my vehicle with tires that can get around on the steep roads in winter weather when they are well taken care of by government.
14.	patterns that are already changing our area and seasons. I moved from Glouster and a home that flooded every ten years or so when I was growing up, to living in government subsidized housing in Athens.	40.	Built a car/camper shelter.
15.	Insurance	41.	Whole home generator
16.	moved vehicle and or other items	42.	Lightning rods on house
17.	I THINK AEP ONCE MADE NOTICE THEY GAVE A BONUS FOR MAKING A HOLE IN YOUR YARD FOR SHELTER FOR YOURSELF ? YOU MUST RE PAVE NORTH TORCH ROAD IN COOLVILLE, OHIO IT IS HEAVY USE BY BIG TRUCKS ETC AND OF COURSE THE 4 WHEELERS SOMEONE IS	43.	Bought a generator, but it died during the last several day power outage. Store water in jugs due to being without public water during the last extended power outage.

18.	GONNA WRECK AND I GO SLOW TO AVOID THE HOLES BUT THEY ARE NOW COVERING THE ROAD IT IS RIDICULOUS AND I CANNOT AFFORD THE DAMAGE TO MY CAR AND I PAY TAXES AND I VOTE	44.	We switched to propane for our cook stove. We keep bottled water and canned items on hand at all times. We purchased a generator to keep our fridge/freezer running, and we store extra gas in cans.
19.	Stock up on food water. First aid classes	45.	Emergency power
20.	Smoke alarms, alternative cooking stove, kerosene lamps, stored water and food, non-electric can opener, battery operated radio and lamps.	46.	Overall preparedness while building /strengthening neighborhood resilience. - positive adaptation to perceived adversity.
21.	I have a safe spot to go to with water and food, flashlights, radio, telephone, in case of hazardous weather and blankets, flashlights for car.	47.	Renovated old cistern. Added solar power and battery backup.
22.	We moved 500 feet up on a hill away from the creek that flooded in 1998. No we have to worry about high winds, ice and snow storms and trying to get up our driveway in the winter. Not to mention the constant upkeep on a straight up driveway. When it rains heavy it washes out. We don't have $15,000+ to have it blacktopped.	48.	Removing decaying or diseased trees, planting native species that are better suited to our area, trying to return streams on property to natural flow.
23.	Cut down trees. Move car away from trees during bad storms.	49.	Mitigation of our risks is beyond what we can afford
24.	We live in a town that flooding occurs, and if need be, we can always park on an upper street. However, water does not typically reach into our street! Thank God! We used to live where it flooded and we would have to stack everything in our buildings! And once loss everything in our home!	50.	Glouster added a three dollar charge per water hook up that is earmarked to fix our Sewer system to help mitigate damage from flooding. as a resident I am gladly paying this extra money to help our community.
25.	I spent a great deal of money to raise my house out of the flood plain - hopefully	51.	Cost of a home generator is too great; we don't have a well; storage units for solar power aren't affordable
26.	My issues where at another location.	52.	N/A

11. In your opinion, what are some steps your local government, organizations and individuals could take to reduce or eliminate the risk of future natural hazard damages in your community? (Such as identifying evacuation routes, notification/alert procedures, or providing checklists for homeowners during a natural hazard emergency, etc.): - Comments

Response		Response	
1.	notifications are always important. Grants or funding to help cover the costs of emergency kits for those who	43.	Identifying evacuation routes Identifying Athens area shelters
2.	cannot afford them. Provide low cost weather radios	44.	Identifying evacuation routes. Checklists of what to keep in the household's emergency kit.
3.	maybe a different type siren if a tornado is coming vs a thunderstorm... I know this is a weather related questionnaire but we reeeeeeally need more law enforcement out here in New Marshfield ! So many drug addicts, thieves, idiots on 4 wheelers with 5 kids trying to hold on to one adult who's speeding down the road, it's bad out here !!	45.	Smartphone-based hazard alerts seem to work well for us - certainly better than a radio announcement. Just make sure that the notification settings are configurable, so we know what we will receive and what we won't. Ideally utilize the built-in emergency features in the phone's OS, not a separate app.
4.	Just remind everyone to have an action plan. People will not listen until it affects them. The government shouldn't have to take all of the responsibility.	46.	Continue use of current alert system but find a way to get more people connected
5.	Not sure	47.	Checklist for households seems most useful. Burying power lines.
6.	community education, alerts are great.	48.	The Sunday creek needs to be dredged from its start in Athens County to the Hocking river

7.	Checklists and a better notification/alert system. During bad weather we don't have the best phone, internet, or television service.	49.	Notification/alerts need to be tied to land line phones. There is not cell service in much of the county, or internet availability either. Particularly in high winds when cell service goes away where it is available. Provide rural water service with backup generation to be able to pump water up hills.
8.	Tearing down residential homes in the flood zone, or having a warning for flood zone residents when flooding is imminent	50.	Clearly marked flood routes throughout the county. Expanded cellular service areas (our village has no cell service, meaning no way to make contact or be contacted during a power outage).
9.	Good notifications, routes around flood zones, info on what to do when we don't have electricity. Work on infrastructure so that less likely to have flooded roads.	51.	Have the Athens County Engineer fix all the roadways. They are a hazard year round, leaning trees, pot holes as wide as a car, roadways being eaten away by creeks. Reporting them does no good in Athens County.
10.	Immediate and clear alerts containing evacuation routes from your location (e.g., link in alert opens Google/Apple maps and routes you to nearest evacuation path from your location), evacuation procedures/checklists, and where/how to report your safety to others after hazard is reduced.	52.	Working telephone systems. Enough already!
11.	being as transparent as possible about natural hazards and their impacts. like notifications and alerts as well as being a resource if something does happen	53.	Evacuation routes would be helpful, especially with the 20,000+ transients who inhabit Athens yearly. Checklists would be helpful for preparedness. A Risk Management Assessment of Athens county landowners and their risks to the communities through their activities (chemical storage, natural gas, machines, Et Cetra).
12.	A guide to evacuation routes, preparing for hazards, safe places for water, toilets and out of extreme weather.	54.	Our fire department is excellent in assisting residents of Rome Township.
13.	Improving Routes 144 and 329 which are prone to flooding. Ensure that Co Rd 53 (Bethany) is maintained well. This is the most used route from Stewart area during a flood.	55.	cutting brush back and cutting trees that have limbs on lines.
14.	PSA about smart actions just in case and on alert system at time before with warnings and time of incident	56.	Checklists in the mail with phone numbers. Text alerts.
15.	Utilize tornado sirens for flash flood warnings as well, keep updated list of at-risk residents in each community (elderly, disabled) for evacuation or remain-in-place assistance.	57.	I think they do a great job already.
16.	A better alert system would be great! I usually get the email from the county but I'm thinking of community members who live in areas with no service or internet. I would also like to see an emergency email from the county that doesn't include advertisements.	58.	I came from Florida. We don’t have problems with the power going out from raging thunder storms and lightning. Every storm that rolls through my power flickers and sometimes goes out. This is an issue that needs to be looked at.
17.	Checklist are available online but maybe pushing them more would help people prepare. Also installing more warning sirens in the county should help notify people that don't have a phone access since there are still areas with not service. Educating the public on preparing their home is another idea that will assist and gain public interest.	59.	Information and assistance preparing emergency plans and kits. More focus on improving proper drainage on, and from, the city's residential hillsides. Information on what homeowners can do to improve property safety, such as tree trimming and maintenance (with a list of reputable contractors). Education on anti-erosion measures

18.	Maybe set up automotive calls	60.	I think the Sunday creek could be widened and made deeper in spots to decrease flooding.
19.	Evacuation routes should be established. Our neighborhood of approximately 40 homes has only one way in and out, with a lot of large older trees near the entrance/exit. Emergency vehicles could be held up for hours.	61.	Trim trees to keep them from falling in the roadway. Better maintenance of streets and drains and ditches. Better maintenance of electrical services. Quit worrying about mowing grass and weed earring and take care of the municipal services.
20.	Eliminate or reroute roads in high-risk flood/landslide areas. Safely remove old and failing dams. Provide subsidies to assist individuals in moving out of high-risk areas. Purchase properties in high-risk areas for abatement and conservation.	62.	Notifications if the roads are closed (I live in Amesville and even the ODOT map/app is never updated accurately as to whether or not 550/690/329 are open) would be very helpful.
21.	Alert/ notification	63.	Notification and alert procedures would be excellent, along with a free/downloadable checklist for homeowners and even renters.
22.	They have been manageable so far, with some inconvenience. There are usually one or two days a year when roads are not maneuverable. It was very inconvenient to have both Stroud's Run Rd and Dutch Creek Road closed at the same time.	64.	evacuation routes, alert procedures and checklists are all good ideas. A program to help property owners asses their properties for dangerous trees and or other issues that could be mitigated. communication is a major issue- for example in the derecho when cell phones were not working and power was out it was hard to get information.
23.	Alert system that is sent to your phone. Voicemail and or text. In every Township / Village there should be a coordination between EMA, local entities, schools, and churches. To provide for emergency shelter and food. There should be Heating and Cooling facilities in every area also	65.	Flood plain management, reducing additional development in local flood plains. Do what we can locally to encourage renewable sources of energy that don't contribute to climate change.
24.	Promote awareness. Enforce floodplain regulations	66.	Above examples sound good. I'm concerned for elderly during winter storms etc. I hope there is a plan for them to have access to heat etc.
25.	All of the things listed would be helpful. Talking with the local libraries to be emergency stations since they are already community centers where they are.	67.	Do something, anything, towards flood mitigation. Chauncey floods every time someone pees in the creek, ridiculous.
26.	All of the above, plus designated shelters.	68.	Creation of an alert system via telephone or text message.
27.	Improve sharing of and marking of alternative routes during flooding. Make information available online and keep up to date.	69.	Help people living in mobile homes to develop plans for shelter in case of high winds or tornado threats.
28.	Create an evacuation route that is not crossing the railroad track, last time we had to go under the train by foot and my husband carried our son, through the ditch. What if it is a chemical train? It would affect at least 10 families. We are on Elm & Willis & Wall Street. Millfield. It has always been a problem for resale on our home.	70.	Cut down trees in road right of way which are likely to be blown down in a storm. When trees fall in road, don't push them into ditches which were cut to provide drainage during storms. Improve notification/alert procedures so that those of us without availability of cell, internet, television service can be notified, esp. when landline is out

29.	Restrict irresponsible development that increases hazard risks, restrict logging, mining, and other natural resource based activities that exacerbate hazards, educate decisionmakers about the importance of natural processes and natural resilience as a primary risk mitigation factor	71.	Notifications and updates are needed during emergency situations. Cell phone service is not always reliable and a battery operated radio is our only way of getting information. Keeping the rural areas up to date using the radio is imperative.
30.	Provide communication during such incident, bury the power lines instead of having them in the air. Improve the infrastructure of the area.	72.	VERY DANGEROUS PEOPLE PASSING THE SLOW DRIVERS I CANNOT AFFORD TO REPAIR SUSPENSION EXHAUST ON VEHICLE
31.	Teach people who is meant by Shelter in Place. Identify evacuation routes. Work with the Red Cross to know in advance where evacuation sites and shelters will be set up. Know that cell phones will not work in an emergency and support the maintenance of landlines. Teach disaster preparedness with your partners.	73.	THE ROADS ITS THE ROADS STUPID TO QUOTE BILL CLINTON ITS THE ECONOMY STUPID WELL TWO PROPERTIES ON N TORCH RD JUST SOLD FOR OVER 400,000. THAT IS DOLLARS AND THEY WILL PAY BIG TAXES WHERE DOES IT GO THE ROAD IS AWFUL FOR 20 YEARS NOW
32.	keep trees away from electrical lines since AEP will only do it after an emergency happens	74.	having an alert system, checklists for homeowners and people who live in apartments, safe areas to park and stay for the homeless, shelters set aside for all who are in need
33.	I live with my 81 year old mother and hope if something happens when I am not home with her that she would be cared for.	75.	Invest in infrastructure and infrastructure protection
34.	allow individual owners to be be eligible for flood damage funds that would allow at least ingress and egress safely to their homes due to flooding to property from large floods that took away access to home; in this case I am talking about a driveway culvert across small creek affected by the larger creeks that allowed county etc to get money	76.	All of those: ID evac routes, notifications and alerts, disaster checklists pertaining to specific threats.
35.	Checklists More preparation before hand How to get message out to people quickly without social media	77.	Always stay stocked with food and supplies year-round due to flooding with no way out
36.	A clear widely known disaster plan. Emergency supplies in multiple locations throughout the county including a supply of radios or walkies that can be used for communication. Clearly identified flood roads both with signage and maps.Training in rural communities about emergency preparedness. Rural emergency centers with community trained leaders.	78.	Plan for the event; shelters id, food and medical assistance, transportation, Plan and budget for recovery. Provide temporary financial assistance. Approach this from a strategic and collaborative approach. County Engineers, 1st responders. Involve youth. Hire an outside party to evaluate the readiness of the County.
37.	I think identifying evacuation routes and working on the notification/alert procedure is a great idea. I think it would also be great to have a better handle on the flood zones and what that looks like for our area. I'm sure renters probably don't know this information.	79.	Seriously not done in our area! Although there is an alarm on top of the Glouster Water and Electric building that no longer works and SHOULD be sounded when we go under a WARNING of any kind! Like the Jacksonville Fire Dept. does any time we are under warnings!
38.	The evacuation route to/from Chauncey is HORRIBLE, you can barely pass anyone even if both people come to an almost stopped pace and of course most do not drive that way anyway. It is SCARY to drive that route. Many years I used the Millfield flood route and it was SO much more maintained.	80.	keep water ways around the community of Amesville free of debris; generators for communities for water systems; community food banks with nonperishable items

39.	Make a water re-routing system for the two creeks that enter Amesville, so flood waters can be routed away from roadways and other important infrastructure during times of heavy rainfall. An emergency messaging system would be great.	81.	Do more than the minimum! Neighborhood resilience building efforts. Bottom-up / top down collaborative efforts, including incident command system familiarity. Engage the public with co-participatory efforts, more
40.	Enacting and enforcing building codes that prevent people from building in vulnerable/compromised areas (ie, flood plains, etc).	82.	Checklists for homeowners. Back up plan to disperse information if internet access is down.
41.	How about a risk fund for things not covered by home owners insurance-land movement-there are homes and businesses in harms way through out the city	83.	Evacuation routes are not even marked in our area! Notifications and alert procedures?
42.	Get rid of the injection wells. They will destroy our groundwater. It is just a matter of time.	84.	The creeks need widened and cleaned yearly.

12. Which of the following items do you currently own to help ensure your safety in the event of a natural hazard event: - Comments

- Preparedness/Response Plan including a neighborhood resource directory and communications network
- Water - one gallon per person, per day (atleast a 3 day supply for evacuation, 2-week supply for home). Also include an
- Food - nonperishable, easy-to-prepare items (atleast a 3 day supply for evacuation, 2 week supply for home)
- Medications (7 day supply) and medical items and means for temperature control for medications
- Battery powered or handcrank radio (NOAA Weather Radio, if possible)
- Dishware and utensils (mess kit)
- Flashlight(s)
- Extra batteries and rechargable
- First aid kit and manual
- Hand Sanitizer

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Yes	No
Preparedness/Response Plan including a neighborhood resource directory and communications network	22 19%	94 81%
Water - one gallon per person, per day (atleast a 3 day supply for evacuation, 2-week supply for home). Also include an electrolyte solution	50 41%	72 59%
Food - nonperishable, easy-to-prepare items (atleast a 3 day supply for evacuation, 2 week supply for home)	80 65%	43 35%
Dishware and utensils (mess kit)	93 76%	30 24%
Flashlight(s)	120 97%	4 3%
Battery powered or handcrank radio (NOAA Weather Radio, if possible)	73 60%	48 40%
Extra batteries and rechargable batteries	101 82%	22 18%
First aid kit and manual	91 74%	32 26%
Hand Sanitizer	97 80%	25 20%
Medications (7 day supply) and medical items and means for temperature control for medications	81 69%	37 31%

13. Which of the following items do you currently own to help ensure your safety in the event of a natural hazard event: - Comments
- Sanitation and personal hygiene items with enough extra water (consider a non-potable source) to periodically flush toilet - Copies of personal documents in waterproof container (medication list and pertinent medical information, proof of address, deed/lease to home, passports, birth certificates, insurance policies) - Multipurpose tool - Cell phone and Chargers - Family and emergency contacts - Map of the area - Emergency blankets and additional - Extra Cash

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Yes	No
Multipurpose tool	104 83%	21 17%
Sanitation and personal hygiene items with enough extra water (consider a non-potable source) to periodically flush toilet and	62 51%	60 49%
Copies of personal documents in waterproof container (medication list and pertinent medical information, proof of address, deed/lease to home, passports, birth certificates, insurance policies)	44 36%	78 64%
Cell phone with chargers	121 96%	5 4%
Family and emergency contact information	95 78%	27 22%
Extra cash	58 47%	65 53%
Emergency blanket and additional blankets	101 81%	24 19%
Map(s) of the area	60 49%	63 51%

14. Which of the following items do you currently own to help ensure your safety in the event of a natural hazard event: - Comments
- Tire repair kit, jumper cables, flares, signage, chains, sand, shovel, scraper, frozen lock solution, extra keys - Supplies for pets, livestock; care/shelter plans in the event of evacuation - Deck of cards, games, puzzles, books, spiritual readings - Waterproof - Candles for light & warmth - Paper &

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	Yes	No
Tire repair kit, jumper cables, flares, signage, chains, sand, shovel, scraper, frozen lock solution, extra keys	90 73%	34 27%
Candles for light & warmth	107 86%	18 14%
Deck of cards, games, puzzles, books, spiritual readings	113 90%	12 10%
Waterproof container for matches or a flint set	61 50%	61 50%
Supplies for pets, livestock; care/shelter plans in the event of evacuation	76 61%	48 39%
Paper & pencil	120 97%	4 3%

15. Are there any other issues regarding the reduction of risk and loss associated with natural hazards or natural disasters in the community that you think are important? - Comments			
Response		**Response**	
1.	Online stream gauges (often provided through USGS) are very useful for identifying impending floods. I use these regularly to identify potential navigation hazards.	18.	Demonstrated emergency response preparedness of first responders including back-up communications, and power supply, response plan, response drills, emergency response equipment, and basic competence.
2.	I really need to do better at preparing.	19.	cell phone service in our area is non-existent.
3.	No	20.	Working phones. Land lines or cell reception.
4.	I live in an area of New Marshfield where there is no cellphone service so I don't get the warnings the go off on other people's cellphones, another thing we need, better cell phone service,, I get zero bars on my cell phone here, People try to call me and I can't hear them, and they can't hear me	21.	Know what your utilities are, how to shut off service, and who to call if service appears to be strange. Roadway flooding and flooding, in general, have been difficult to plan through because of how dangerous the water flows can become and where they emerge, cutting off communities from being able to come or go.
5.	Advance warnings of tornado and wind events	22.	A better warning system from the county.
6.	No	23.	No
7.	Lack of electricity means no needed oxygen use. Lack of landline telephone service means no way to contact 911. When National Guard came to Athens County to help in winter emergency 20 years ago, they refused to respond to emergency heat needs outside Athens City because it was "too dangerous for them".	24.	In my area very few people have internet access, cell phones, or even cell service. At my house, I usually only have 1X service. In the event of an emergency some people who live in rural areas wouldn't receive a text or call to alert them of danger. How can we more effectively reach them?
8.	Participatory planning with transparency and active engagement. Lack of confidence in the competency of appointed leaders, a lack of visionary leadership and informed decision making on behalf of future generations. A lack of confidence in this process, likely to be more of the same ole, same ole effort just to be eligible for FEMA and other funds	25.	Massively improved road-work notice is needed!! Highly trafficked roads are shut down to one lane without notice. Construction is not consistent so assumptions about whether or not the road is being worked on today because it was worked on yesterday cannot be made. ODOT does not notify the public or first responders. That HAS TO change!!!!!!!!!!!!!
9.	The two biggest issues in this area Glouster would be trains and railroad and the Tom Jenkins Dam. Is there a plan? Police, fire, EMA etc.	26.	Friends or neighbors close by
10.	Besides listing the above, reminding people what they can do in their everyday lives to discontinue as much dependence on the things causing more and more climate related disasters.	27.	Our satellite TV goes out on a regular basis and we aren't always aware of weather issues or other situations.
11.	It's helpful to include elderly/disabled and/or single parents on a list of neighbors to check on during a disaster.	28.	Identifying at-risk households (elderly, disabled, mobile home residents) in advance of hazardous situations and creating partnerships with neighbors/friends to commit to aiding those individuals in emergency events.
12.	Our driveway floods every time it rains even slightly heavily and ODOT will not help, even though they built the road and didn't bother with drainage. Amesville says its homeowner's responsibility that water streams off the road on to our sidewalk. Residents shouldn't have to mitigate damage wrought by poorly constructed roadways. It's absurd.	29.	What about livestock, feed sources, etc. A plan to take animals for safekeeping if their farm area is destroyed. Rescue plan for large animals, horses, etc.

13.	Yes, we need to have plans for people with disabilities and the elderly--where are they and who will assist them to evacuate when necessary. Also, plan for high heat and extreme cold periods that can cause death to the infirm and elderly.	30.	Again, I have to come back to not being put on APPROPRIATE SNOW LEVELS in the winter time! There are too many times they will call a level 2 and, in every circumstance, it SHOULD have been a level THREE!!!! Stop letting them put our lives in danger to save a few dollars! >:[
14.	Cert team bag	31.	N/A
15.	How do I find out what natural disasters are most likely to happen where I live?	32.	climate change efforts, river levels
16.	limited access to many homes, poor internet service	33.	Does the County know where all the medically fragile and seniors reside?
17.	no, my main concern I've already mentioned!!!... give the low-income property owner the ability to make large cost flood repairs when the area has been designated a federal emergency	34.	N/A

16. Do you receive information about natural hazards? (preparedness and response)

	Number of Response(s)	Response Ratio
Yes	89	68.9%
No	35	27.1%
No Responses	5	3.8%
Total	129	100%

17. If you answered YES to Question 16 how do you currently receive information about natural hazards? Select all that apply: - Comments

- Social Media
- Cable Television
- Weather radio
- Newspaper
- A friend or collegue
- Other

	Number of Response(s)	Response Ratio
Social Media	70	73.6%
Cable Television	31	32.6%
Weather radio	41	43.1%
Newspaper	25	26.3%
A friend or collegue	25	26.3%
Other	45	47.3%
Total	95	100%

Other Responses

	Response		Response
1.	phone alerts	24.	Forecast models
2.	radio	25.	cell phone alerts
3.	NOAA	26.	cell alerts on nixle
4.	E-mail alerts	27.	text alert
5.	text message	28.	county emergency e-mail
6.	email alerts / texts	29.	cell phone; EMA texts
7.	Emergency notification feature in my iPhone	30.	notifications/alerts while I'm at work
8.	Alert system	31.	Red Cross
9.	Athens County EMA & Alert Athens County	32.	Text
10.	smartphone apps (weather channel, OHGO, etc.)	33.	Nixle
11.	Text and email alerts	34.	email
12.	athens co ema text service	35.	American Red Cross
13.	Nixle texting and emails	36.	county emergency notification list

14.	Everbridge	37.	cell phone
15.	NIXLE or whatever it is now.	38.	Cell phone alerts
16.	Text alerts	39.	Messages by text
17.	alert systems	40.	internet
18.	texts	41.	Ham radio
19.	email	42.	On-line learning, skyward, CoCoRaHS
20.	local radio stations	43.	internet news
21.	local text alerts to my phone	44.	Father
22.	text messages	45.	email and text alerts
23.	EMA	46.	

18. If you answered NO to Question 16, how would you like to receive information about natural hazards? - Responses

Response		Response	
1.	email	16.	Email, text, phone
2.	Alert on my cell phone	17.	cell phone or radio if emergency, email otherwise
3.	online, social media, online resources	18.	Social media
4.	No	19.	neighbors
5.	email	20.	Social Media/cable tv/Newspaper
6.	newsletter/social media	21.	text
7.	no	22.	email
8.	social media	23.	text
9.	Email or town crier(siren if major)	24.	Warning siren, more advanced than a fire truck.
10.	Neighborhood meetings	25.	Text messages
11.	Text or phone calls	26.	Text messages would be nice!
12.	mail	27.	Booklet
13.	e-mail	28.	my employer, with my tax statements
14.	Emergency alert	29.	text messages except for no service in Amesville
15.	Text message	30.	Mail

Appendix 4 – Key Person Survey Questions and Responses

Athens County Multi-Jurisdiction Natural Hazard Mitigation Plan Key Stakeholder Survey								
Organization	**Responder Title**	**1. Are you aware of any recent developments that may help or hinder the ability of local government to deliver services during an emergency? (some examples may include new construction, better communication means, or a new administrative policy)**	**2. What has your agency, firm, or department done to reduce the impact of natural hazards?**	**3. With additional resources, what else can your agency, firm, or department do to reduce the impact of natural hazards?**	**4. What is the best way for Athens County to provide information to you regarding ways to reduce the impacts of natural hazard events?**	**5. What can Athens County do to help your agency, firm, or department better prepare for or reduce the impacts of natural hazard events?**	**6. If a natural hazard event struck today, would your organization be prepared to deal with it?**	**7. What do you think your organizations role should be in natural hazard mitigation?**
Health Department	Emergency Response Coordinator	No	Dedicated two internal storm shelters, added more receptacles and light switches to back-up generator, added/replaced fire exit route maps, added hazard spill kits, added new flash lights and heat lamps.	Educate colleagues so they have awareness on the county hazards.	You have to build up and maintain a top notch county contact list and freely share the information and be 100% transparent about all natural hazards.	Nothing as of right now.	Depends on the situation but overall I would say, we would struggle initially, but after a couple of hours of establishing and following Incident Command, and getting the hang of the goals and tasks of what we need to do, I think we would do pretty good.	The Health Departments roles are to assist the community to make sure they are prepared, disseminate information, alerts, and warning, medical countermeasure dispensing and administering, public health bio-surveillance, and assisting with surge management.
Athens City County Health Department	Health Commissioner	No	We have held table top exercises to prepare for natural hazard events.	We have available to us state and federal resources to mitigate these catastrophes.	E-mail	Table top trainings with all agencies represented will prepare us to collaborate and recognize the role each agency plays in minimizing the impact of the event.	Yes	The health department should recognize the health hazards the event produces and be prepared to prevent disease and assist in caring for those individuals directly affected by the natural hazard.
Athens City-County Health Department	Administrator	No	Planning & Exercising	Continue to educate the public	E-mail	Continue open dialogue between agencies	Yes	Follow already established guidelines for public health in natural hazard events.

Village of Amesville	Mayor	Renovation of the water treatment plant for Amesville makes the system more reliable and safer. The WTP is better prepared for emergencies, but still lacks a 3 phase 208 volt generator. As a member of the Ohio Rural Water Association we do have access to equipment from other communities in an emergency. Lack of cell coverage still is problematic.	Review by Village Council of hazard plans, website with plans listed for various emergencies and reviews of infrastructure regularly.	Share a 3 phase generator with other small communities, have access to emergency communications in Athens County beyond the Fire Department. Provide better materials to the elementary school regarding emergency procedures and drills.	E-mails or materials on websites.	Assist in running drills in Amesville. Provide copies of plans and procedures for those that don't use the internet.	Depends, we are mostly prepared for flooding and severe weather. If hit by vandalism or terrorism at our water or wastewater system we would be harder pressed to manage the situation.	Providing organizations and residents with information about hazard mitigation, procedures during an emergency and where resources would be available.
Buckeye Hills Regional Council	Development Director	Lack of broadband and cellular communication services in remote areas could pose a challenge to recovery efforts.	Our agency works as an information provider and communications coordinator in recovery scenarios for natural hazard events. This effort is primarily focused on supporting our senior citizen clients that are dispersed throughout our eight county region. We also work to provide planning resources to help mitigate risk to citizens and properties.	We could do additional pre-hazard risk analysis for areas of our region with additional resources. Often times we lack specialized spatial data to do things like disaster modeling, etc.	Communicate with Aging Director Jennifer Westfall or Development Director Bret Allphin. jwestfall@buckeyehills.org, bretallphin@buckeyehills.org.	Information sharing is the most important resource for us and our partnership recovery efforts.	Yes. We have had to evacuate our building for months to recover from a flooding event. We have systems in place to allow us to work remotely in almost all cases.	I think our role as a pre-disaster planning partner, communication coordinator, and information provider is the sweet spot for our staff and resources. We are not well suited for anything close to first response activities. We could stage vehicles or equipment in our parking lot in an emergency if necessary.
Athens City School District	Superintendent	Within the School District we have improved our mass notification systems to include a District App, and all-call phone based system, and the ability to email/text through our student information software system. We have recently off-loaded our technology mainframe servers to the META location, with a backup at Athens Middle School.	In designing our new buildings we are paying close attention to the floodway designations to assure our construction does not cause any issues for those further downstream.	I cannot immediately think of anything.	E-mail or via an annual update meeting if pertinent, updated information is available.	Any advanced warning that you may receive so we can respond quickly to protect lives and property.	I believe so. This is a broad question, as it encompasses many potential outcomes, but I do believe we have a strong team, a good system of communication, and could respond quickly and decisively to assist with a natural hazard event occurrence.	The district could provide emergency shelter and meals, as well as emergency transportation. We could also assist in mass communication to the families we serve via a variety of channels. Lastly, our people know our families and could quickly identify where the most help is needed (food, medical concerns, etc.)

Athens Area Chamber of Commerce	President	Emergency text messages, considerations of new locations for EMS teams	Ability to share information with member businesses and stakeholders		E-mail	Education on effects of increased hazards as a result of climate change and potential mitigation actions.	Yes	Dissemination of educational materials
LCR Realty	Broker & Owner	There have been some modest road improvements throughout the County with the majority in Athens Corporation limits and limited amount of road for County Roads.	We have installed a new parking lot at our business and improved surface water drainage that is getting worse year-to year due to seemingly worsening weather patterns. Our business location that we own is located at 280 E. State St. Athens, Ohio	Because we are a real estate firm with 24 agents, we cover a lot of miles and are traveling to all sections of the county. We can alert government officials to hazards or pending hazards if there was a developed web-site to accept and track, tally, file such notices from the public or participating people or businesses.	Through a centralized and published notification method such as a website or automatic notification.	Provide educational materials to help identify and mitigate most common natural hazards or impacts from events. A resource guide that was readily available on-line would be helpful as well.	Some of us in our organization are natural leaders and problem solvers and so the answer is yes.	Assessment, Education, Resource Development and easy access to all of these.
Federal Hocking Local Schools	Superintendent	No	We are glad to make our facilities available if there is a need.	I am not aware of anything at this time.	E-mail	Continue to share information.	Yes	
Amesville Economic and Entrepreneurial Team (AE&E	Chair, Amesville Economic and Entrepreneuria l Team	Amesville does not have cell phone tower. This is huge issue. Residents and any persons passing through are village are unable to use their cellphones to obtain help or notify others in case of an emergency compounding the issue ,many residents complain about poor internet service.	Please refer to Mayor of Amesville's response.	If we had funds we would construct cellphone tower to provide necessary communication.	E-mail and notices to our Mayor.	I am not sure.	The AE & E team is a committee--would not have a role as a team.	
Athens Insurance Services	Agent	No	Being an insurance agency those risks are certainly known however they are not on the forefront.	Unfortunately not much	I am open to anything.		Our readiness would vary based on the type of hazard.	

Athens County EMS	Chief	No	Emergency power generators at all EMS stations, all hazard weather radios at all stations for early warning	Continue ongoing efforts to maintain and modernize EMS stations, timely replacement of aging ambulances	E-mail, meetings, web sites, pretty much anything	Continue ongoing efforts to maintain and modernize EMS stations, timely replacement of aging ambulances	Yes	
Alexander Local Schools	Superintendent	No	No	Nothing at this time	E-mails and updates	The only thing we are currently looking at is another entrance/ access road to the school.	Yes, we have safety plans we follow in detail.	We can provide facilities for large numbers of people who are displaced in all of the communities we serve. We could also assist with transportation via school buses if that is a need.
Village of Glouster	Fiscal Officer	We are having multiple issues with storm drains collapsing. Without proper drainage it could affect the response time of emergency vehicles.	We are in the process of repairing what our budget will allow. We have also recently added a $3.00 charge to our water & electric bills for the purpose of storm drain repair.		E-mail	We need help looking for grants to address our issues due to state budget cuts.	NO	
Athens Fire Dept.	Chief	Closed roads due to construction. Debris/Snags in the waterways, as well as a lack of boat ramps in our jurisdiction.	Removed a low head, canal diversion dam. This removal allows boats to traverse above the Whites Mill dam to the city limits.	Proper staffing to respond to large scale emergencies, as well as deployment of drones to assess large scale damage to ensure proper deployment of resources. With proper staffing, snags/debris in the waterways can be removed to help the rivers flow properly, and prevent small flash flooding.	E-mail or in person meeting	Assist with planning and awareness of local available resources.	Depends upon the disaster and scale. We have the equipment and training to deal with flooding, and building collapse, as well as other technical rescues.	
Nelsonville-York City School District	Superintendent	No	We continue to monitor our facilities and grounds for hazards and ways to reduce the same.	Nothing at this time	Telephone or E-mail. Radio alerts	Increase funding for these events. Make the process for applying for these funds less cumbersome.	Yes, to the extent we have the ability to manage our campus.	

Lodi Township	Trustee	No	Maintain clear roadways by keeping Right of Ways mowed. Clearing dead trees along roadsides. Filling potholes and grading roadways from storm water damages. Remove flood debris from roadways. Keep ditches and culverts clear of debris.	Replace, enlarge culverts to better handle the larger quantities of water we seem to be getting. Enlarge some drainage ditches and build up our roadways to be above the flood plain.		Keep us informed of pending threats and help find grant monies to reduce known problem spots	Yes, to a large degree but it puts a strain on our limited budget to apply the manpower and to purchase materials quickly.	
York Township	Trustee President	The switch to digital radios is coming soon	Keep ditches and culverts free flowing. Refer residents constructing new buildings to seek out the county planner for advice.	Raise some roads to prevent flash flooding	E-mail and seminars		We hope and think so but it's not an exact science	The township is obligated to the best of our abilities to keep roads open and safe for traveling
9-1-1 Communicatio n / Athens County	Lieutenant	Development that would hinder our ability to respond would be a real-time event such as weather-related, construction etc. These are relayed through ODOT, County Engineers Office or weather applications tracking current trends.	We respond to and report through our mass notification system critical events for our community members.		Information sharing and training	AEP Ohio uses ICS to manage our emergencies. We will use our Liaison Office to coordinate with the EMA. We will make the EMA director aware of who their contact will be for each event.	Yes, we have handled natural hazards event in the past. Real-time first responders.	
AEP Ohio	Emergency Preparedness Manager	No	We file our maintenance plan yearly with the Public Utilities Commission of Ohio. This plan includes yearly pole inspections, tree trimming plan and system improvements. We also have an Emergency Response plan that has been approved by the commission.	We have mutual assistance agreements with the other investor owned utilities in the United States. This gives us access to the needed resources to respond to a natural disaster.	AEP Ohio uses ICS to manage our emergencies. We will use our Liaison Office to coordinate with the EMA. We will make the EMA director aware of who their contact will be for each event.		Yes, using the Incident command system we are able to scale our response to any emergency.	The AE & E team is a committee-- would not have a role as a team.
Athens County EMS	Assistant Chief	No			E-mail	Continue to include the University in discussions and planning process.	Yes, depending on the hazard.	We understand risks and have knowledge when others may not.

Ohio University	Emergency Manager	No	We plan and discuss regularly the impacts of not only natural hazards but any type of hazard (all hazards) that may affect our campus.	Increase awareness of natural hazards.	Electronically	Shared services would be helpful. Share best practices. Maybe a Countywide Disaster Board or something that can get organizations and groups together quickly when a disaster occurs. A list of organizations and contacts for when a disaster strikes.	Yes	Assist in planning and cooperation with other resources and emergency services agencies
HAPCAP	Executive Director	No	Community Development has worked with land bank to get rid of dilapidated buildings. Conduct Environmental Reviews of all CD projects. We administer disaster recovery funding for flood and wind clean-up projects. Transportation programs are part of emergency planning documents/conversations etc. We participant in the Athens PIO network	Open up our offices for people to stay when they need shelter, or a cooling area, need to charge phones etc. We could even provide food etc Communicate with vulnerable populations Provide resources to clients Use trained disaster recovery staff to begin immediate cleanup (if funding available) Provide transportation.	E-mail, social media, phone, newsletters, community meetings	Provide best practice information for communication strategies. During flooding events, it would be great to have published flood routes/maps that people could access. Collaborate with us and the Red Cross to evaluate whether or not our Glouster facility could serve a purpose during emergencies.	No	We could be a command center or a central location for community members to pick up resources.
City of Nelsonville	City Manager	No	2017-Removed 3 houses and 2 mobile homes using Hazard Mitigation funds. 2019-Applied for Hazard Mitigation funds to tear down one home and purchase 38 parcels in floodplain 2019-working with Army Corp of Engineers and EPA to build a natural flood wall at Polley Park	Install motors on City floodgates instead of hand cranks for easier operation and safety reasons. Improve storm drains to handle heavy rains	Meetings	Have different equipment ready for use in an emergency; generators trash pumps etc.	Yes, depending on the situation. Fire Department is well trained.	

Villageof Albany	Mayor	We have new water lines and more fire hydrants	We have developed new planning and zoning codes to help with safety in the village	We need to find funding sources to construct storm sewers	E-mail mailing list		Yes	I think our Village should take a more active approach in discussions with our County Planner.
Red Cross	Disaster Program Specialist	Meeting with EMA and LEPC.	Talks with Emergency Management concerning sheltering within the County.		Ever bridge notifications, Tornado sirens, etc.	Continue work on mass care and sheltering	Yes, with the assistance of the volunteers within the 13 counties of the Chapter, resources from our Region (45 Ohio Counties), The Division and Notional.	Assessment of damages to determine resource deployment. Response to emergencies and service. Mitigation. Management of Incident Command.
Athens Metropolitan Housing Authority	Executive Director	No	Athens MHA has developed an Emergency Preparedness Plan Policy and Procedures	Provide Housing Units on an emergency basis.	Disseminate information to organizations to enhance their ability to effectively respond to emergencies and disasters.	Develop and disseminate a document that contains all the necessary information the agency would need in order to communicate with those in charge during an emergency.	Yes	We could serve in various different capacities.
Jacksonville Village	Mayor	New water lines in the Village, a brand new fire truck and new policies the Village has implemented will help. The new disaster siren coming in Spring 2020 will also help. Flooding is still an issue in the Village and a train travels though the Village on a regular basis carrying hazardous cargo.	Storm water drains were recently cleaned throughout the Village to help with drainage during rain.	Flood gates on the storm water drains would be a tremendous help to the Village. Larger drains may also be needed because the current system is antiquated.	E-mail the Mayor	Assistance with available grants would help.	Yes, but there is always room for improvement. It would depend on the type of disaster.	Acquire funding and put it to sensible use to minimize impacts of natural hazards.
Trimble Local Schools	Superintendent	Yes, construction project which is occurring in a neighboring town which has limit access to our community via a state route. This time line was not discussed with the area schools in advance.	They have implemented a district crisis intervention application for all employees of the district to utilize.	Provide better training which can occur on site.	Inservice which are held on a local fashion	Provide better communication surrounding the existing plan and how it is used within the school districts.	Maybe	

Athens County CoCoRaHS (Rain/Snow Gauge) Network	Coordinator	Concern re: consolidating emergency response radio communications by centralizing them in Columbus (eg: MARCS), and how survivable this scheme is during major events.	We collect and archive rain and snow data for ongoing research into climate change trends which may impact Athens County future planning. http://climate.athens.oh.us/oh-at	Increase early warning for rain/snow event impact planning on Athens County, such as the Flash Flood Guidance Index, regional Hocking River Watershed stream gauges, etc. http://w8kvk.com/hr	E-mail	No suggestions at this time.	We are primarily a "pre-event" resource, but are well prepared for monitoring real time precipitation (both rain & snow) during an event, and providing guidance to appropriate agencies.	
COAD	Executive Director	No	We have an emergency plan in place and have drills regularly.	Given our location and access to high speed internet we could assist in communications.	E-mail	Provide timely information and warnings when appropriate	Yes	
Athens County Sheriff's Office - Dog Shelter	Detective	No	We have additional portable kennels that we can utilize in the unattached garage area, for the purpose of displaced dogs. County EMA also owns a large amount of pop up kennels and a large tent for shelter. If there was a flood or other natural disaster we could house additional displaced animals at this facility.	My main concern would be a flooding incident that would limit access to our facility. Other than a flooding incident, I feel that the only other issue would be a summer time incident when it was extremely hot. The overflow areas of the shelter are heated but there is no cooling.	E-mail	We may need additional dog food, and supplies. I feel that it would also be beneficial to have a reserve water supply if there would be a possibility of losing water to the building.	I believe we would be prepared.	
Athens County Sheriff' Department	ccw clerk	No	We have recently attended Athens County EMA meetings to offer our services in the event of a local emergency.		E-mail or phone			
Ohio University Airport	Airfield Maintenance Supervisor			Hopefully A.C.E.M.A along with Ohio University's Risk and Safety Management and the Airport we can come up with a plan to utilize resources here at the Airport.		Being included in meetings or future trainings will help this along.	With the Emergency Plan that we have in place I believe we are prepared.	

Athens County Department of Job & Family Services	Executive Director	We have an updated Emergency Preparedness Plan & Business Continuity Plan, so ACDJFS would be willing and able to help. Included are our emergency numbers and listed agency-owned technology & vehicles. We have a large building on Route 13 in Millfield and a new building (pending move) on West Union in Athens, as well as a large staff (90). With additional generator support, (current unit runs only emergency skeletal outlets at the St Rt 13 location) these assets could be utilized for shelter or other emergency administrative purposes.	Our lower parking lot at the County Home floods. We have a project underway to abandon that lot (for parking) and increase parking in our upper lot so that both clients and staff have dry parking throughout flood seasons.	With additional generator support, (current unit runs only emergency skeletal outlets) these assets could be utilized for shelter or other emergency administrative purposes.	We are in close contact with the County Commissioners and sit on the county's LEPC.	Our agency serves the Athens County residents with the fewest resources. Our mission is to protect and support these people to the greatest extent our funding and human resources allow. Assistance in identifying those in dire straits during an emergency would allow us to reach out and provide available benefits. An additional generator would ensure our County Home location is a proper shelter.	Yes	As mentioned, our agency serves the Athens County residents with the fewest resources. Our mission is to protect and support these people to the greatest extent our funding and human resources allow. Assistance in identifying those in dire straits during an emergency would allow us to reach out and provide available benefits. Our Mobile JFS office unit (retired ambulance) will allow us to do outreach and benefits applications in the field. Our relatively large staff (90) are social service experts and are a great source for providing available information and direction to resources.

Key Person Stakeholders that were Invited to Take the Survey	
ORGANIZATION	**NAME**
City of Athens Planning Director	Paul Logue
Mayor, Village of Albany	Mayor Kirkendall
Mayor, Village of Buchtel	Mayor Sullivan
Mayor, Village of Coolville	Mayor Tyman
Mayor, Village of Jacksonville	Mayor Smathers
City Manager of Nelsonville	Charles Barga
Mayor, Village of Amesville	Mayor Gooseman
Mayor, Village of Trimble	Mayor Davis
Mayor, Village of Chauncey	Mayor Mattey
Mayor, Village of Glouster	Mayor Wolf
Ohio University Planning Department	
Hocking College Planning Department	
Waterloo Township Trustees	
Dover Township Trustees	
York Township Trustees	
Lee Township Trustees	
Athens Township Trustees	
Alexander Township Trustees	
Lodi Township Trustees	
Ames Township Trustees	
Canaan Township Trustees	
Bern Township Trustees	
Rome Township Trustees	
Carthage Township Trustees	
Troy Township Trustees	
Hocking County EMA Director	Cesalie Gustafson
Perry County EMA Director	Rita Spicer
Washington County EMA Director	Rich Hays
Morgan County EMA Director	John Wilt
Meigs County EMA Director	Jamie Jones
Vinton County EMA Director	William Faught
Athens County Engineer	Jeff Maiden
Volunteer Fire Association	Athens County
ODOT District 10	
National Weather Service	
Southeast Ohio EMS	
Athens County EMS	
US Army Corps of Engineers, Huntington	
American Electric Power, Ohio	
American Red Cross, Athens	
NOAA	

Wayne National Forest	
ODNR District 4	
ODNR State Office	
USGS	
Columbia Gas of Ohio	
Sprint	
Verizon	
AT&T	
Ohio University, Voinovich School	
Hocking Conservancy District	
Tuppers Plains- Chester Water District	
Burr Oak Water District	
Le-Ax Water District	
Sunday Creek Valley Water District	
Adelphia Communications	
Spectrum	
Coolville Volunteer Fire Department	
Albany Water & sewer Dept.	
Albany Volunteer Fire Dept.	
Athens County Soil & Water District	
COAD	Jessie Schmitzer
Athens County Water & Sewer District	
Arcadia Nursing	
Federal Hocking School District	
Norfolk- Southern Railroad	
Nelsonville York School District	
Jacksonville Volunteer Fire Department	
Glouster Fire Department	
York Township Vol. Fire Department	
Chauncey- Dover Volunteer Fire Dept.	
Nelsonville Water Treatment Plant	
Nelsonville TV-Cable	
Athens City School District	
Nelsonville Police Department	
Nelsonville Fire Department	
Alexander Local Schools	
HAPCAP	Jessica Stroh
Athens County GIS Coordinator	Scott Dunfee
Athens County EMA Director	Donald Gossell
Buckeye Hills Regional Council	Bret Allphin

Appendix 5 – Survey Results Summary

Athens County Multi-jurisdictional Natural Hazard Mitigation Plan 2019 Update
Public Survey Result Summary

The Executive committee for the Natural Hazard Mitigation Plan met and decided to best gain residents feedback on their experiences with natural hazards in the county that a survey should be made with relevant questions and the results would be added to the plan.

It is clear that residents of Athens County have experienced a natural hazard with nearly 75% saying they have been impacted by one. This makes it evident that the natural hazard mitigation plan is necessary for Athens County. Some impacts included property damage/loss, loss of access to their home or business, and emotional stress around the hazard's impact.

Hazards that are the most concerning are: flooding, high winds, windstorm/blizzard, ice storm, tornado, extreme heat, and extreme cold. Hazards with a small concern are: drought, hail, mine collapse, thunder and lighting, and wildfire. Hazards that residents have little to no concern are: Dam failure, earthquakes, and landslide/rock fall. Other concerns that residents voiced were derecho, invasive species, dead and falling trees, train related hazards, and watershed and soil destruction due to fracking and injection well practices.

75% of survey takers do not live in a flood hazard area resulting in a majority not having flood insurance. However, 75% do not live in a flood hazard area but 85% stated that they do not have flood insurance. It can be implied that about 10% of residents live in a flood hazard area but do not have flood insurance.

41% of responders have taken actions to protect them and their valuables from floods. Some of the actions include: purchasing a generator, storing supplies, cutting down trees (especially dead or infected ones) as well as moving cars away from trees during storms, and strengthening or raising houses or other infrastructures at risk.

Responders had an opportunity to tell the committee what they would like to see from their local government, organizations, or individuals to prevent and mitigate natural hazards. Some of the most noted recommendations were notifications and alerts, public and community education, identifying evacuation routes, and disaster checklists. Based on the list of items respondents did not have for safety in a natural hazard event we recommend residents gather these items: a prepared/response plan, water, sanitation, a map of the surrounding area, and waterproof matches.

33 respondents gave feedback on whether there are any issues regarding reduction of risk of loss during natural hazards. These responses varied from none, to worries of cell phone reception, lack of advanced notice, and concerns for elderly and disabled residents.

Lastly, About 70% of respondents do get information regarding natural hazards. Of that 70% the majority get their information from social media, while the rest get it notified in other ways like TV, radio, text alerts from EMA, Emails, and the Red Cross. The respondents that do not currently get information had an opportunity to say how they would like to obtain information.

These responses were reflected in the previous options like social media, text messages, emails, etc. These information services should be advertised more throughout the county to ensure residents not getting this information are able to sign up for alerts.

Prepared by: Alicia Lundy- Morse, Ohio University Intern City of Athens Planning Department

Natural Hazard Mitigation Plan 2019 Update Key Stakeholder Survey Result Summary

The Executive committee for the Natural Hazard Mitigation Plan decided in addition to obtaining feedback from residents many key stakeholders could also provide valuable insight to needs pertaining to natural hazards in the county. The survey's questions were designed to gather information to inform mitigation strategy and actionable mitigation items within the plan.

36 respondents, representing: governments, businesses, nonprofits etc., gave feedback regarding developments, their respective roles, communications, and needs pertaining to natural hazard mitigation. These responses highlighted the need for cell service and broadband in the region, which was mentioned in multiple responses as was preference for email or cellphone notifications and update regarding hazard events. Many responses also highlighted specific infrastructure needs, such as: storm water systems and generators, to better serve and protect citizens during and after hazard events.

Information gathered from the survey responses highlighted a broad swath of mitigation actions that we organized under four broad goals. These goals cover four areas: multi-jurisdictional issues involving government citizens stakeholders and policy makers, minimization of natural hazard human economic and environmental impacts, disaster resistance regrading existing and new infrastructure, and increased use of hazard mitigation planning. From these goals objectives and action items were delineated in the Mitigation Action Plan for 2020-2024.

Appendix 6 – Press Release

For Immediate Release

September 4, 2019

Athens County Natural Hazard Mitigation Plan Update

Athens County, Ohio— Athens County planner Jessie Powers has announced that Athens County is launching an update of the Natural Hazard Mitigation Plan. The plan process has begun with a public comment survey available to all at: http://survey.constantcontact.com/survey/a07eghoews8jyisjuu9/a0199k05dfwyu/greeting.

The current multi-jurisdictional plan was adopted in 2014 and should be updated every 5 years. The plan is being evaluated by Jessie Powers and Bob Eichenburg with the assistance of Donald Gossel Director of Athens County Emergency Management Agency, Dustin Hube Emergency Response Coordinator at the Athens City- County Health Department, and Athens City Planner Paul Logue. In addition, there is a larger group of stakeholders being consulted throughout the planning process.

FEMA governs the plan and mandates an update every five years. A compliant plan is extremely important for disaster and mitigation project funding. The multijurisdictional nature offers opportunity for all Athens County residents to participate and help create a safer place to live.

The intent of this Plan is to develop a comprehensive strategy to help reduce impact of natural hazards in Athens County. This process involves public participation in identifying hazards, analyzing what assets are at risk, and assessing what goals and actions we can take to reduce those risks. The Plan is then monitored so that goals are achieved and regularly re-evaluated as needs and issues change. View the current plan at: http://www.co.athensoh.org/8.29.19%20Athens%20County%20MultiJurisdictional%20Natural%20Hazard%20Mitigation%20Plan%20Update-Revised%202014.pdf.

For more information please contact Jessie at jpowers@athensoh.org or Bob at bobeichenberg@yahoo.com

Appendix 7 – Nelsonville and City of Athens Ordinances and Regulations

City of Nelsonville Ordinances and Regulations

Follow the attached link for all ordinances, regulations, and resolutions for the City of Nelsonville:

http://www.nelsonvillecityattorney.com/code#

City of Athens Ordinances and Regulations

Follow the attached link for all ordinances, regulations, and resolutions for the City of Athens:

https://library.municode.com/oh/athens/codes/code_of_ordinances

Village of Albany Ordinance and Regulations

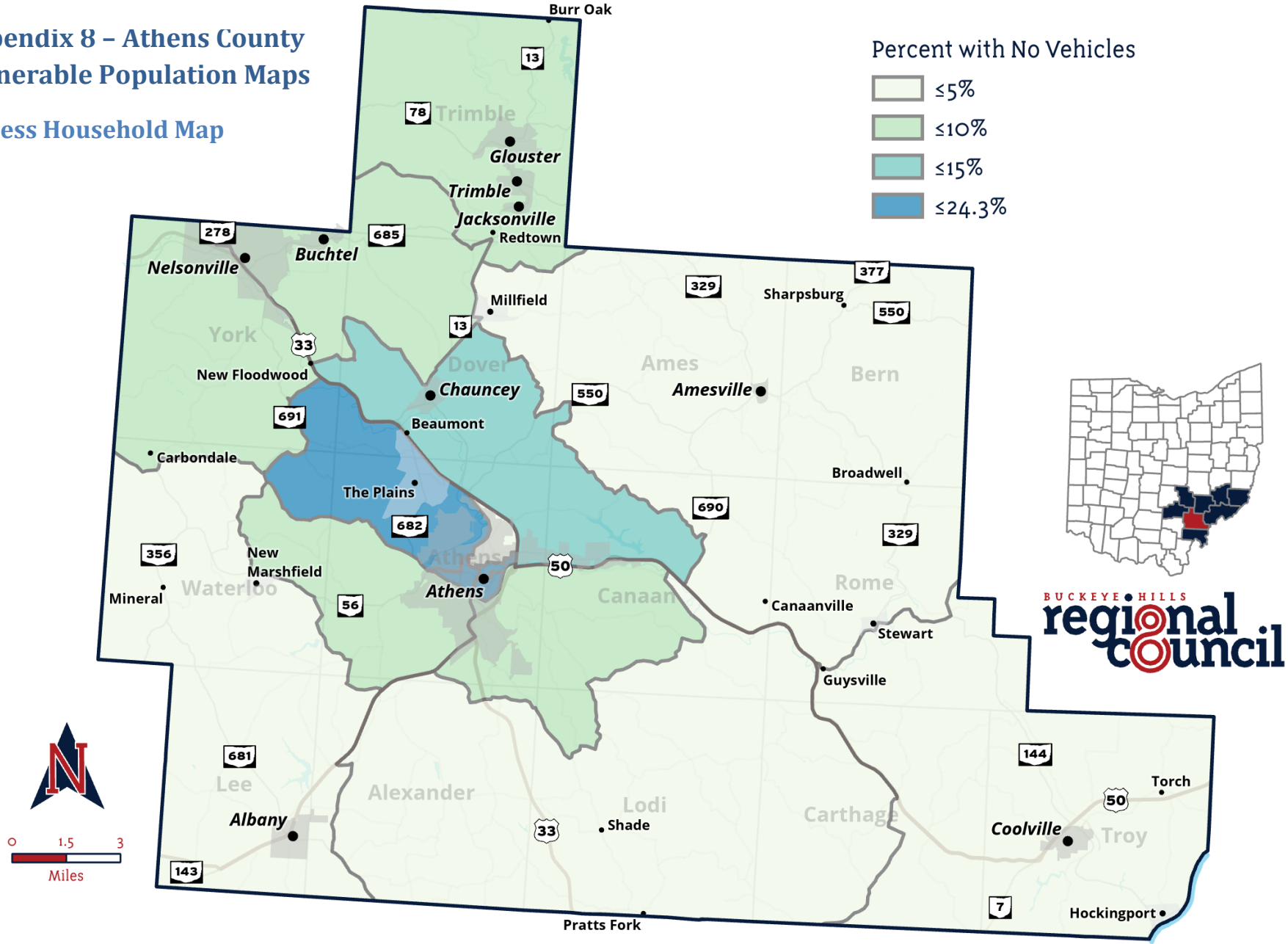
Follow the attached link for all ordinances, regulations, and resolutions for the Village of Albany:

https://albanyoh.wordpress.com/building-and-zoning/

Please note these are the only municipalities in Athens County with ordinances and regulations beyond floodplain ordinances.

Appendix 8 – Athens County Vulnerable Population Maps

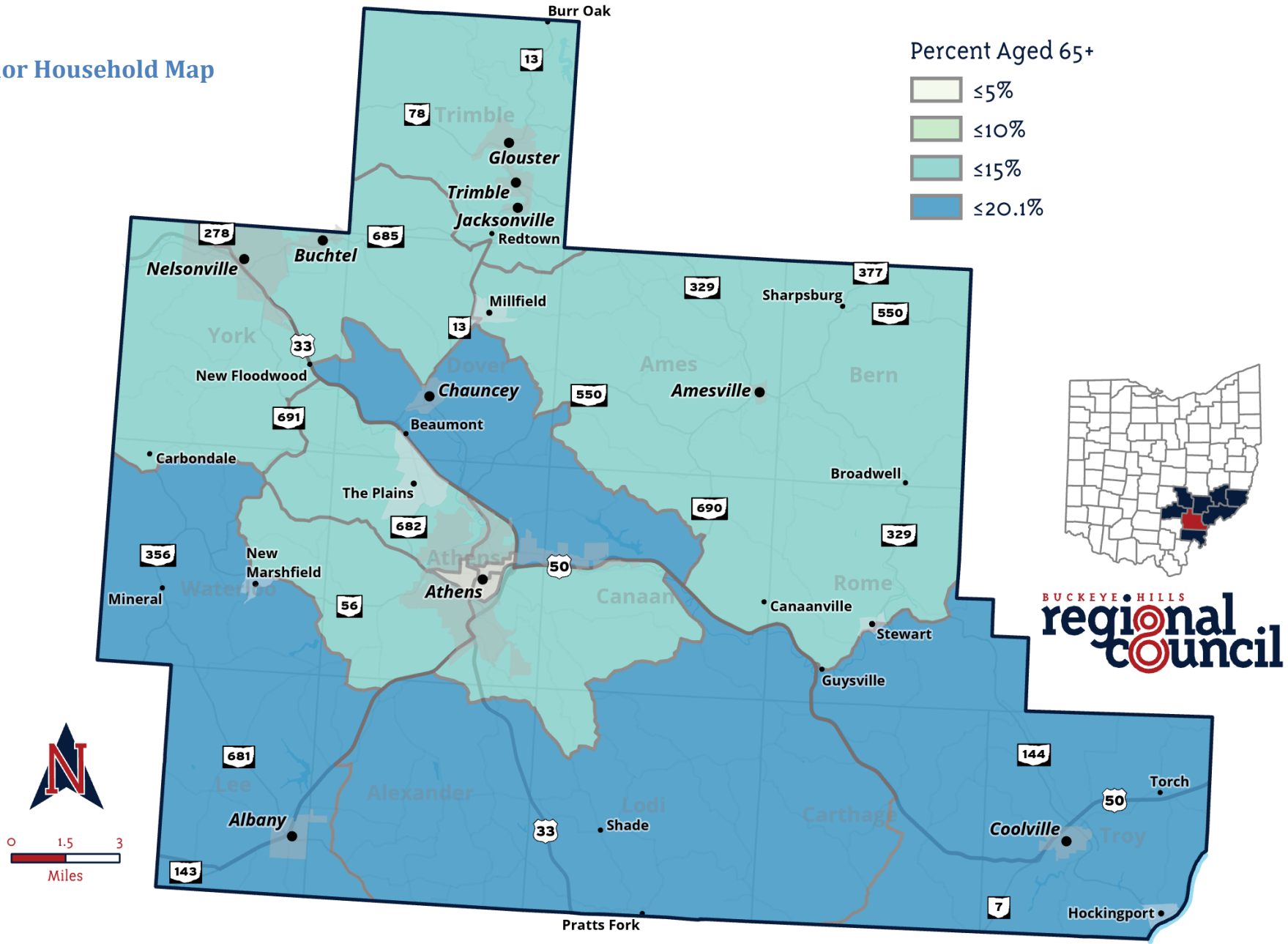
Carless Household Map



Cartography by Jason Pyles, September 2019
http://www.buckeyehills.org | 740.374.9436
For information about data sources, please contact a GIS Specialist at Buckeye Hills

Data comes from the Centers for Disease Control's Social Vulnerability Index. These values are calculated from the Census Bureau's American Community Survey estimates covering 2012-2016.

Senior Household Map

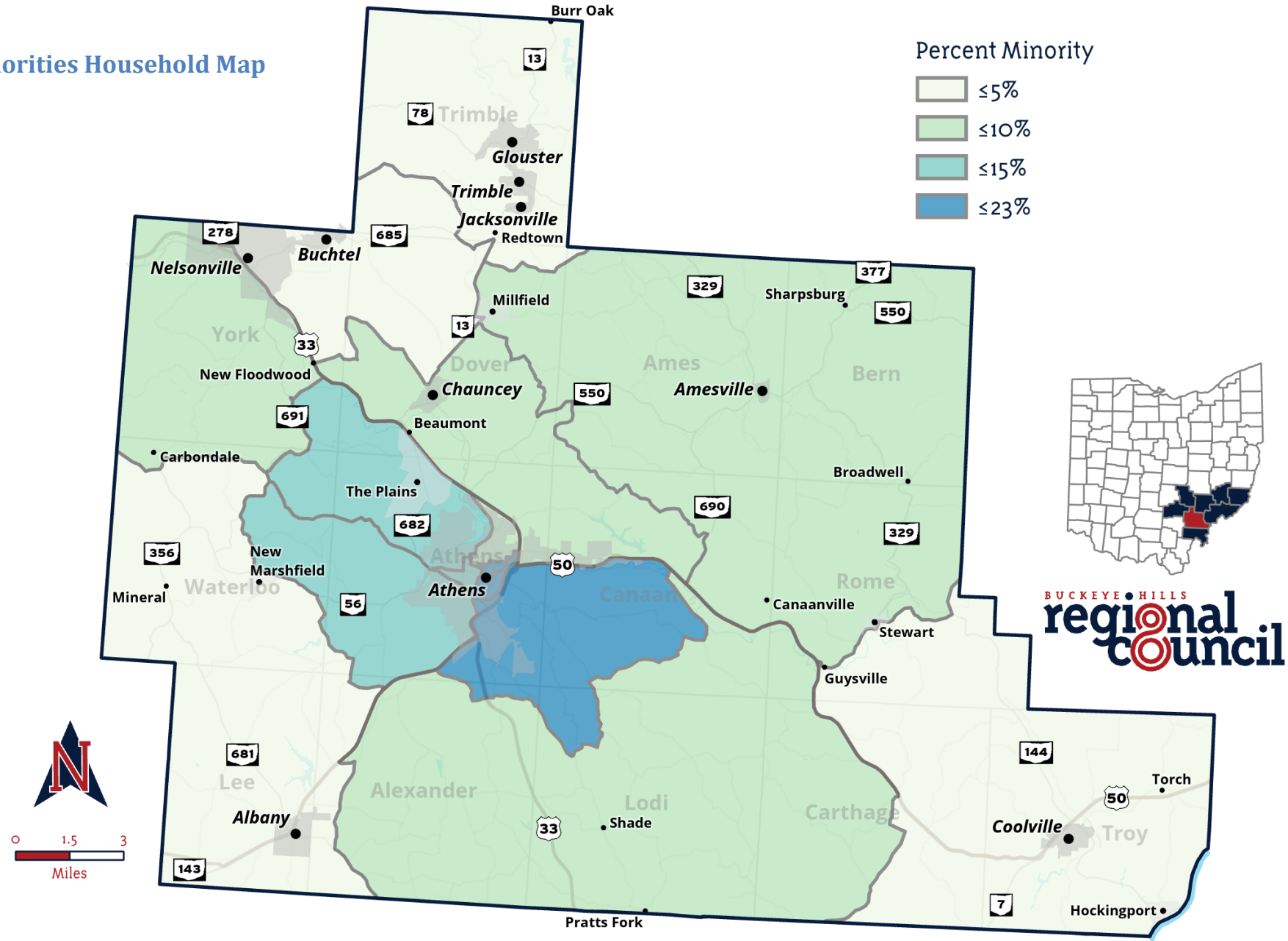


BUCKEYE HILLS regional council

Cartography by Jason Pyles, September 2019
http://www.buckeyehills.org | 740.374.9436
For information about data sources, please contact a GIS Specialist at Buckeye Hills

Data comes from the Centers for Disease Control's Social Vulnerability Index. These values are calculated from the Census Bureau's American Community Survey estimates covering 2012-2016.

Minorities Household Map

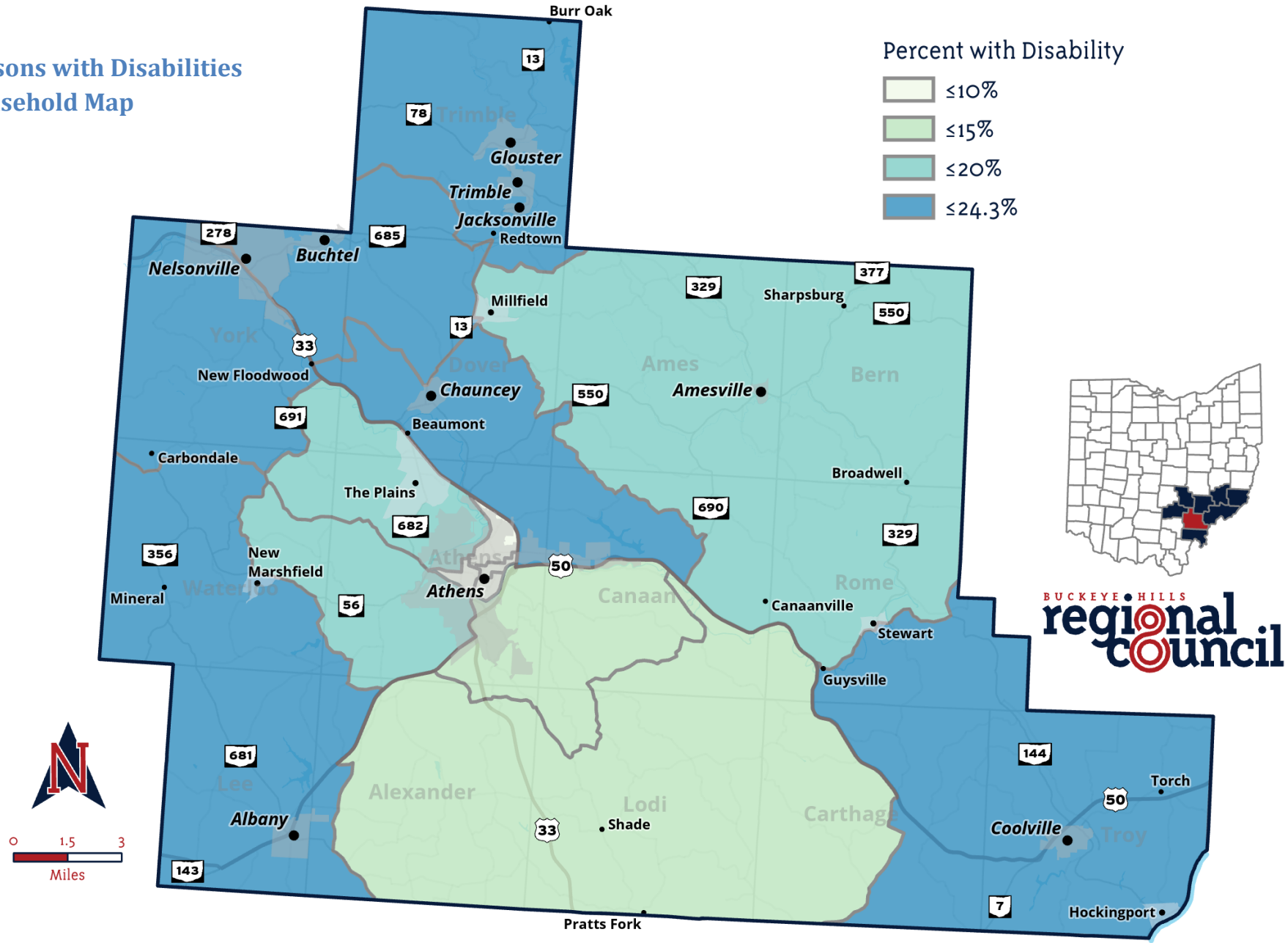


BUCKEYE HILLS regional council

Cartography by Jason Pyles, September 2019
http://www.buckeyehills.org | 740.374.9436
For information about data sources, please contact a GIS Specialist at Buckeye Hills

Data comes from the Centers for Disease Control's Social Vulnerability Index. These values are calculated from the Census Bureau's American Community Survey estimates covering 2012-2016. Minority is defined as people that do not identify as White/Caucasian and not Hispanic.

Persons with Disabilities Household Map



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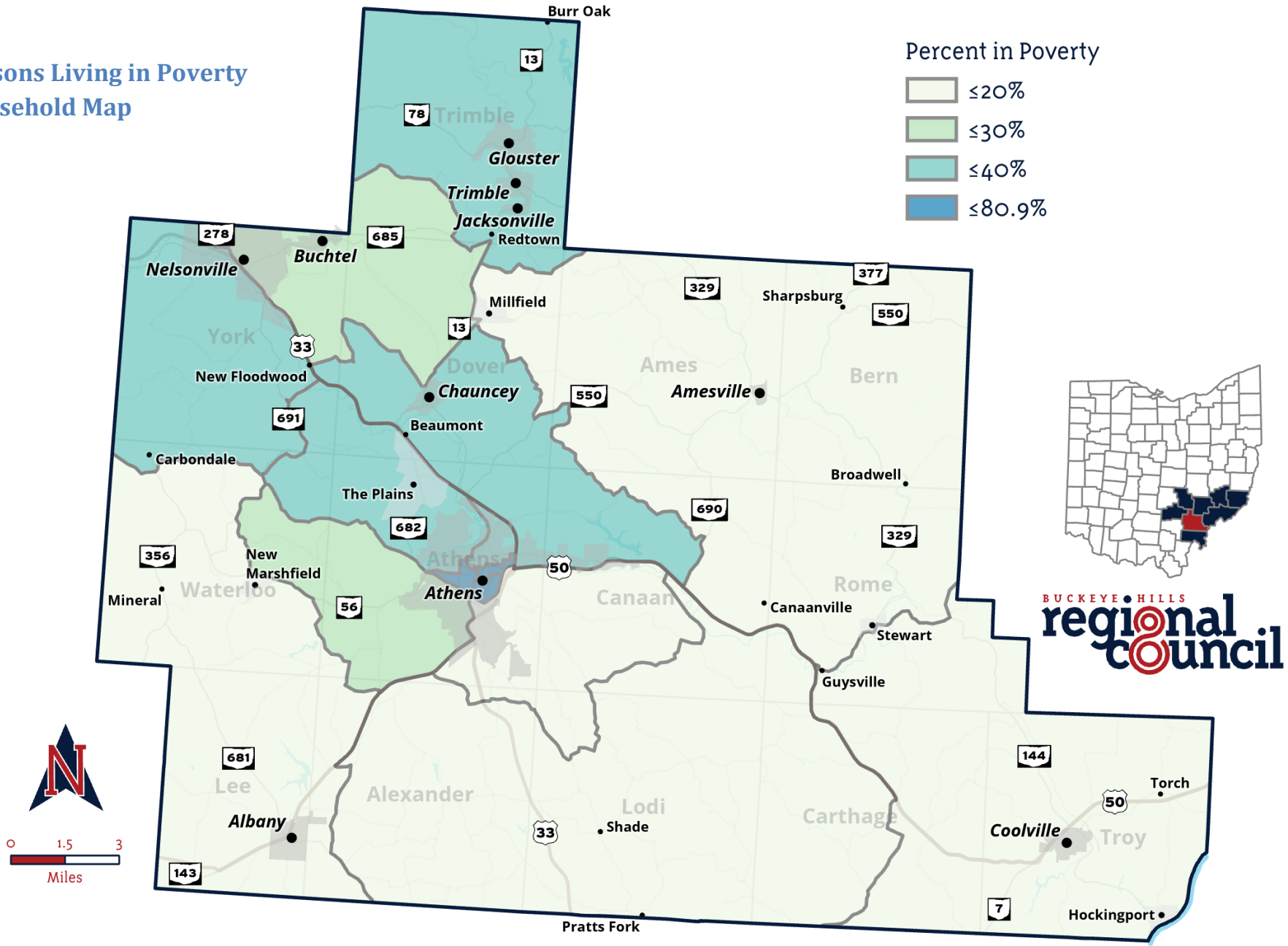
For information about data sources, please contact a GIS Specialist at Buckeye Hills

Data comes from the Centers for Disease Control's Social Vulnerability Index. These values are calculated from the Census Bureau's American Community Survey estimates covering 2012-2016.

Persons Living in Poverty Household Map



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For information about data sources, please contact a GIS Specialist at Buckeye Hills

Data comes from the Centers for Disease Control's Social Vulnerability Index. These values are calculated from the Census Bureau's American Community Survey estimates covering 2012-2016.

Appendix 9 – National Climatic Data Center

Storm Data

EVENT ID	LOCATION BEGIN/END	BEGIN DATE	EVENT TYPE	MAGNITUDE/ TORNADO SCALE	DAMAGE PROPERTY NUM	EVENT NARRATIVE	EPISODE NARRATIVE
504630	VANDERHOOT/ ALBANY	4/30/2014	Flood		$10,000	Many small streams overflowed and closed sections of roads. Examples from the state highway department included portions of Route 56, 144, 329, 356. and 682. No structures were flooded.	Rounds of convection began on Monday the 28th. A nearly stationary front was located across the Tri State area near extreme southeast Ohio on Tuesday the 29th with more unstable air upstream over Kentucky. Additional rounds of convection fell on Tuesday. More discrete thunderstorm cells formed during the late afternoon and early evening of the 29th. This produced some large hail and damage to vehicles. One of those downpours caused a flash flood in western Lawrence County. ||Additional showers fell on the 30th, but amounts were not as heavy. The storm totals for the rain reached into the 3 to 3.6 inch range. This was over a 3 day period. Spotters in Albany and Athens both measured around 3.6 inches of rain. A spotter in Guysville measured around 3.3 inches. An automatic gauge near Pomeroy had around 3.2 inches of rain. Dean State Forest in Lawrence County and Rio Grande in Gallia County both had around 3 inches. The cooperative observer in Jackson measured just over 3 inches. ||Many streams eventually overflowed, causing minor flooding on the 30th. A strong rise occurred on the Hocking River, but eventually the crest remained below flood stage.
509961	MODOC	6/3/2014	Hail	1	$0		After some early morning rain showers, scattered thunderstorms formed in eastern and southern Ohio during the mid afternoon hours of the 3rd, ahead of a cold front.||The front sagged south to near the southern Ohio border with Kentucky by dawn on the 4th. A strong low pressure for early June moved east through the Midwest, and along the frontal boundary, during the day on the 4th. Near and south of the front, dew points were in the upper 60s and lower 70s. The disturbance passed to the east by early on the 5th.||Several rounds of showers and thunderstorms passed through southeast Ohio during the afternoon and evening hours on the 4th.
543567	ATHENS (ZONE)	11/22/2014	Winter Weather		$0		Warmer air returning northeast through the upper Ohio Valley, caused some light freezing rain for a few hours during the morning of the 22nd. The melted down rain amounts were under five hundredths of an inch. ||A light glaze was reported on untreated roads, mainly from northern portions of both Athens and Washington Counties on north, including Morgan and Perry Counties. Temperatures were still in the upper 20s and lower 30s. A few roads were temporarily closed, until highway crews could treat the surface. This included the northbound lanes of Interstate 77 in northern Washington County, near the Noble County line.
543764	ATHENS (ZONE)	11/24/2014	Strong Wind	42	$25,000		As a strengthening low pressure system lifted north through the Great Lakes into Ontario, strong winds aloft mixed down to the ground during the late morning and early afternoon. Surface temperatures were still in the 60s with partial sunshine. The cold air advection aloft aided in the downward momentum transfer.||Wind gusts of 40 to 50 mph were common. Electricity was temporarily out, mostly due to weak tree limbs falling on overhead lines. The most power outages were in Perry County where 5,900 customers were affected. In Athens County, over 4,000 customers were affected.

547113	ATHENS (ZONE)	1/6/2015	Heavy Snow		$0		A fast moving clipper system moved through on the 6th. It was aided by a wind speed maximum in the flow aloft. Surface temperatures were only in the upper teens to lower 20s.||Three to 5 inches of dry snow accumulated in less than 12 hours over a portion of southeast Ohio on the 6th. This was mainly along the Route 50 corridor and north. The water content was 2 to 3 tenths of an inch. This was the first accumulating snow storm of the winter for these counties. ||Further south, snow amounts were much less in southeast Ohio.
552065	ATHENS (ZONE)	2/14/2015	Cold/Wind Chill		$0		Another arctic front swept through during the early afternoon of the 14th. Temperatures dropped from the low and mid 30s into the teens in a few hours. In the wake of the front, wind gusts of 35 to 45 mph were common into the night. A burst of snow occurred along the front. Accumulations were mostly an inch or less.||Temperatures dropped into the zero to 5 above range by dawn on the 15th. For example, both New Lexington and Newport observed zero degrees.||Early on the 15th, wind chill readings of minus 10 to minus 15 were common.
552295	ATHENS (ZONE)	2/16/2015	Heavy Snow		$0		A unique snow storm hit southeast Ohio on the holiday for Washington's Birthday.||Light snow began falling before dawn on the 16th in Lawrence County, then reached the Route 50 corridor during the mid morning. The temperature was hovering in the single digits when the snow began. The snow increased during the afternoon, then decreased during the late evening hours. The snow ended early on the 17th.||All during the storm, the temperature hovered on either side of 10 degrees. Snow accumulations ranged from 7 to 10 inches in Lawrence County to 4 to 5 inches toward the communities of Athens and McArthur. For example, the lock and dam near Gallipolis had a 10 inch accumulation, while further up the Ohio River, Racine had 5 inches of snow. Jackson measured 6 inches of snow. Further north, the snow was less around Marietta, McConnelsville, and New Lexington. ||For many counties, this was the first significant snow storm of the 2014-15 winter.
552507	ATHENS (ZONE)	2/18/2015	Winter Weather		$0		In less than a week, a second arctic front swept through southeast Ohio during the late morning hours of the 18th. Snow showers formed ahead of the front, with a few bands lingering during the afternoon in its wake. Snow accumulations of 2 to 3 inches were common in Jackson, Vinton, Athens, Perry, and Morgan Counties, with less toward the Ohio River. ||Temperatures dropped into the zero to 5 below range by dawn on the 19th. Despite sunshine through icy low clouds, daytime readings only recovered into the 5 to 10 degree range. Wind chill readings of minus 10 to minus 20 were felt on the 19th. ||The diminishing winds and a clear sky developed first over southern counties then moved north during the overnight hours of the 19th into the 20th. With a fresh snow pack, temperatures dropped well below zero for dawn on Friday, the 20th. The coldest official temperature in southeast Ohio was 26 degrees below zero at Waterloo of Lawrence County. Readings of minus 15 to minus 20 were more common. New Lexington had minus 17, South Point observed minus 15, Gallipolis had minus 13, and Jackson felt minus 12. Unofficially, the Athens airport near Albany had minus 20 and the Scalia Lab at Ohio University dropped to minus 18. The general public reported minus 20 in McArthur and around Kitts Hill. | |In several counties, the morning of Friday the 20th was the coldest since the cold waves of February 1996 and January 1994.||A power outage on the 20th affected about 2,000 customers in Lawrence County. It caused a pump at a water utility to fail. About 800 customers in the Proctorville and Scottown vicinity lost their water service.
552574	ATHENS (ZONE)	2/18/2015	Extreme Cold/Wind Chill		$0		Same episode narrative as event ID 552507

552763	ATHENS (ZONE)	2/21/2015	Heavy Snow		$0		After the arctic deep freeze at dawn on the 20th, snow overspread southeast Ohio between 0300E and 0500E on the 21st. New snow accumulations of 4 to 7 inches were common in 12 hours. A few public reports of a 8 to 9 inch accumulation were received in Athens and southern Washington Counties. In southern portions of both Lawrence and Gallia Counties, the snow changed to freezing rain during the morning, then to mostly rain by midday. The snow and rain diminished to drizzle by evening. A quarter inch of ice from freezing rain was reported around Ironton.
553171	ATHENS (ZONE)	2/23/2015	Cold/Wind Chill		$0		Near calm winds, a clear sky, and a snow cover allowed early morning temperatures to drop below zero.||The coldest official temperature was 15 below zero at New Lexington of Perry County. Jackson was minus 9, Newport and Waterloo were minus 7. Even Gallipolis was 3 below zero.||The Scalia Lab on the Ohio University campus in Athens, dropped to minus 11.||Public schools were canceled or on a 2 hour delayed start for the day.
554446	ATHENS (ZONE)	3/4/2015	Heavy Snow		$50,000		A warm front lifted north through southeast Ohio on the 3rd with a 1/4 to a 1/2 inch of rain. Late afternoon/evening temperatures rose into the 40s and 50s. Winds and dew points also increased. This combination helped accelerate the melting of the leftover snow pack.||Rains increased overnight, with 1 to 1.7 inches of rain falling by dawn on the 4th in mainly north of the Hocking River Valley. An automatic gauge near Lower Salem in Washington County measured 1.69 inches. Beverly had 1.48 inches of rain through dawn. This caused small stream flooding to begin. Rain rates were mostly 1 to 2 tenths of an inch per hour. Total rainfall of 1.5 to 2 inches became common by that evening.||As the small stream flooding continued, the rain changed to sleet and wet snow during the late afternoon/early evening of the 4th. Heavy wet snow quickly accumulated along the Ohio River counties during the evening on the 4th and into the morning hours of the 5th. As the heavy snow was falling, several high water signs and barricades were stolen across Lawrence County. Further north, the snow was lighter over Morgan and Perry Counties.||The snow diminished by early afternoon of the 5th. A total snow accumulation of 10 to 13 inches was common from Jackson and Lawrence Counties on up the Ohio River to Washington County. For example, Waterloo of northern Lawrence County measured a 13 inch accumulation. The snow depth at Gallipolis also went from zero to 13 inches during the storm. Marietta reported a snow accumulation of a foot. Further north snow accumulations were mostly 4 to 8 inches across Morgan, and 3 to 5 inches in Perry County. An unofficial report of 17 inches was received north of Waterloo near the border with Gallia County. A spotter in Thurman of Gallia County measured 14 inches of snow.||After transitioning from rain to snow, the wet snow accumulated on trees. Prolonged power outages were common in the counties adjacent to the Ohio River. The coldest minimum temperatures was 8 below zero at New Lexington of Perry County. Waterloo of Lawrence County had 6 below zero, while Jackson had minus 3. Near the Ohio River readings were closer to zero degrees. Newport in Washington County was 2 below zero. ||Eventually, the Ohio River had minor flooding from Gallia County on down the river through Ironton on the 6th into the 7th. Overall, both the stream and river flooding mainly blocked roads with little damage to structures.
554518	ALBANY/ HOCKINGPORT	3/4/2015	Flood		$25,000	Several roads were closed by overflowing streams. This included portions of State Route 681 and 56.	Same episode narrative as event ID 554518
555502	ATHENS (ZONE)	3/6/2015	Cold/Wind Chill		$0		Same episode narrative as event ID 554518

559226	ATHENS	4/8/2015	Lightning		$4,000	Lightning struck a dwelling. The house filled with smoke.	Thunderstorms existed at dawn on the 8th in Indiana. With support for the mid and upper level winds, this mesoscale convective complex maintained its intensity through the morning. It raced southeast at 50 mph reaching southeast Ohio during the midday time frame. Most areas saw brief wind gusts of 40 to 45 mph and rains of a quarter to a half inch. A few areas saw stronger wind gusts.||After a lull, additional rounds of convection moved into southeast Ohio after sunset on the 8th. Minor flooding occurred in Washington County as a result of the overnight convection. Rain amounts of 1.5 to 2.5 inches occurred in 24 hours.||Distinct thunderstorm cells formed during the day on the 9th. On the southern edge of a larger complex, one storm that moved from Athens County through southern Washington County had significant mid level rotation. Yet, no evidence of a tornado was found. ||Widespread showers accompanied the cold frontal passage early on the 10th. Rain totals of 1 to 1.5 inches were reported that included both the afternoon convection on the 9th and the predawn showers on the 10th.||In the wake of the cold front, drier air finally moved into southeast Ohio during the daylight hours of the 10th.
560644	ALBANY	4/9/2015	Thunderstorm Wind	71	$20,000	The unofficial wind equipment at Alexander Elementary School measured a gust to 82 mph. Damage occurred to the ball fields.	Same episode narrative as event ID 559226
560645	ATHENS	4/9/2015	Hail	0.88	$0		Same episode narrative as event ID 559226
560646	ATHENS/ HEBBARDSVILLE	4/9/2015	Thunderstorm Wind	50	$25,000	Trees were blown down along Radford Road and in the University Heights Drive vicinity.	Same episode narrative as event ID 559226
560650	GROSVENOR	4/9/2015	Thunderstorm Wind	50	$25,000	Trees were blown down.	Same episode narrative as event ID 559226
560657	ALBANY	4/9/2015	Hail	0.75	$0		Same episode narrative as event ID 559226
560659	ALBANY	4/9/2015	Hail	1	$0		Same episode narrative as event ID 559226
565878	STEWART	5/11/2015	Thunderstorm Wind	39	$5,000	A small wooden ticket booth at a race track was blown over. Some of the affected trees had signs of decay. A roof was damaged.	Well in advance of a surface cold front, afternoon heating had temperatures in the mid and upper 80s. Dew points were in the mid 60s. Clusters of thunderstorms formed and moved through southeast Ohio during the afternoon and early evening.
566117	LOTTRIDGE	5/11/2015	Thunderstorm Wind	50	$1,000	Multiple trees were blown down along County Route 53.	Same episode narrative as event ID 565878
566118	SHADE	5/11/2015	Thunderstorm Wind	50	$1,000	Trees fell near the intersection of County Routes 75 and 25.	Same episode narrative as event ID 565878
572738	NELSONVILLE/ MINERAL	6/20/2015	Flash Flood		$10,000	Roads were flooded and closed, including State Route 356, 56, and 690. Rockcamp Creek flooded near Mineral. No dwellings were flooded.	The remnants of what was Tropical Storm Bill moved east, through northern Kentucky during the morning hours, reaching near Portsmouth during the mid afternoon hours.||Showers were more persistent from northern Vinton County and the Hocking River Valley on north. Lines of thunderstorms formed ahead of the low pressure center during the early afternoon and moved north. One brief tornado was confirmed in Washington County on the mesoscale comma head of one short convective line.||Rain totals of 1.5 to 2.5 were common over grounds that had become wet during the past week. Minor flash flooding occurred.
573124	ATHENS	6/23/2015	Thunderstorm Wind	50	$5,000	Trees were blown down.	Storms intensified in a narrow line during the afternoon. This was just ahead of a surface cold front.
575020	THE PLAINS	6/30/2015	Hail	0.88	$0		Thunderstorms formed in central Ohio in response to a disturbance in the winds aloft. As the thunderstorms moved southeast, a diffuse line formed. A few storms pulsed to stronger levels.

578710	JACKSONVILLE/ AMESVILLE	7/14/2015	Flash Flood		$25,000	Creeks flooded and closed roads, including Kasler Creek.	Showers and thunderstorms formed during the evening hours on the 12th. A weak low pressure was over southern Ohio. Minor flash flooding occurred in Jackson County.||After a lull in the rain during the morning into the early afternoon on the 13th, a mesoscale convective complex moved southeast through southern Ohio during the mid and late afternoon.||After another lull during the evening, more thunderstorms formed by late evening on the 13th in southeast Ohio. These moved southeast and caused repetitive showers. The heaviest rains were from Jackson County through Gallia County. The 24 hour rain maximum was from an automatic gauge near Rio Grande with 3.98 inches. Another gauge in Gallia County at Northup measured 3.23 inches. Two gauges around Jackson measured 2.68 and 2.03 inches of rain. The cooperative observer in Gallipolis measured 2.25 inches. Significant flash flooding occurred.||Finally, more thunderstorms formed in northern Ohio ahead of a cold front and mid level disturbance during the midday and early afternoon on the 14th. These storms formed into a squall line and moved southeast, through southern Ohio during the late afternoon. Rain amounts of a half inch to an inch in an hour were enough to cause minor flash flooding, since streams were running well above normal and soils were saturated. In less than 8 days, the rain total at both Waterloo and Gallipolis was around 6.1 inches. ||The last event from this multiple day episode was from the slow responding Symmes Creek in Lawrence County.
607217	ATHENS (ZONE)	1/8/2016	Winter Weather		$0		After a clear night, clouds increased during the predawn hours and light rain developed during the early morning. Pockets of freezing rain occurred at the onset, mainly in sheltered valleys. Several accidents occurred during the morning. For example, the Dunham Fire Department reported several accidents in Washington County. Also, accidents occurred along Route 16 near Beverly. ||As the rain continued temperatures rose above freezing in those colder pockets.
608980	ATHENS (ZONE)	1/22/2016	Heavy Snow		$0		A major storm spread snow north during Friday morning the 22nd. The snow reached Lawrence County around 1000E and then north of the Route 50 corridor by early afternoon. ||Southeast Ohio was on the western fringe of the heavier snow. ||The snow continued to fall through the night. The snow then diminished and ended Saturday morning the 23rd. ||Prior to this storm, a few places had a inch of old snow on the ground.||Snow accumulations of 7 to 10 inches were common near the Ohio River, with a few locations near 12 inches. Snow accumulations diminished into the 6 to 8 inch range further west, toward the towns of Jackson, Athens, and McConnelsville. Perry County was far enough northwest to miss out on the heavy snow, with only 2 to 4 inches of accumulation over 24 hours. ||The cooperative observer at Newport saw a 10 inch snow accumulation. Jackson and Gallipolis both had 7 inches of snow accumulate. Waterloo and South Point measured an 8 inch accumulation. The Scalia Lab at the Ohio University in Athens, and the emergency manager in McConnelsville reported around a 7 inch snow accumulation. A 7 inch accumulation also occurred near McArthur.||In the wake of the storm, the clearing sky and a fresh snow cover allowed temperatures to reach on either side of the zero mark for dawn on the 24th. The coldest reading was 6 below zero from Waterloo in Lawrence County.
610502	ATHENS (ZONE)	2/8/2016	Heavy Snow		$0		Ahead of a large mid and upper level trough, rain showers changed to snow showers during the evening of the 8th. Bands of snow showers were most persistent near the Route 50 corridor. The heaviest snow occurred on either side of dawn on the 9th, with temperatures in the 20s. ||By midday on the 9th, snow accumulations of 4 to 6 inches were common across Vinton, Athens, Perry, Morgan, Washington, and the northern half of Meigs. One unofficial report of 8 inches was received from northeast of Stewart in Athens County. Further south, snow accumulations of only 1 to 2 inches fell across Jackson, Gallia, and Lawrence Counties. ||As the air turned colder, occasional snow showers lingered into the 10th, but added little additional accumulation.

613585	ATHENS (ZONE)	3/1/2016	Strong Wind	37	$10,000		A strengthening low pressure system tracked east into northern Ohio and the Lake Erie vicinity by the early evening. Temperatures had peaked in the mid and upper 60s during the early and mid afternoon. The powerful cold front, associated with the storm system, streaked through between 1800E and 2100E. Wind gusts of 40 to 50 mph occurred with the showers associated with the front. The airport near Athens measured a gust to 43 mph. As colder air moved in, winds continued overnight, but gusts were not as strong.||A few trees fell causing power outages. Roughly 1,000 customers were without electricity.
617794	ATHENS (ZONE)	4/2/2016	Strong Wind	43	$25,000		A cold front whipped through during the evening with just light showers and some graupel. The front was associated with a strong flow aloft and falling temperatures. ||Wind gusts of 45 to 55 mph were common during the late afternoon into the evening.||There were no injuries. Minor damage and power outages occurred. Fallen trees, tree limbs, and blown debris partially blocked roads. A tall pine tree fell and smashed a car in Gallipolis. The most power outages were in Washington County where over 1800 customers were affected. Jackson County had nearly 900 customers affected, with around 600 without power in Athens and Meigs Counties.
622144	NELSONVILLE	4/28/2016	Hail	1	$5,000		An east to west front had lifted north into central Ohio during the day, but still just south of the Interstate 70 corridor. More clouds and cooler temperatures lingered north of the boundary. In southern Ohio, more sunshine allowed for warmer temperatures and increased instability during the afternoon. Temperatures had warmed to the mid 70s with dew points in the lower 60s. ||Thunderstorms formed during the mid afternoon and moved southeast. One long lived cell produced the largest hail in Athens County.
622145	BUCHTEL	4/28/2016	Hail	1	$0		Same episode narrative as event ID 622144
622146	BEAUMONT	4/28/2016	Hail	1.25	$0		Same episode narrative as event ID 622144
622147	BROADWELL	4/28/2016	Hail	2.5	$50,000	Hail as large as tennis balls fell. Vehicles were dented.	Same episode narrative as event ID 622144
633055	AMESVILLE	6/16/2016	Thunderstorm Wind	50	$2,000	Tree branches were blown down on North Franklin Street. They fell onto phone and power lines.	Low pressure was situated north of the region in the lower Great Lakes during the afternoon of June 16th. A warm front was draped from Lake Erie south and east through Maryland and the Delmarva Peninsula, with a well-developed warm sector in place to the south and west of this boundary. By the afternoon, surface temperatures had warmed into the low to mid 80s across southern Ohio and most of West Virginia. A moist and unstable air mass was in place, with surface dew points in the mid to upper 60s and nearly 3000j/kg of ML CAPE analyzed by RUC analysis. 500 mb flow was near 50 knots and a possible large-scale damaging wind event was expected. Thunderstorms developed in east-central Ohio near the I-70 corridor after 2pm and moved south and east over the Ohio Valley and into West Virginia. There was one report of wind damage in Ohio with these thunderstorms before the developing line moved into West Virginia.
633056	COOLVILLE STATION	6/16/2016	Thunderstorm Wind	50	$2,000	Several trees fell down in and around the city of Coolville. One tree was blown onto a transformer northeast of town.	Same episode narrative as event ID 633055
635987	PLEASANTON	7/15/2016	Thunderstorm Wind	50	$0	Trees were uprooted in a yard.	Thunderstorms formed ahead of a cold front moving through central Ohio during the peak heating of the afternoon. Mixing layer cape values across southeast Ohio were in the 1500j/kg range, with 20 to 30 knots of shear. Initially the cells were fairly discrete. The storms developed rapidly and some large hail was reported. They eventually formed a squall line, with pulses and bowing structures from time to time. The gust front out ran the convective line and it began to break apart during the mid to late evening just south of the Ohio River in West Virginia.
635988	VANDERHOOT	7/15/2016	Thunderstorm Wind	52	$0	A trained spotter estimated 60 mph winds as the storm passed.	Same episode narrative as event ID 635987

641330	ATHENS OHIO UNIV ARP	7/29/2016	Flash Flood		$1,000	High water from heavy rain washed out several culverts on Jisco West Road.	A weak complex of thunderstorms moved south and east from central Ohio into southeastern Ohio. Large precipitable water values were in place leading to extremely heavy rainfall rates in some of the thunderstorms. Light steering winds lead to slow storm motion. A few instances of minor flash flooding occurred in Jackson County as a result during the evening hours of the 29th and into the early morning hours of the 30th.
664830	ATHENS (ZONE)	1/5/2017	Winter Weather		$0		A clipper type system brought widespread snowfall to the middle Ohio River Valley on the 5th and 6th. Snow started on the morning of the 5th, and tapered off early on the 6th. Widespread light snow occurred throughout the event, with several bands of moderate snow. Total snow accumulations across southeast Ohio were around 3 inches. Many schools were dismissed early on the afternoon of the 5th as the snow started to accumulate.
673126	FLOODWOOD	3/1/2017	Thunderstorm Wind	50	$5,000	A large tree fell and took out several electric poles.	A strong cold front moved across the Ohio River Valley during the afternoon of March 1. Strong storms had developed near this cold front well to the west the day before, and raced through the middle Ohio River Valley early on the 1st as a severe squall line producing widespread damaging wind gusts. Heavy rainfall from training storms also produced flash flooding as 1-2 inches of rain fell over several hours. The flash flooding combined with the wet ground eventually lead to river and stream flooding during the afternoon of the 1st through the 2nd. ||The Muskingum river at Beverly, spilled over its banks on the evening of the 1st, and remained in flood stage for several hours. The river had a crest of 29.3 feet, just above the flood stage of 29 feet. This caused minor flooding of several homes, roads and lowlands next to the river.||The Hocking River at Athens rose out of its banks just after noon on the 2nd, and remained above flood stage through mid morning on the 3rd. The river crested at just over 21 feet, about a foot over flood stage of 20 feet. This resulted in minor flooding of lowlands and campgrounds along the river.||Other smaller creeks and streams, such as Duck Creek, the Little Muskingum, Raccoon Creek, Shade Creek and Symmes Creek all rose out of their banks. The Raccoon Creek was the last to return below bankfull, early on the 4th. According to the Ohio DOT, various roads were closed due to the flooding across Southeast Ohio.
673883	ATHENS OHIO UNIV ARP/ ALBANY	3/1/2017	Flash Flood		$2,000	Flash flooding occurred along portions of Rockcamp Creek, Mud Lick Run and Hewett Fork. This closed portions of SR 56, SR 356, and SR 691 due to the high water.	Same episode narrative as event ID 673126
673902	MINERAL/ EAST CLAYTON	3/1/2017	Flood		$2,000	Multiple roads were closed due to flooding on Sunday and Monday Creek, that lead to flooding along the Hocking River.	Same episode narrative as event ID 673126
678306	EAST CLAYTON/ BEAUMONT	3/31/2017	Flood		$8,000	Heavy rainfall caused flooding across northeastern Athens County. Multiple roads were closed due to high water, including routes 56, 356, 681, and 685.	A strong, slow moving storm system moved through the Ohio River Valley on March 31st. This brought widespread rainfall to the Middle Ohio River Valley. There was some training of storms, leading to localized rainfall amounts of around 2 inches. As creeks and streams rose, numerous roads were closed due to high water, with some flooding lingering into the morning of April 3. An apartment building was evacuated mid day on the 31st due to rising water in Allensville in Vinton County, however in the end, no damage was reported to the building. ||The West Fork of Duck Creek at Macksburg in Washington County, topped it banks late afternoon on March 31, cresting about half a foot above its bankfull level of 13 feet overnight, with the flooding coming to an end early morning on April 1. The river gauge on Monday Creek at Doanville in Athens County, rose above bankfull stage (16 feet) on the evening of March 31, crested that night just above 16 feet, and remained out of its banks until about noon on April 1. Raccoon Creek at Bolins Mills in Vinton County was out of its banks for several days. The creek rose above bankfull of 14 feet on the evening of the 31st, crested at about 16 feet late on the 1st, and remained above bankfull until early morning on the 3rd.

678445	EAST CLAYTON/ BEAUMONT	4/1/2017	Flood		$2,000	Heavy rainfall caused flooding across northeastern Athens County. Multiple roads were closed due to high water, including routes 56, 356, 681, and 685.	Following heavy rainfall on March 31, several creeks and streams remained above bankfull April 1st, and into the 3nd. The West Fork of Duck Creek at Macksburg in Washington County, Monday Creek at Doanville in Athens County, and Raccoon Creek at Bolins Mills in Vinton County were all out of their banks early on the 1st. Flooding lingered along Raccoon Creek into the early morning hours on the 3rd.||The Shade River at Chester in Meigs County briefly rose out of its banks as other streams began to drain. It topped bankfull (17 feet) early on the 1st, crested about half a foot above bankfull just after sunrise, and quickly returned to its banks by late morning.
696727	CARBONDALE/ NEW FLOODWOOD	6/23/2017	Flash Flood		$1,000	Hewett Fork flooded, causing closures on State Routes 56 and 356 south of Carbondale.	Tropical Storm Cindy made landfall in southwestern Louisiana on the 22nd. The storm weakened after making landfall and became post tropical as it moved through the Mississippi and lower Ohio River Valleys into the 23rd. At the same time, a strong cold front was moving eastward across the Midwest and western Great Lakes. The remnants of Cindy passed through the eastern portions of the Ohio River Basin during the evening of the 23rd. The tropical moisture and energy associated with the remnants combined with the lift of the approaching cold front to produce a large area of heavy rainfall. The area of the heaviest rain stretched along the Middle Ohio River Valley, from central and northeastern Kentucky into southeastern Ohio and western West Virginia.||Common rainfall measurements ranged from 2 to 3 inches across Southeast Ohio. For example, in Athens County the Nelsonville cooperative observer measured 2.6 inches of rain, while a CoCoRaHS observer in nearby Chauncey reported 2.8 inches. In Meigs County, the cooperative observer near Salem Center received 2.08 inches of rain, and the Newport observer in Washington County had 2.18 inches in their rain gauge. ||Initially, flash flooding closed many roads across Southeast Ohio. Some areas of high water lingering through the 24th as water drained through the river system. Strong rises were seen on local stream gauges such as the Duck Creek at Whipple and the Little Muskingum River at Bloomfield in Washington County. In general, the Ohio River rose about 10 feet, however no river flooding occurred along the Ohio River.
696730	CARBONDALE/ NEW FLOODWOOD	6/24/2017	Flood		$0	Following flash flooding along Hewett Fork, lingering high water kept State Routes 56 and 356 closed into the afternoon.	Tropical Storm Cindy made landfall in southwestern Louisiana on the 22nd. The storm weakened after making landfall and became post tropical as it moved through the Mississippi and lower Ohio River Valleys into the 23rd. At the same time, a strong cold front was moving eastward across the Midwest and western Great Lakes. The remnants of Cindy passed through the eastern portions of the Ohio River Basin during the evening of the 23rd. The tropical moisture and energy associated with the remnants combined with the lift of the approaching cold front to produce a large area of heavy rainfall. The area of the heaviest rain stretched along the Middle Ohio River Valley, from central and northeastern Kentucky into southeastern Ohio and western West Virginia.||Common rainfall measurements ranged from 2 to 3 inches across Southeast Ohio. For example, in Athens County the Nelsonville cooperative observer measured 2.6 inches of rain, while a CoCoRaHS observer in nearby Chauncey reported 2.8 inches. In Meigs County, the cooperative observer near Salem Center received 2.08 inches of rain, and the Newport observer in Washington County had 2.18 inches in their rain gauge. ||Initially, flash flooding closed many roads across Southeast Ohio. Some areas of high water lingering through the 24th as water drained through the river system. Strong rises were seen on local stream gauges such as the Duck Creek at Whipple and the Little Muskingum River at Bloomfield in Washington County. In general, the Ohio River rose about 10 feet, however no river flooding occurred along the Ohio River.
698728	ATHENS	7/7/2017	Thunderstorm Wind	50	$2,000	Numerous trees were blown down by thunderstorm winds in the city of Athens.	Showers and thunderstorms developed across Ohio and Indiana during the afternoon of the 7th. In a very unstable atmosphere, this activity strengthened through the afternoon, moving through the middle Ohio River Valley during the late afternoon and evening, producing damaging winds gusts and heavy rainfall.
699587	BEAUMONT	7/10/2017	Hail	1	$0	The hail lasted for about 5 minutes.	Showers and thunderstorms formed along a warm front lifting through the middle Ohio River Valley on the 10th. A turn in the low level winds along the front lead to rotating thunderstorms which produced large hail, heavy rain, damaging winds and one weak tornado.

699588	HOLLISTER/ JACKSONVILLE	7/10/2017	Thunderstorm Wind	74	$15,000	Wind damage consistent with a microburst caused tree damage near Jacksonville. The damage started near Taylor Ridge Road where several trees were uprooted. A section of roof from a single family home was removed. The microburst winds traveled southeast from there, through Jacksonville, were several trees were uprooted along Sunday Creek.	Same episode narrative as event ID 699587
699593	ANTHONY	7/10/2017	Thunderstorm Wind	50	$2,000	The survey team found several trees down in the area. This included along Sand Ridge Road, Mill School Road and Fossil Rock Road.	Same episode narrative as event ID 699587
703091	TRIMBLE	7/22/2017	Thunderstorm Wind	50	$2,000	Several trees were blown down in Jacksonville.	A warm front lifted across the middle Ohio River Valley on July 22nd. A wave of low pressure moved along the front during the afternoon, causing increased coverage of showers and thunderstorms. Some of these were strong to severe, and also contained heavy rainfall, with totals of 1 to 3 inches.
703104	COOLVILLE STATION	7/22/2017	Thunderstorm Wind	50	$2,000	A few trees were downed in Coolville.	Same episode narrative as event ID 703091
721667	HUNTERDON/ JACKSONVILLE	11/6/2017	Flash Flood		$10,000	Multiple roads across the northern and eastern parts of the county were covered with water as creeks and streams came out of their banks. Flooding occurred along Congress Run closing Congress Run Road. Greens Run flooded, closing State Route 685. State Routes 329 and 550 were closed near Amesville due to flooding on Federal Creek and Opossum Run. Flooding along Federal Creek, Two Mile Run and Rowell Run caused a closure on State Route 144.	In an unseasonably warm airmass, thunderstorms formed along a cold front moving into Ohio from the west on the afternoon of the 5th. These storms were aided by a strong upper level system, with fast flow above the surface. These storms gradually weakened as they moved into Southeastern Ohio during the late evening, however with the strong low level jet, some of the storms were still able to produce tree and power line damage.||As the cold front moved through that night, continued training of showers and storms resulted in 2.5 to 3.5 inches of rainfall. Up to an additional half inch of rain fell during the late morning and afternoon of the 6th. Flash flooding occurred during the predawn on the 6th. As that water drained through the system, areal flooding lingered into the early morning hours on the 9th.
721673	FROST	11/6/2017	Flash Flood		$2,000	Flooding along Jordan Run and Frost Run closed State Route 144 in both directions between US 50 and State Route 329 north of Coolville.	Same episode narrative as event ID 721667
721761	BEAUMONT/ SHARPSBURG	11/6/2017	Flood		$0	Many roads remained closed into the early afternoon due to high water following flash flooding earlier in the morning. This included sections of State Routes 144, 329 and 550.	Same episode narrative as event ID 721667

726782	ATHENS (ZONE)	12/29/2017	Winter Weather		$0		A low pressure system, and trailing cold front lead to a period of snow across the Middle Ohio River Valley on the 29th and 30th. Across most of southeast Ohio amounts over the 24 hour period totaled 2 to 4 inches. However, there was one stripe of higher snow amounts across Vinton, Athens, northern Meigs and southern Washington Counties where 3 to 5 inches fell. ||A trained spotter near McArthur in Vinton County measured 3.5 inches from snowfall overnight into the morning of the 30th. In Athens County, there were multiple CoCoRaHS reports of 4 to 5 inches, especially around the city of Athens. A social media report from northern Meigs County indicated 4.5 inches by the time the snow ended around noon on the 30th. In Washington County, a trained spotter near Marietta measured 4.5 inches of snow, while the cooperative observer in Newport got 4 inches.
726786	ATHENS (ZONE)	1/8/2018	Winter Weather		$0		A combination of snow, sleet and freezing rain created slippery travel conditions across portions of southeast Ohio on the morning of the 8th as an upper level disturbance pulled a stream of Gulf moisture north. This moisture moved over a very cold air mass, resulting in the wintry mix of precipitation. Multiple traffic accidents occurred due to icy roads. One resulted in a fatality, in Athens County a semi truck driver lost control and slid over a bridge falling onto the road below. The driver, a 56 year old man from Georgia, died in the accident.
727242	ATHENS (ZONE)	1/12/2018	Winter Storm		$0		A strong cold front moved through the middle Ohio River Valley on the 12th. Abundant Gulf moisture was in place, and as the cold air surged in behind the front, rain quickly changed to freezing rain and sleet through the early evening, and then finally became all snow by mid to late evening.||Many areas received a coating of ice from freezing rain, and then up to half an inch of sleet before changing over to snow. Widespread snow amounts of 3 to 5 inches fell during the overnight, with some localized spots getting 6 to 7 inches. The cooperative observer in Nelsonville got 4 inches, as did the observer in Gallipolis. In New Lexington, the cooperative observer received 6 inches, while the Ohio DOT reported some amounts as high as 7 inches in northwest Perry County.
729115	ATHENS (ZONE)	1/16/2018	Winter Weather		$0		A strong cold front and upper level disturbance crossed the middle Ohio River Valley from the 15th into the morning of the 16th. Light snow moved into Perry and Morgan Counties during the late afternoon of the 15th, while counties along the Ohio River generally started seeing snow around midnight. A fairly widespread 1 to 3 inches of snow fell, with the higher amounts along the Ohio River. The emergency manager for Lawrence County, measured 3 inches of snow in Ironton. Three inches were also measured by the Highway Department in Meigs County, with about 2.5 inches measured by the Jackson County Highway Department and the cooperative observer near Gallipolis in Gallia County. Many CoCoRaHS and cooperative observers measured 1 to 2 inches across Athens, Morgan, Perry, Vinton and Washington Counties.
729825	ALBANY	2/7/2018	Flood		$1,000	Flooding along Onion Creek and Rockcamp Creek closed a portion of State Route 681.	A low pressure system moved through the southern Ohio River Valley on the 6th, crossing the middle Ohio River Valley on the 7th. This system tapped into moisture from the Gulf of Mexico and brought a prolonged period of moderate to heavy rainfall. Many rain gauges across southeastern Ohio reported 24 hour rainfall amounts of 1.0 to 1.3 inches, resulting in minor flooding.
729826	CARBONDALE	2/7/2018	Flood		$1,000	State Route 56 was closed near mile marker one due to flooding along Hewett Fork and Trace Run.	Same episode narrative as event ID 729825
729887	ATHENS (ZONE)	2/6/2018	Winter Storm		$0		A strong low pressure system moved through the middle Ohio River Valley on the 7th. North and west of this low, surface temperatures remained at or below freezing. This resulted in a period of freezing rain, sleet and snow. Ice accretion of 0.25 to 0.3 inches occurred in a strip across Vinton, Athens, Perry and Morgan County. Scattered power outages occurred across Perry and Morgan counties where the widespread icing brought down trees and power lines. There was a sharp line between the freezing rain/sleet, and where it was all snow. The far northwestern corner of Perry County got several inches of snow instead of the ice. Closer to the

							Ohio River, generally a light coating up to 0.2 inches of ice was measured through mid morning, before temperatures rose above freezing.
732028	ATHENS (ZONE)	2/17/2018	Winter Weather		$0		A low pressure system moved through the central Appalachians on the 17th, driving a lot of low level moisture into the middle Ohio River Valley. While this system also pulled warmer air northward, it remained cold enough across southeastern Ohio for a period of snow during the early afternoon before changing over to rain by late afternoon. There was a narrow band that experienced a brief period of very heavy snow, with reports of 2 to 3 inches accumulating in an hour. This band was across portions of Jackson, Vinton, Athens, Meigs, and Washington Counties. Even across individual counties, snowfall accumulations varied drastically based on the location of the heaviest band. For example, in Meigs County, a member of the public measured just over 4 inches of snow near Tuppers Plains, while in Chester only 2 inches accumulated. In Washington County, 3 inches of snow was measured near Reno, with under an inch in Marietta. In Jackson County, the city of Jackson was hit hard where the cooperative observer measured 3 to 4 inches of snow in less than 2 hours, however the southern part of the county only got a couple inches.
734194	MINERAL/EAST CLAYTON	2/16/2018	Flood		$2,000	Numerous roads were closed across the county due to flooding. This included State Route 144 near mile marker 12, and State Route 329 between State Routes 144 and 550. State Route 13 was closed between Trimble and Glouster and State Routes 56 and 356 were both closed on the western end of the county.||Monday Creek at Doanville also flooded. The stream gage showed the creek going above bankfull level of 16 feet around sunrise on the 17th. It crested at 16.2 feet around 10 AM, and returned to its banks around 2 PM.	A wave of low pressure and a surface front crossed West Virginia, producing heavy rainfall on the 16th. Generally 1 to 2 inches of rain fell on already saturated soil. This resulted in creek and stream flooding on the 16th and into the 17th. As the rain drained through the river system, smaller main stem rivers flooded. This eventually led to flooding along the Ohio River.
734300	EAST CLAYTON/ BROADWELL	2/22/2018	Flood		$1,000	Multiple roads were closed due to flooding across the county. This included portions of State Routes 56, 356, 546 and 550.	An oscillating surface boundary with multiple waves of low pressure brought periods of moderate to heavy rainfall from the 22nd into the 25th. This caused another round of flooding on small creeks and streams across the middle Ohio River Valley, and eventually lead to minor flooding on the Ohio River.
734305	TORCH/ GUYSVILLE	2/24/2018	Flood		$1,000	Due to high water on the Ohio River, the Hocking River backed up and flooded a section of State Route 144.	Same episode narrative as event ID 734305
741933	ATHENS	4/3/2018	Hail	0.88	$0		A warm front lifted across the middle Ohio River Valley on the morning of the 3rd. This brought a round of showers and thunderstorms. Showers lingered across central and eastern Ohio through much of the day with the warm front in the vicinity. A strong cold front then pushed through in the evening with strong to severe thunderstorms. Periods of heavy rain, first with the warm front, and then again with the cold front led to flooding.
743056	LOTTRIDGE/ HOLLISTER	4/3/2018	Flash Flood		$1,000	State Route 329 was closed due to flooding in the Trimble Area. Also, near Torch, County Road 62 flooded due to water from the Little Hocking River.	Same episode narrative as event ID 741933

743073	CHAUNCEY/ GROSVENOR	4/4/2018	Flood		$5,000	The Hocking River flooded near Athens, with a crest around 22.5 feet, or half a foot above moderate flood stage, on the morning of the 5th. The river rose above flood stage just after noon on the 4th, and returned to within its banks during the predawn hours on the 6th. This caused flooding along East State Street in Athens.	Same episode narrative as event ID 741933
743237	NELSONVILLE/NEW FLOODWOOD	4/4/2018	Flood		$2,000	Several roads were flooded in Doanville, including Lang Road, Brady Road and Pancake Road due to high water on Monday Creek.||Monday Creek at Doanville rose above its bankfull level of 14 feet very early on the 4th. It crested at 16.3 feet, just above its 16 foot moderate stage that afternoon, and returned to its banks just before noon on the 5th.	Same episode narrative as event ID 741933
743246	CARBONDALE/ EAST CLAYTON	4/15/2018	Flood		$1,000	Flooding along Minkers Run caused high water on Kimberly Road.	A strong upper level system combined with a lot of low level moisture led to a period of heavy rainfall on the 15th into the 16th. One to two inches of rain fell across most of southeast Ohio, resulting in flooding.
743258	PRATTS FORK	4/17/2018	Flood		$2,000	For the second time in the month of April, the Ohio River flooded causing water to spill onto Addison Pike near Addison. The Point Pleasant, WV river gage showed the river rose above its 40 foot flood stage late afternoon of the 17th. It crested at just over 42 feet around noon on the 16th and then returned to below flood stage mid morning on the 19th.	Same episode narrative as event ID 743246
750023	NELSONVILLE	5/30/2018	Thunderstorm Wind	50	$2,000	A few trees were blown down near Nelsonville.	As subtropical storm Alberto moved into the Mississippi Valley, strong thunderstorms formed in the outer bands of the storm over the middle Ohio River Valley on the 30th. As the remnants moved towards the Great Lakes, additional showers and storms moved through on the 31st.
755255	MILLFIELD	6/17/2018	Thunderstorm Wind	50	$500	Several trees were blown down in Millfield.	In an unstable atmosphere, showers and thunderstorms developed during the heat of the afternoon on the 17th. A couple of these storms were strong enough to produce hail and isolated wind damage.
755256	CHAUNCEY	6/17/2018	Thunderstorm Wind	50	$4,000	Two trees were blown down in Chauncey, each bringing down electrical wires and blocking roads.	Same episode narrative as event ID 755255
755259	MILLFIELD	6/17/2018	Hail	0.75	$0		Same episode narrative as event ID 755255

755322	NELSONVILLE/ BEAUMONT	6/21/2018	Flood		$2,000	Multiple roads were closed across Athens County due to high water. This included State Routes 13 and 685 near Glouster, and State Route 690 near Amesville.||Monday Creek also flooded at Doanville, where the gage showed the creek spilled from its banks just before noon on the 22nd. The creek crested around 18.6 feet, or about 2.5 feet above its 16 foot bankfull level, late that night. It then returned to its banks by 4 PM on the 23rd.	As a front oscillated north and south across the middle Ohio River Valley, areas of repetitive, heavy rainfall led to flooding.
782527	KIMBERLY	10/28/2018	Tornado	EF0	$10,000	A very weak tornado touched down near Nelsonville, along Collison Road, where it lofted a trampoline into power lines and blew around some loose pieces of sheet metal. Additional damage occurred near the end of the path, along Kimberly Road. Here, several trees were uprooted or snapped, with one falling onto a house, penetrating the roof. The survey found all of the trees that fell were diseased or weakly rooted. Also in this area, a metal carport was tossed into the woods. The estimated maximum wind speed was 55 mph. A video of the tornado was taken near Collison Road, showing a rotating funnel above the ground, with the trampoline and sheet metal being picked up and thrown as it passed over.	A quick moving low pressure system moved through the Great Lakes on the 28th, driving a cold front through the middle Ohio River Valley. This front helped kick off thunderstorms, which combined with strong mid level winds led to strong thunderstorms with hail, strong wind gusts and one weak tornado.
782529	CANAANVILLE	10/28/2018	Thunderstorm Wind	50	$10,000	Part of the roof was blown off a house along Willow Creek Road.	Same episode narrative as event ID 782527
782531	COOLVILLE STATION	10/28/2018	Thunderstorm Wind	50	$1,000	Multiple trees were blown down near Coolville.	Same episode narrative as event ID 782527
791353	MINERAL/EAST CLAYTON	12/20/2018	Flood		$2,000	Several roads were closed across central Athens County due to flooding. This included State Route 681 along Rockcamp Creek near Albany, along with State Route 56 and 356 along Hewett Fork near Carbondale and Marshfield. Near Amesville, State Route 329 along Federal Creek, State Route 550 along McDougall Branch and State Route 690 along Mush Run were closed.	Several low pressure systems lifted through the Appalachians between the 20th and 24th. The strongest impacted the area on the 21st with moderate to heavy rain totaling 1.25 to 1.5 inches over 24 hours. This fell on already saturated ground, and quickly became runoff into local creeks and streams, pushing some into flooding. Additional rainfall on the 22nd, caused some waterways to surge out of their banks again. Eventually, this water worked its way into the Ohio River, with minor flooding in typical low spots along the river.

791427	PRATTS FORK/ VANDERHOOT	12/21/2018	Flood		$500	The Shade River near Chester rose above its 17 foot bankfull level shortly after midnight on the 21st. The gage showed the river cresting at 19.36 feet late that evening before returning to its banks around dawn the morning of the 22nd. This caused flooding on the Sugar Run Creek Bridge.	Same episode narrative as event ID 791427
797128	ATHENS OHIO UNIV ARP/ MINERAL	2/6/2019	Flood		$2,000	Several roads were closed due to high water. This included State Route 56 near Hewett Fork, State Route 144 near where Jordan Run meets the Hocking River, and County Route 19 near Albany where over a foot of water was flowing over the road due to flooding on Margaret Creek. State Route 681 was also flooded.||Monday Creek flooded near Doanville. The stream gage at Doanville showed the creek rose above its 16 foot bankfull level early on the 8th, and crested at 17 feet that evening. It returned to its banks around sunrise on the 9th.	Several waves of low pressure at the surface moved up the Ohio River Valley on the 6th and 7th. Rainfall amounts across Southeast Ohio through the period were 2 to 3 inches, with some localized amounts over 3 inches. This led to fairly widespread, but generally minor flooding on the 6th and 7th. As the water worked through the rivers, some river flooding also occurred from the 8th through the 10th, including the Hocking River, Muskingum River, and Ohio River.
797132	FLOODWOOD/G ROSVENOR	2/7/2019	Flood		$4,000	The Hocking River flooded near Athens. The river gage at Athens showed the river rose above its 20 foot flood stage late on the 7th. It crested just over 22 feet early on the 9th and returned to its banks late that evening. This caused flooding along State Street and the Blue Line bike path in Athens. Route 33 south of Nelsonville was beginning to flood near the roundabout.	Same episode narrative as event ID 797128
797222	FLOODWOOD/ CHAUNCEY	2/13/2019	Flood		$2,000	The Hocking River at Athens flooding, closing West State Street and the Blue Line bike path in Athens. County Road 4 also flooded.||The river gage at Athens showed the river rose above its 20 foot flood stage on the afternoon of the 13th. It crested at 21.1 feet during the predawn hours of the 14th, and returned to its banks that afternoon.	A low pressure system moved through the Ohio River Valley on the 12th and 13th, bringing a period of moderate to heavy rain to southeast Ohio. Generally 1 to 2 inches of rain fell on already saturated soils, which led to minor flooding in several areas. Local rivers were still running high from previous flooding, and this rainfall led to renewed flooding along the Muskingum and Hocking Rivers.

799855	ATHENS (ZONE)	2/24/2019	Strong Wind	45	$25,000		A warm front lifted northward into Ohio on the evening of the 23rd, promoting widespread showers and a few isolated thunderstorms due to the close proximity of an approaching cold front. Local reports of 1 to 1.5 inches of rain had fallen between the evening of the 23rd and the morning of the 24th.||Behind the cold front, very gusty winds developed with most areas seeing gusts of 40 to 50 knots. Combined with the soggy ground, these winds led to power outages due to downed trees and power lines. Thousands of power customers lost power, and it took a couple days for all service to be restored.
807409	NEW MARSHFIELD	4/14/2019	Thunderstorm Wind	50	$2,000	Several large pine trees were uprooted.	A very strong low pressure system moved from the lower Ohio River Valley to the Great Lakes on the 14th, pushing a cold front through late that evening. Ahead of the cold front, strong to severe thunderstorms developed, producing mainly scattered wind damage.
807411	ATHENS	4/14/2019	Thunderstorm Wind	50	$10,000	Multiple large limbs and a pine tree were snapped on the Ohio University campus. The outfield fence at the softball field was also blown down.	Same episode narrative as event ID 807409
807412	THE PLAINS	4/14/2019	Thunderstorm Wind	48	$500	A large limb was broken out of a tree. Nearby a mesonet station measured a 55 mph wind gusts.	Same episode narrative as event ID 807409
807413	ALBANY	4/14/2019	Thunderstorm Wind	50	$0	Measured on a personal weather station.	Same episode narrative as event ID 807409
807414	ATHENS OHIO UNIV ARP	4/14/2019	Thunderstorm Wind	53	$0	Measured at the Ohio University Airport (KUNI).	Same episode narrative as event ID 807409
				TOTALS	$475,500		

Storm Data Summary

Event Type	# Incidents Reported	# Incidents (separate by date)
Cold/Wind chill	4	4
Flash Flood	8	7
Flood	22	20
Hail	12	7
Heavy Snow	6	6
Lightning	1	1
Strong Wind	4	4
Thunderstorm Wind	27	13
Tornado	1	1
Winter Storm	2	2
Winter Weather	8	8

Appendix 10 – Athens County Repetitive Loss Property 2018

Athens County Repetitive Loss Property 2018

Community Name	Occupancy	Zone	Tot Building Payment	Total Contents Payment	Losses	Total Paid	Average Pay
Amesville, Village Of	OTHR-NONRES	AE	$21,100.00	$15,000.00	2	$36,100.00	$18,050.00
Amesville, Village Of	OTHR-NONRES	AE	$20,000.00	$10,000.00	2	$30,000.00	$15,000.00
Amesville, Village Of	SINGLE FMLY	A	$20,069.18	$0.00	2	$20,069.18	$10,034.59
Amesville, Village Of	SINGLE FMLY	AE	$59,430.04	$0.00	2	$59,430.04	$29,715.02
Amesville, Village Of	SINGLE FMLY	AE	$220,063.57	$47,221.84	3	$267,285.41	$89,095.14
Athens County*	SINGLE FMLY	A	$17,705.13	$3,423.20	3	$21,128.33	$7,042.78
Athens County*	SINGLE FMLY	A	$82,035.26	$14,829.96	5	$96,865.22	$19,373.04
Athens County*	SINGLE FMLY	AE	$49,471.04	$24,600.00	2	$74,071.04	$37,035.52
Athens County*	SINGLE FMLY	X	$24,815.12	$20,000.00	2	$44,815.12	$22,407.56
Athens County*	SINGLE FMLY	A	$60,556.17	$0.00	5	$60,556.17	$12,111.23
Athens County*	SINGLE FMLY	A	$36,715.18	$0.00	3	$36,715.18	$12,238.39
Athens County*	OTHR-NONRES	AE	$27,126.05	$9,654.05	3	$36,780.10	$12,260.03
Athens County*	SINGLE FMLY	X	$3,621.28	$0.00	2	$3,621.28	$1,810.64
Athens County*	SINGLE FMLY	X	$198,174.63	$53,872.15	2	$252,046.78	$126,023.39
Athens County*	OTHR-NONRES	X	$108,649.31	$11,651.17	18	$120,300.48	$6,683.36
Athens County*	SINGLE FMLY	A	$11,383.75	$7,000.00	2	$18,383.75	$9,191.88
Athens County*	SINGLE FMLY	A	$44,301.21	$10,500.00	2	$54,801.21	$27,400.61
Athens County*	SINGLE FMLY	AE	$60,492.31	$1,000.00	2	$61,492.31	$30,746.16
Athens County*	SINGLE FMLY	AE	$115,533.36	$0.00	2	$115,533.36	$57,766.68
Athens County*	SINGLE FMLY	AE	$19,112.06	$0.00	2	$19,112.06	$9,556.03
Athens County*	SINGLE FMLY	X	$3,734.86	$4,475.28	2	$8,210.14	$4,105.07
Athens County*	SINGLE FMLY	A	$15,991.67	$4,600.00	2	$20,591.67	$10,295.84
Buchtel, Village Of	SINGLE FMLY	C	$8,813.10	$0.00	2	$8,813.10	$4,406.55
Chauncey, Village Of	SINGLE FMLY	A12	$8,147.80	$1,192.50	2	$9,340.30	$4,670.15
Chauncey, Village Of	SINGLE FMLY	A12	$11,939.64	$0.00	4	$11,939.64	$2,984.91
Chauncey, Village Of	SINGLE FMLY	A12	$30,948.13	$22,627.88	4	$53,576.01	$13,394.00
Chauncey, Village Of	SINGLE FMLY	A12	$31,587.48	$0.00	3	$31,587.48	$10,529.16
Chauncey, Village Of	SINGLE FMLY	A12	$60,691.72	$0.00	3	$60,691.72	$20,230.57
Chauncey, Village Of	SINGLE FMLY	A12	$25,611.57	$7,902.37	2	$33,513.94	$16,756.97
Chauncey, Village Of	SINGLE FMLY	AE	$7,855.47	$0.00	3	$7,855.47	$2,618.49
Chauncey, Village Of	SINGLE FMLY	AE	$8,665.54	$0.00	3	$8,665.54	$2,888.51

Chauncey, Village Of	SINGLE FMLY	A12	$5,477.82	$0.00	3	$5,477.82	$1,825.94
Chauncey, Village Of	SINGLE FMLY	AE	$56,533.66	$8,424.61	4	$64,958.27	$16,239.57
Chauncey, Village Of	SINGLE FMLY	AE	$22,271.55	$16,764.82	4	$39,036.37	$9,759.09
Glouster, Village Of	SINGLE FMLY	X	$4,662.79	$18,336.88	2	$22,999.67	$11,499.84
Glouster, Village Of	SINGLE FMLY	A	$20,000.00	$0.00	2	$20,000.00	$10,000.00
Glouster, Village Of	OTHR-NONRES	AE	$42,619.47	$3,034.59	2	$45,654.06	$22,827.03
Glouster, Village Of	SINGLE FMLY	A	$6,463.45	$0.00	3	$6,463.45	$2,154.48
Glouster, Village Of	SINGLE FMLY	AE	$26,000.00	$3,175.51	2	$29,175.51	$14,587.76
Glouster, Village Of	SINGLE FMLY	EMG	$26,828.17	$2,644.87	2	$29,473.04	$14,736.52
Glouster, Village Of	OTHR-NONRES	AE	$11,997.17	$111.36	2	$12,108.53	$6,054.27
Jacksonville, Village Of	SINGLE FMLY	A	$32,300.00	$19,561.08	2	$51,861.08	$25,930.54
Jacksonville, Village Of	SINGLE FMLY	A	$10,049.30	$0.00	2	$10,049.30	$5,024.65
Nelsonville, City Of	SINGLE FMLY	AE	$4,755.30	$0.00	2	$4,755.30	$2,377.65
Nelsonville, City Of	SINGLE FMLY	A10	$11,575.77	$0.00	3	$11,575.77	$3,858.59
Nelsonville, City Of	SINGLE FMLY	A	$4,784.30	$0.00	2	$4,784.30	$2,392.15
Trimble, Village Of	SINGLE FMLY	A	$23,516.24	$0.00	2	$23,516.24	$11,758.12
Trimble, Village Of	OTHR-NONRES	X	$0.00	$58,545.06	3	$58,545.06	$19,515.02
Trimble, Village Of	OTHR-NONRES	X	$0.00	$31,901.16	2	$31,901.16	$15,950.58
Trimble, Village Of	OTHR-NONRES	X	$0.00	$26,470.53	2	$26,470.53	$13,235.27
Trimble, Village Of	SINGLE FMLY	A	$40,700.59	$0.00	5	$40,700.59	$8,140.12
Trimble, Village Of	OTHR-NONRES	A	$42,482.60	$37,500.00	2	$79,982.60	$39,991.30
Trimble, Village Of	SINGLE FMLY	A	$19,924.44	$0.00	2	$19,924.44	$9,962.22
Trimble, Village Of	SINGLE FMLY	A	$24,410.05	$0.00	2	$24,410.05	$12,205.03
Trimble, Village Of	SINGLE FMLY	A	$6,409.48	$0.00	2	$6,409.48	$3,204.74
Trimble, Village Of	SINGLE FMLY	A	$25,418.09	$8,600.00	3	$34,018.09	$11,339.36
Trimble, Village Of	SINGLE FMLY	A	$35,399.42	$3,977.50	2	$39,376.92	$19,688.46
Trimble, Village Of	SINGLE FMLY	A	$43,230.78	$5,000.00	2	$48,230.78	$24,115.39
Trimble, Village Of	SINGLE FMLY	A	$33,790.22	$9,060.57	3	$42,850.79	$14,283.60
Trimble, Village Of	SINGLE FMLY	A	$12,680.52	$4,400.00	2	$17,080.52	$8,540.26

Repetitive Loss Properties are those for which two or more losses of at $1,000.00 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978.

Severe Repetitive Loss Properties are residential properties that have at least four NFIP payments over $5,000.00 each and the cumulative amount of such claims exceeds $20,000, or at least two separate claim payments with the cumulative amount exceeding the market value of the building.

Rows highlighted in yellow indicate a severe repetitive loss property.

* : Unincorporated Athens County Areas

Appendix 11 – Athens County Recent Public Assistance Received

Athens County Recent Public Assistance Received

Grant 4360	February 14-25, 2018 flood
SDRP-0217	February/March 2017 flood
SDRPAth18	June 2018 flooding

Grant #	Applicant Name	Applicant FIPS	County	Proj Title	Proj Category	Fed Amt	State Amt	Waiver Amt
4360	Alexander Township (Athens)	009-01112-00	Athens	Alexander Township Roads	C	$4,804.58	$0.00	$0.00
4360	Alexander Township (Athens)	009-01112-00	Athens	Alexander Township Completed Roads	C	$0.00	$3,101.90	$3,101.90
4360	Alexander Township (Athens)	009-01112-00	Athens	Alexander Township Completed Roads	C	$18,611.41	$0.00	$0.00
4360	Ames Township (Athens)	009-01770-00	Athens			$0.00	$3,473.02	$3,473.02
4360	Ames Township (Athens)	009-01770-00	Athens	Ames Township (Howard Rd)	C	$75,000.00	$12,500.00	$12,500.00
4360	Ames Township (Athens)	009-01770-00	Athens	Ames Township (Henry Rd)	C	$4,457.02	$0.00	$0.00
4360	Ames Township (Athens)	009-01770-00	Athens	Ames Township - Henry Rd and Howard Rd	C	$5,611.54	$0.00	$0.00
4360	Ames Township (Athens)	009-01770-00	Athens	Ames Township - (Debris Removal Jurisdiction)	A	$10,769.53	$0.00	$0.00
4360	Athens County Engineer (Athens)	009-0480F-00	Athens			$686,096.61	$114,348.81	$114,349.42
4360	Athens County Engineer (Athens)	009-0480F-00	Athens			$303,864.33	$50,644.07	$50,644.02
4360	Athens County Engineer (Athens)	009-0480F-00	Athens	DR4360-OH Dutch Creek Large slips	C	$6,562.08	$1,093.68	$1,093.68
4360	Athens County Engineer (Athens)	009-0480F-00	Athens			$156,021.18	$26,003.54	$26,003.51
4360	Athens County Engineer (Athens)	009-0480F-00	Athens	DR4360-OH Rock Riffle Rd	C	$50,748.21	$0.00	$0.00
4360	Athens County Engineer (Athens)	009-0480F-00	Athens	Project 44113 DR4360-OH- Anthens County Antle	C	$35,191.72	$5,865.29	$5,865.28
4360	Athens County Engineer (Athens)	009-0480F-00	Athens	Project 44122 DR4360-OH- Athens Debris Remova	A	$4,414.28	$0.00	$0.00
4360	Athens Township (Athens)	009-02750-00	Athens			$64,670.63	$0.00	$0.00
4360	Bern Township (Athens)	009-05942-00	Athens	Bern Township Roads (Athens County)	C	$26,051.30	$0.00	$0.00
4360	Bern Township (Athens)	009-05942-00	Athens	Letchen Hill Road Base & Surface Erosion	C	$4,950.00	$825.00	$825.00
4360	Carthage Township (Athens)	009-12336-00	Athens	Carthage Township (Dog Hollow Rd and Roadside P)	C	$3,961.35	$0.00	$0.00
4360	City of Athens (Athens)	009-02736-00	Athens			$175,664.26	$23,867.70	$23,867.69
4360	City of Athens (Athens)	009-02736-00	Athens	Armitage Road Slip	C	$74,391.90	$0.00	$0.00

4360	City of Athens (Athens)	009-02736-00	Athens	City of Athens Fire Department - EPM	B	$5,825.38	$0.00	$0.00
4360	Lodi Township (Athens)	009-44590-00	Athens			$9,525.59	$1,587.60	$14,087.59
4360	Lodi Township (Athens)	009-44590-00	Athens	Project 44606 - DR4360-OH- Grim Rd Large Slip	C	$11,611.77	$1,935.30	$1,935.29
4360	Lodi Township (Athens)	009-44590-00	Athens	Project 44608 DR4360-OH- Carter Rd	C	$3,369.95	$561.66	$561.65
4360	Lodi Township (Athens)	009-44590-00	Athens	Project 44608 DR4360-OH- Carter Rd	C	$7,873.50	$1,312.25	$1,312.25
4360	Lodi Township (Athens)	009-44590-00	Athens	Project 44607 DR4360-OH- COE Z Right Rd Road	C	$37,500.00	$12,500.00	$0.00
4360	Lodi Township (Athens)	009-44590-00	Athens			$9,503.86	$0.00	$0.00
4360	Rome Township (Athens)	009-68238-00	Athens	DR4360-OH Project 45739 Road damages	C	$3,830.63	$0.00	$0.00
4360	Rome Township (Athens)	009-68238-00	Athens	DR4360-OH- Haga Ridge Rd and Red Bud Rd.	C	$0.00	$2,761.57	$2,761.57
4360	Rome Township (Athens)	009-68238-00	Athens	DR4360-OH- Haga Ridge Rd and Red Bud Rd.	C	$24,489.76	$0.00	$0.00
4360	Rome Township (Athens)	009-68238-00	Athens	DR4360-OH Project 45739 Road damages	C	$0.00	$7,134.22	$7,134.22
4360	Rome Township (Athens)	009-68238-00	Athens	DR4360-OH Project 45739 Road damages	C	$42,805.31	$0.00	$0.00
4360	Village of Glouster (Athens)	009-30674-00	Athens	Glouster Ballpark	G	$25,180.61	$0.00	$0.00
4360	Village of Trimble (Athens)	009-77406-00	Athens	Gravel Road Surface Erosion	C	$9,805.28	$0.00	$0.00
SDRP-0217	Athens County Engineer (Athens)	009-0480F-00	Athens			$0.00	$361,924.30	$0.00
SDRP-0217	Athens County Engineer (Athens)	009-0480F-00	Athens			$0.00	$32,705.29	$0.00
SDRP-0217	Athens County Engineer (Athens)	009-0480F-00	Athens			$0.00	$10,489.69	$0.00
SDRP-0217	Rome Township (Athens)	009-68238-00	Athens			$0.00	$5,302.86	$0.00
SDRP-0217	Rome Township (Athens)	009-68238-00	Athens	TR 230_Red Bud Rd	C	$0.00	$26,475.00	$0.00
SDRP-0217	Rome Township (Athens)	009-68238-00	Athens	TR 230_Red Bud Rd	C	$0.00	$3,892.50	$0.00
SDRPAth18	Rome Township (Athens)	009-68238-00	Athens			$0.00	$1,770.92	$0.00
SDRPAth18	Village of Glouster (Athens)	009-30674-00	Athens	West Main Street - Embankment Failure	C	$0.00	$10,058.81	$0.00
SDRPAth18	Village of Glouster (Athens)	009-30674-00	Athens	West Main Street - Embankment Failure	C	$0.00	$17,514.64	$0.00
SDRPAth18	Village of Glouster (Athens)	009-30674-00	Athens	West Main Street - Embankment Failure	C	$0.00	$2,407.88	$0.00

Appendix 12 – Athens County 2014 MJNHMP Action Items Table 2020 Status Update

Athens County 2014 Multi-Jurisdictional Natural Hazard Mitigation Plan Action Items Table 2020 Status Update							
Objective	**Activity/Task**	**Time Frame**	**Time/Cost**	**Funding Source**	**Responsible Party**	**Priority**	**2020 Status Notes**
Goal 1: Facilitate and coordinate solutions to multi-jurisdictional issues that involve government, citizens, stakeholders, and policy-makers at all levels.							Revised in 2020 Plan Copied to 2020 Plan Complete Deleted
1. Efforts will be made to provide information about natural hazards and risk reduction to 100% of the citizens that may be affected.	1a. Coordinate a seasonal hazard awareness campaign. Develop brochures and radio/TV spots. Brochures will be designed with checklists (all hazards and all buildings/infrastructure)	01/01/2015 - 12/31/2019	160 hrs.	In-kind	County EMA and Mitigation Committee	Medium	2020 Action Item 1.1.1
	2. Prepare a county-scale GIS wildfire risk map. OU intern based on any existing maps from ODNR or WNF.	01/01/2015 - 12/31/2015	80 hrs.	In-kind	County EMA and County RPC	Medium	2020 Action Item 1.1.2
	3. The NHMC shall provide a comprehensive packet of information to each mayor and village council member.	01/01/2015 - 12/31/2015	80 hrs.	In-kind	County RPC and mitigation committee	Low	2020 Action Item 1.1.3
	4. Provide landslip hazard risk maps on the County GIS page. Provide the wildfire risk map when it is available.	01/01/2016 - 12/31/2016	8 hrs.	In-kind	County GIS and County RPC	High	2020 Action Item 1.1.4
	5. Create a High Road Map for the county that will show evacuation routes and roads affected by the 100-year flood as well as flash floods.	09/02/2014 - 06/30/2015	80 hours, in-kind from GIS and Planning	In-kind	County GIS and County RPC	High	2020 Action Item 1.1.5

2. Establish methods to coordinate information sharing with municipalities, townships, Ohio University, Hocking College, the business community, and other organizations.	1. Form a natural hazard mitigation committee to implement the Plan.	01/01/2014 - 12/31/2019	180 hrs. of RPC staff time in committee meetings over a 5 year period	In-kind	Mitigation Committee and County RPC	High	2020 Action Item 1.2.1
	2. Coordinate emergency equipment availability and needs	10/01/2015 - 12/31/2015 10/01/2016 - 12/31/2016 10/01/2017 - 12/31/2017 10/01/2018 - 12/31/2018	80 hrs. maintenance	In-kind	County EMA	High	2020 Action Item 2.1.5
	3. Coordinate with Corps of Engineers on Tom Jenkins dam water releases during high water periods.	01/01/2014 - 12/31/2019	8 hrs.	In-kind	County EMA	Low	2020 Action Item 1.2.4
	4. Investigate the impacts on Hocking River flooding should the dam at Lake Logan fail.	Complete	16 hours	In-kind	County RPC	Medium	Complete
	5. Improve communications with utilities by holding four meetings in the first two years and annually thereafter.	01/01/2015 - 12/31/2015 01/01/2016 - 3/30/2016 01/01/2017 - 3/30/2017 01/01/2018 - 03/30/2018 01/01/2019 - 03/30/2019	6 employees @ 24 hrs. each/total of 144 hrs.	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, County EMA & 911	Medium	2020 Action Item 1.2.3
	6. Establish cooperation on Level 3 emergencies.	Complete	4 employees @ 4 hrs. each/total of 16 hrs.	In-kind	County Prosecutor, County Engineer, and County Sheriff	Low	Complete
	7. Review emergency preparedness systems for large assemblies of people trapped by a natural disaster.	07/01/2015 - 12/31/2019	40 hrs.	In-kind	Mayors, County EMA & 911, County Health Dept.	High	
	8. Improve communications with the business community by convening a meeting of business officials to discuss emergency preparedness.	01/01/2015 - 12/31/2015	20 hrs.	In-kind	RPC, Natural Hazard Mitigation Committee, EMA	Low	2020 Action Plan 1.2.1

	9. Ensure that an after-action report is presented to all interested parties whenever the EOC is activated.	01/01/2015 - 12/31/2015	16 hrs.	In-kind	Mitigation Committee	Low	2020 Action Item 1.2.7
Goal 2: Minimize human, economic, and environmental disruption from natural hazards.							
1. Improve the County's ability to notify every citizen of an impending natural hazard and to improve citizen safety during and after a hazard event.	1. Implement a barrier/sign program to designate high water roads prior to a flood event.	01/01/2015 - 12/31/2019	32 hrs. + sign costs of $2000	FMA	Mitigation Committee, County Engineer, Township Trustees, Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, and County RPC	High	
	2. Produce evacuation route mapping with GIS, utilizing Red Cross' evacuation routes, LIDAR, and include modifications on the County map.	Moved to Goal 1, High Road Map					2020 Action Item 1.1.5
	3. Implement a siren warning system to notify public of impending natural hazard events.	01/01/2014 - 12/31/2019	40 hrs.	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens , County EMA, and County Mitigation Committee	High	2020 Action Item 2.1.5
	4. Use wide area rapid notification and an information hotline.	01/01/2014 - 12/31/2019	Continuous	In-kind	County 911	High	
	5. Utilize GIS to create a vulnerable population database.		40 hrs./yr. maintenance	In-kind	County EMA and 911	High	Completed by Buckeye Hills included in 2020 Plan Update
	6a. Determine whether an emergency preparedness plan for flash flood areas is needed.	01/01/2015 - 06/30/2015	20 hrs.	In-kind	Mitigation Committee and County RPC	High	2020 Action Item 2.1.7

	6b. Prepare a flash flood emergency plan if deemed necessary	07/31/2015 - 12/31/2015	40 hrs. Committee and 40 hrs. RPC	FMA	Mitigation Committee and County RPC	High	2020 Action Item 2.1.8
	7a. Promote weather radios as the preferred advance warning system in Athens County. The NHMP should seek grant funding and establish priorities for weather radio placement.	01/01/2014 - 06/30/2015	80 hrs.	PDM, In-kind	Mitigation Committee	High	Action Plan 2020 2.1.1
	7b. Conduct PSAs via radio for various natural hazards such as cold weather and flash floods.	01/01/2014 - 12/31/2019	8 hrs.	In-kind	Mitigation Committee and County RPC	High	2020 Action Item 1.1.1
2. Utilize data gathered during the mitigation planning process to develop a mitigation project for submittal to OEMA.	1. Research eligible projects. Mitigation efforts are needed in the communities of Buchtel, Chauncey, Glouster, Jacksonville, and Nelsonville where residents and property are at risk from the flood hazard. Elevation and/or buy-out programs will be researched and proposed for those considered competitive.	01/01/2014 - 12/31/2019	40 hrs. consultant and 20 hrs. RPC	In-Kind, FEMA grant programs	Consultant, Mitigation Committee and County RPC	Medium	2020 Action Item 2.2.1
	2. Mitigate repetitive loss properties in the floodplain.	12/01/2014 - 12/31/2019	100 hrs. consultant and 20 hrs. RPC	Hazard Mitigation Grant Program (HMGP)	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor or Code Enforcement - City of Nelsonville, Mayor or City Planner - City of Athens, County Planner or EMA Director - Athens County	High	2020 Action Item 2.2.2
3. Maintain the flow-carrying capacity of drainage systems.	1. Explore creative solutions for stormwater detention.	01/01/2014 - 12/31/2019	20 hrs. SWCD and 20 hrs. County RPC	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, County RPC and County SWCD	Low	2020 Action Item 2.3.1

	2. Investigate the possibility of limiting Letters of Map Revision.	01/01/2015 - 03/31/2015	20 hrs.	In-kind	Mitigation Committee and County RPC	Low	
	3. Encourage solid waste enforcement staff to focus on and disseminate information about areas where illegal waste dumping poses the most threat.	04/01/2015 - 09/31/2015	20 hrs.	In-kind	Mitigation Committee and County RPC	High	2020 Action Item 2.3.3
Goal 3: Educate and encourage property owners to take action to decrease their vulnerability to the impacts of natural hazards.							
1. Seek community involvement in hazard mitigation activities and planning.	1. Seek a grant to obtain a PowerPoint projector	01/01/2015 - 12/31/2016	40 hrs.	PDM	County RPC	Medium	
	2. Conduct a minimum of ten PowerPoint presentations about natural hazard mitigation activities to interested groups in the County.	01/01/2015 - 12/31/2016	40 hrs.	In-kind	County RPC	Medium	2020 Action Item 2.4.1
	3. Ask interested community members to research likely global warming impacts related to hazard risk on Athens County.	08/15/2015 - 06/30/2015	40 hrs.	Volunteer	County RPC	Medium	
	4. Research man-made natural hazards and how to mitigate such events.	01/01/2015 - 12/31/2019	80 hrs.	Volunteer	County RPC	Medium	
	5. Ask interested community members to provide actions that can be taken by citizens to increase food security.	01/01/2014 - 12/31/2019				Low	
	6. Establish public-private partnerships with governments, businesses, community service agencies, and residents.	01/01/2014 - 12/31/2019	100 hrs.	In-kind	Mitigation Committee	High	2020 Action Item 2.4.3
Goal 4: Improve the disaster resistance of existing buildings, structures, critical facilities, as well as infrastructure whether new construction, expansion, or renovation.							

1. Improve the ability to offer services that were hampered by a natural hazard event.	1. Explore the viability of creating temporary emergency services outside the hazard event area. Pick a heliport location and locate routes to a hospital.	04/01/2015 - 09/31/2015	20 hrs. Committee and 20 hrs. Red Cross	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, Mitigation Committee, and Red Cross	Medium	2020 Action Item 3.1.1
	2. Explore alternate ice/snow control systems.	01/01/2015 - 12/31/2017	16 hrs.	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, County Engineer and Mitigation Committee	Low	Complete. Curent system was updated since 2014 and functions well.
	3. Analyze replacement costs for high priority, critical facilities in the floodplain	01/01/2015 - 12/31/2019	8 hrs.	FMA	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, and County RPC	Medium	2020 Action Item 3.1.3
	4. Assess what services would be impacted, including education, by long-term sheltering needs.	01/01/2015 - 12/31/2019	16 hrs.	In-kind	Mitigation Committee and Red Cross	Medium	2020 Action Item 3.3.2

2. Identify and protect historic resources in hazard zones.	1. Define what historic resources will be included.	01/01/2015 - 12/31/2015	8 hrs.	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, and County RPC	Medium	2020 Action Item 3.2.1
	2. Use GIS to map the historic resources.	01/01/2016 - 12/31/2016	8 hrs.	PDM	County RPC, possibly a consultant	Medium	2020 Action Item 3.2.2
	3. Devise a mitigation plan to protect the resources.	01/01/2017 - 12/31/2019	80 hrs.	PDM	Mitigation Committee and County RPC, possibly a consultant	Low	2020 Action Item 3.2.3
3. Design the built and landscaped environment to minimize loss or damage from natural hazards.	1a. Hold a meeting with design professionals to encourage safe-room design in new homes and to encourage high-wind-resistant siting, retrofitting, and construction for homes.	01/01/2016 - 06/30/2016	16 hrs.	In-kind	Mitigation Committee	Low	2020 Action Item 3.3.1
	1b. Provide an information packet to design professionals.	01/01/2016 - 06/30/2016	12 hrs.EMA and 12 hrs. County RPC	In-kind or Flood Mitigation Assistance (FMA)	County EMA and County RPC	Low	
	2. Update the Homebuyers/Builder's Guide produced by the Athens County Soil and Water Conservation District.	01/01/2014 - 06/30/2014	40 hrs. SWCD and 40 hrs. County RPC	In-kind	Athens County SWCD and County RPC	Low	2020 Action Item 3.3.2
	3. Provide hazard mapping to utility companies at one of the annual meetings to keep them apprised of the most current data.	01/01/2015 - 12/31/2019	8 hrs.	In-kind	Mitigation Committee	Medium	
	4. Organize a seminar about landscaping and hazard risk reduction for fire, wind, and flood hazards.	07/01/2015 - 12/31/2019	80 hrs.	In-kind	Mitigation Committee	Medium	2020 Action Item 3.3.1

Goal 5: Encourage hazard mitigation planning and incorporate that planning into other related plans.							
1. Review and coordinate processes and regulations pertaining to natural hazard planning and risk reduction.	1. Consider adoption of the "higher standards" for floodplain regulations.	01/01/2015 - 12/31/2015	80 hrs.	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor - City of Nelsonville, Mayor - City of Athens, and County RPC	Low	
	2. Review subdivision regulations to ensure compliance with natural hazard mitigation principles.	01/01/2015 - 12/31/2019	20 hrs.	In-kind	Mayor - Village of Amesville, Mayor - Village of Buchtel, Mayor - Village of Chauncey, Mayor - Village of Coolville, Mayor - Village of Glouster, Mayor - Village of Jacksonville, Mayor - Village of Trimble, Mayor or Code Enforcement - City of Nelsonville, Mayor - City of Athens, and County RPC	Low	2020 Action Item 4.1.1
	3. Investigate applying for participation with the Community Rating System (CRS) and "Storm Ready" programs.	01/01/2015 - 12/31/2015	20 hrs.	In-kind	Mitigation Committee and County RPC	Low	2020 Action Item 4.1.2
	4. Review Emergency Operations Plan to ensure compliance with natural hazard mitigation principles.	09/01/2015 - 12/31/2015 09/01/2016 - 12/31/2016 09/01/2017 - 12/31/2017 09/01/2018 - 12/31/2018 09/01/2019 - 12/31/2019	40 hrs.	In-kind	County EMA	High	2020 Action Item 4.1.3
	5. Conduct an annual meeting for floodplain managers.	01/01/2015 - 03/31/2015 01/01/2016 - 03/31/2016 01/01/2017 - 03/31/2017 01/01/2018 - 03/31/2018 01/01/2019 - 03/31/2019	60 hrs.	In-kind	County RPC	High	2020 Action Item 4.1.4

	6. Share information on a website about what other communities in Athens County do to reduce hazard risk.	01/01/2014 - 12/31/2019	20 hrs.	In-kind	Mitigation Committee and County RPC	Medium	2020 Action Item 4.1.5
	7. Production of a structure and value lists and map floodplain and "at-risk" properties in the villages of Chauncey, Glouster, and Jacksonville.	01/01/2016 - 12/31/2016	GIS Intern supervised by RPC	PDM grant	County GIS, County EMA, and County RPC	High	2020 Action Item 4.1.6
	8. Apply for Pre-Disaster Mitigation Funding to update this Plan.	07/31/2016 - 12/31/2019	6 months	PDM grant	County RPC, Mitigation Committee, potentially a hired consultant	High	2020 Action Item 4.1.8

Appendix 13 – Resolutions

VILLAGE OF ALBANY, STATE OF OHIO
RESOLUTION 2019-42

LIBRARY CHAPTER 11
DATE OF MOTION: 10/16/19 BY: Debbie Andrews SECOND BY: Neal Reynolds

A RESOLUTION TO ADOPT THE ATHENS COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN 2019.

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the Village of Albany, Ohio, hereinafter "municipality", is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2014; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multijurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the Mayor or his/her designee to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan; and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW THEREFORE, BE IT RESOLVED BY COUNCIL OF THE VILLAGE OF ALBANY, STATE OF OHIO:

SECTION 1: That the Village of Albany formally adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

SECTION 2. This legislation is hereby determined to be an emergency measure necessary for the preservation of the public health, safety, morals, and general welfare; wherefore, provided this legislation receives the affirmative vote of two-thirds of the members of Council elected or appointed, it shall take effect immediately upon its passage and execution by the Mayor.

(SUSPEND 3 READINGS) yes **(PASS AS EMERGENCY)** yes

DATE OF MOTION: 10/16/2019 MOTION BY: Margaret Dennis
SECOND BY: Neil Reynolds
Yeas: 6 Nays: 0 Abstain: 0

JOURNAL:

FIRST READING: 10/16/2019 Yeas: 6 Nays: 0 Abstain: 0

Page 1 of 2

VILLAGE OF ALBANY, STATE OF OHIO
RESOLUTION 2019-42

ATTEST:

THIS LEGISLATION WAS ADOPTED AS TO FORM ON: October 17 20 19

Diana Warner, Fiscal Officer

Neal Reynolds, President Pro Tempore

APPROVED: Tim Kirkendall, Mayor

October 17, 2019
ENACTED: Effective Date

CERTIFICATE OF PUBLICATION

I, the undersigned, Clerk of Council for the Village of Albany, State of Ohio, do hereby certify that the foregoing Legislation was duly published by posting the same in the following locations and for the following periods of time within the Village of Albany, Athens County, State of Ohio:

POSTING PERIOD: 10-22-19 **to** 11-15-2019

PUBLIC POSTING LOCATIONS:

1. Albany Post Office
2. Albany Library
3. Albany Laundromat
4. Albany Community Center
5. Dettwiller Hardware

Fiscal Officer – Clerk

Page 2 of 2

RESOLUTION No 19-19

A RESOLUTION to approve the Athens County Hazard Mitigation Plan to be submitted to FEMA for all Athens County jurisdictions.

First reading:	7-10-19
Second reading	8-14-19
Third reading	10-09-19

BE IT RESOLLVED BY THE COUNCIL OF THE VILLAGE OF AMESVILLE, STATE OF OHIO:

To approve the Athens County Hazard Mitigation Plan to be submitted to FEMA for all Athens County jurisdictions.

Adopted: 10-09-19

Adopted by Council of the Village of Amesville this 9th day of October, 2019 with a roll call vote as follows: Jayne Darling – aye, Robin Dewey - aye, Larry Kamody – aye, Barb Klaer - aye, and Shelley Stark - aye.

This Resolution:

(X) shall take effect at the earliest time permitted by law

( ) is declared an emergency and shall take effect immediately due to *.

Attested:

Mayor Gary Goosman
Council

Andrea Matthews, Clerk of Village

CERTIFICATE

I hereby certify that a succinct summary of the foregoing resolution was published in the official newsletter of the Village of Amesville, and posted at the Village office, Unified Bank, Amesville Post Office, Amesville Elementary School Valley Cafe and Coonskin Crossing.

Andrea Matthews, Clerk of Village Council

Ordinance No. 0-100-19 *Passed* October 21 2019

1st 9/16

2nd 10/7

Introduced by Kent Butler, Chair
City & Safety Services Committee

AN ORDINANCE ADOPTING THE ATHENS COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN FOR THE CITY OF ATHENS.

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the City of Athens, Ohio hereinafter referred to as "municipality," is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazard Mitigation Plan for our municipality, pursuant to Ordinance 78-15; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-Jurisdictional Natural Hazard Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the Mayor or his designee to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan; and

WHEREAS, our municipality is a member in good standing with the Athens County Regional Planning Commission;

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF ATHENS, ATHENS COUNTY, OHIO:

SECTION I: The City of Athens hereby adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan.

SECTION II: This Ordinance shall be in full force and effect at the earliest moment permitted by law upon its passage and approval by the Mayor.

Christopher B. Kimsey
President of Council

ATTEST:
Clerk of Council

APPROVED:
Mayor

Athens County Commissioners

Charlie Adkins
cadkins@athensoh.org
Chris Chmiel
cchmiel@athensoh.org
Lenny Eliason, MPA
leliason@athensoh.org

15 South Court St.
Athens, Ohio 45701
(740) 592-3219
Visit us at our website:
co.athensoh.org

JoAnn Rockhold
Clerk/Admin. Assistant
jsikorski@athensoh.org
Telephone (740) 592-3292
Fax (740) 594-8010

Resolution

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, Athens County, Ohio hereinafter "municipality" is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2014; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the Athens County Regional Planning Director to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan, and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW THEREFORE, BE IT RESOLVED by the Athens County Board of Commissioners formally adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

ADOPTED this 23rd day of December, 2019.

Lenny Eliason, Board President Athens County Commissioners

County Clerk

Resolution

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the Village of Buchtel, Ohio hereinafter "municipality" is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2006; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing a person to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan, and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW THEREFORE, BE IT RESOLVED by Council that the (village/city/county) of BUCHTEL formally adopts the

Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

ADOPTED this 1ST day of AUGUST, 2019.

(Mayor)

Clerk of Council

VILLAGE OF CHAUNCEY, OHIO
RESOLUTION NO. 2019-8

A RESOLUTION ADOPTING THE ATHENS COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN AND DECLARING AN EMERGENCY

WHEREAS, THE VILLAGE OF CHAUNCEY BELIEVES AND AGREES THAT IT IS BENEFICIAL TO LOCAL COMMUNITIES TO DETERMINE THE THREATS POSED BY VARIOUS NATURAL HAZARDS AND TO PLAN FOR WAYS TO REDUCE THE IMPACTS OF SUCH THREATS; AND,

WHEREAS, THE VILLAGE IS REQUIRED TO HAVE A NATURAL HAZARD MITIGATION PLAN TO BE ELIGIBLE TO RECEIVE FEDERAL EMERGENCY FUNDING IN THE EVENT OF A PRESIDENTIALLY DECLARED DISASTER; AND

WHEREAS, THE EXISTING NATURAL HAZARD MITIGATION PLAN FOR THE VILLAGE EXPIRES IN 2019; AND

WHEREAS, THE ATHENS COUNTY REGIONAL PLANNING COMMISSION PREPARED THE EXISTING NATURAL HAZARDS MITIGATION PLAN FOR THE VILLAGE IN 2014; AND

WHEREAS, THE ATHENS COUNTY REGIONAL PLANNING COMMISSION IS PREPARED TO DEVELOP A MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN THAT WILL APPLY TO ALL MUNICIPALITIES WITHIN ATHENS COUNTY; AND

WHEREAS, THE VILLAGE WILL PARTICIPATE WITH THE PLAN BY APPOINTING THE MAYOR OF THE VILLAGE (OR DESIGNEE) TO REPRESENT THE VILLAGE ON THE REGIONAL PLANNING

COMMISSION AND TO PROVIDE INFORMATION CONCERNING THE VILLAGE TO BE INCLUDED IN THE PLAN; AND

WHEREAS, THE VILLAGE IS IN GOOD STANDING WITH THE ATHENS COUNTY REGIONAL PLANNING COMMISSION;

NOW THEREFORE, BE IT RESOLVED by the Council of the Village of Chauncey, State of Ohio, as follows:

Section One: The Athens County Multi-jurisdictional Natural Hazard Mitigation Plan is hereby adopted and approved as applicable to the Village.

Section Two: This Resolution is an emergency measure necessary for the proper, efficient and safe operation of Village administration through the provision of hazard mitigation services to the Village as set forth in the Plan adopted herein and for on-going matters related to and being necessary for the protection of Village residents' health, safety and welfare, consequently this Resolution shall take effect immediately upon passage.

RESOLVED this 15th day of October, 2019.

John Canter
Council President

ATTEST:
Leslie Nicholson
Village Fiscal Officer

APPROVED AS TO FORM:
Robert J. Shostak, Esq.
Solicitor

APPROVED:
Robert Mattey
Mayor

First Reading: October 15, 2019

Second Reading: not required for emergency resolution on suspension of Rules

CERTIFICATION OF VILLAGE FISCAL OFFICER AS TO POSTING OF RESOLUTION

The foregoing is a true copy of the original Resolution No. 2019-8___.

Publication of this Resolution was made by posting a copy of the same in the following five locations within the Village, beginning on November 22, 2019, and concluding on December 7, 2019 (at least 15 days later):

Location	Date Posted
Village Hall	11/22/19
Chauncey Post Office	11/22/19
Chauncey Food Mart	11/22/19
Cee Dee's	11/22/19
Chauncey Library	11/22/19

ATTEST:

Date:

Leslie Nicholson
Village Fiscal Officer

Resolution

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the Village of Coolville, Ohio hereinafter "municipality" is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2014; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the Mayor or his/her designee to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan, and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW THEREFORE, BE IT RESOLVED by Council that the Village of Coolville formally adopts the

Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

ADOPTED this 9 day of October, 2019.

(Mayor)

Clerk of Council

Resolution

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the Village of Glouster, Ohio hereinafter "municipality" is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2014; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the Mayor or his designee to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan, and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW THEREFORE, BE IT RESOLVED by Council that the Village of Glouster formally adopts the

Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

ADOPTED this 5 day of August, 2019.

(Mayor)

Jan Browning
Clerk of Council

Resolution 2019-12

RESOLUTION ADOPTING THE ATHENS COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN, AND DECLARING AN EMERGENCY

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the Village of Jacksonville, Ohio, is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our Village expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazard Mitigation Plan for our Village in 2014;

WHEREAS, the Athens county Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our Village is prepared to participate with this Plan by appointing the Mayor or the Mayor's designee to represent our Village on the Planning Committee and to provide information about our Village for the Plan; and

WHEREAS, our Village is a member in good standing of the Athens County Regional Planning Commission; and

WHEREAS, this Resolution is being passed as an emergency measure because the immediate passage of the Resolution is necessary to protect the Village from natural disasters.

NOW, THEREFORE, BE IT RESOLVED by Council that the Village of Jacksonville formally adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

Duly enacted under suspension of the rules this 22nd day of August, 2019.

VILLAGE OF JACKSONVILLE

By: _____
Mayor

By: _____
President of Council

ATTEST/SEAL:

Heather Rockwell
Fiscal Officer

CERTIFICATION OF FISCAL OFFICER

The foregoing is a true copy of the original Ordinance No. 2019-12.

Publication of this Resolution was made by posting a copy of the same in the following five locations within the Village, beginning on August 23rd, 2019, and concluding on Sept. 9, 2019 (at least 15 days later):

- Post Office
- Eagles Club
- VFW
- Town Hall
- Corner Pizza

ATTEST:

DATE: Aug. 22, 2019

Heather Rockwell
Village Fiscal Officer

CERTIFICATION

I, Heather Rockwell, Fiscal Officer for the Village of Jacksonville, Athens County, Ohio, certify that the foregoing is a true and correct copy of the Resolution adopted by the Village Council of the Village of Jacksonville, and appears in the Village records as Resolution No. 2019-12.

ATTEST:

DATE: Aug. 22, 2019

Heather Rockwell
Village Fiscal Officer

Ordinance No. 55-19 *Passed* October 14, 2019

ORDINANCE NO. 55-19

AN ORDINANCE ADOPTING ATHENS COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN 2019.

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the City of Nelsonville, Ohio hereinafter "municipality" is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2014; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the City Manager or his designee to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan, and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW THEREFORE, BE IT ORDAINED by Council that the City of Nelsonville, Ohio that:

Section 1: The City of Nelsonville, Ohio adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019 prepared by the Athens County Regional Planning Commission in 2019.

2. This ordinance shall be in full force and effect at the earliest date permitted by law.

Duly enacted by Council on second reading on the 14th day of October 2019.

NELSONVILLE CITY COUNCIL

President of Council

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RESOLUTION NO. 11-11-19 (A)

RESOLUTION ADOPTING HAZARD MITIGATION PLAN, AND DECLARING AN EMERGENCY

WHEREAS, it is agreed that it is beneficial for a community to determine the threats posed by various natural hazards and to plan for ways to reduce those threats; and

WHEREAS, the Village of Trimble, Ohio hereinafter "municipality" is required to have a Natural Hazard Mitigation Plan in order to be eligible to receive federal emergency funding in the event of a Presidentially-declared disaster; and

WHEREAS, the existing Natural Hazard Mitigation Plan for our municipality expires in 2019; and

WHEREAS, the Athens County Regional Planning Commission prepared the existing Natural Hazards Mitigation Plan for our municipality in 2014; and

WHEREAS, the Athens County Regional Planning Commission is prepared to write a Multi-jurisdictional Natural Hazards Mitigation Plan that will cover all the municipalities in Athens County; and

WHEREAS, our municipality is prepared to participate with this Plan by appointing the Mayor or his designee to represent our municipality on the Planning Committee and to provide information about our municipality for the Plan, and

WHEREAS, our municipality is a member in good standing of the Athens County Regional Planning Commission;

NOW, THEREFORE, BE IT ORDAINED BY THE VILLAGE OF TRIMBLE COUNCIL, ATHENS COUNTY, OHIO AS FOLLOWS:

1. The Village of Trimble hereby adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2019.

2. It is found and determined that all formal actions of Council relating to the passage of this Resolution were conducted in open meetings of the Village Council and that all deliberations of Council that resulted in such formal action were in meetings open to the public, in compliance with all legal requirements including Sec. 121.22 of the Ohio Revised Code.

3. This Resolution is being passed as an emergency measure to take effect immediately, pursuant to Ohio Rev. Code Sec. 731.30 because it is necessary for the immediate preservation of the health, safety and welfare of the Citizens of the Village, and the deadline for filing with the County Auditor is approaching.

4. This Resolution shall become effective the earliest date allowed by law.

Duly enacted under suspension of the rules on first reading this 11 day of November, 2019.

VILLAGE OF TRIMBLE:

By: _____
Mayor

By: Susan K. Hooper
President Pro Tem of Council

ATTEST/SEAL:

Heather Rockwell
Clerk - Treasurer/Fiscal Officer

CERTIFICATION OF CLERK/FISCAL OFFICER

The foregoing is a true copy of the original Resolution # 11-11-19 (A) .

Publication of this Resolution was made by posting a copy of the same in the following five (5) locations within the Village, beginning on November 12, 2019 and concluding on November 18, 2019 (at least 15 days later):

- TOWN HALL

- KROGER

- MRS. K'S VARIETY STORE

- U.S. POST OFFICE

- MATT'S CARRY-OUT (THE BRICKYARD)

ATTEST:

DATE: 11/12/19

Heather Rockwell

Village Fiscal Officer/Clerk

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