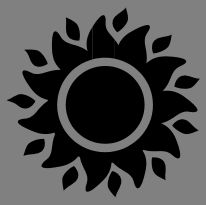
multi-jurisdictional natural hazard mitigation plan

2014



athens county

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.

County Commissioners:

Lenny Eliason
Charlie Adkins
Chris Chmiel

Participating Jurisdictions (all continuing):

City of Athens
Village of Albany
Village of Buchtel
Village of Coolville
Village of Jacksonville
Athens County
City of Nelsonville
Village of Amesville
Village of Chauncey
Village of Glouster
Village of Trimble

The following Natural Hazards are considered in this plan:

Dam failure
Drought
Earthquake
Extreme heat

Extreme cold
Flooding (flash)
Flooding (riverine)
Freezing Rain/Ice Storms

Hail
High Wind
Landslide/Rockfall
Land Subsidence

Thunderstorms & lightning
Tornado
Winter storms/ Blizzards
Wildfire

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Chapter 1-Introduction

Communities across the country are susceptible to unpredictable forces of nature. 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 provide resiliency from disasters. A Natural Hazard Mitigation Plan provides the means for a region's population to live safely protected from the extremes of nature's forces. While life is not risk-free, good planning can help minimize the dangers posed by nature's extremes.

Picture from 9/16/2010 storm

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 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 on a day-to-day basis.

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.

To ensure that the Plan is current and reflects the changing needs of the community, Athens County has decided to review all of the sections of the current Plans and update the current policies and guidelines.

Picture from 9/16/2010 storm

As part of the update process, the County has identified additional ways to reduce the County's vulnerability to natural hazards—before the next disaster actually occurs. This Plan outlines a strategy with specific programs and policies that can be implemented by Athens County and local units of government

within Athens County to reduce the impact of natural hazards on people, structures, and the natural environment.

Natural Hazard Mitigation Planning

A Natural Hazard Mitigation Plan provides the means for a region's population to live safely protected from the extremes of nature's forces. While life is not risk-free, good planning can help minimize the dangers posed by nature's extremes. The Federal Emergency Management Agency (FEMA) defines hazard mitigation as "any action taken to reduce or eliminate the long-term risk to human life and property from hazards." 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.

Natural hazard mitigation planning involves participation in a process that accomplishes the following:

- **Natural hazards analysis** – Previous natural hazard events are studied to determine which natural hazards should be given priority status in the Plan.
- **Asset identification** – Structures and utilities that are vulnerable to natural hazard events are identified.
- **Loss estimation** – The amount of loss from a given scale hazard event (such as the 1% chance flood[1]) is calculated.
- **Mitigation strategy** – Goals and actions that reduce risk from hazard events are proposed.
- **Gathers public input** and provides information to the public – Citizen input is sought and information about the planning process is regularly provided.

Figure 1a: Survey Responses

Athens County – Background

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 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. Additional County census data can be found in Appendix 1.

[1] The 1% annual chance flood is the magnitude of flooding that has a statistical chance of occurring once every 100 years. This does not mean that a large magnitude flood will not happen more frequently than once in a great while. Because we are dealing with unpredictable weather patterns and statistical odds, it is possible to have several large floods within close proximity to one another. Also, it is defined as a large flood that has a 1% chance of occurrence in any given year.

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. Underlying bedrock is composed of shale, siltstone, sandstone, limestone, and coal. The shale has weathered to produce many soils that are prone to instability. The narrow stream valleys have historically been chosen as settlements because they offer some of the flattest ground for building. Unfortunately, the same stream valleys are prone to flooding and have been the sites of flood disasters since people settled the area.

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. 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%.

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 traveling between Charleston, West Virginia and Toledo, Ohio bisects the county in a north-south direction.

Appendix 2 shows the location of Athens County within the state of Ohio and shows a base map of Athens County.

This Plan identifies 16 natural hazards which pose a significant threat to Athens County residents. These include the following:

- Flooding-Riverine
- Flooding-Flash
- Blizzard
- High Winds
- Thunderstorm/Lightning
- Extreme Cold
- Heat Wave
- Ice Storm
- Hailstorm
- Drought
- Landslide
- Wildfire
- Subsidence
- Tornado
- Dam Failure
- Earthquake

Multi-jurisdictional Approach

Local jurisdictions have the option of preparing a multi-jurisdictional hazard mitigation plan under DMA2K. Jurisdictions can benefit in several ways when they choose to participate in a multi-jurisdictional planning process. Among such benefits, this process:

- 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.

This Plan was prepared using this multi-jurisdictional approach. Municipalities and the County Commissioners participated in the planning process. In addition to Athens County, 10 local governments are included in the plan:

City of Athens	City of Nelsonville
Village of Albany	Village of Amesville
Village of Buchtel	Village of Chauncey
Village of Coolville	Village of Glouster
Village of Jacksonville	Village of Trimble

(See end of document for contact information)

Using the multi-jurisdictional approach, the County was able to identify certain elements in this Plan that is 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.

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.

Plan Requirements

The DMA 2K also provides specific criteria for the preparation and adoption of multijurisdictional, “all-hazards” mitigation plans by local governments to meet these requirements. The Athens County Natural Hazard Mitigation Plan has been prepared to support the requirements of a mitigation plan for all participating local governments in the County. DMA requirements specify that the following elements must be included in the plan:

1) Documentation must show how the Plan was prepared and who was involved in the planning process. Public involvement is essential.

2) A risk assessment section should include:

- 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 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.

3) The Plan must include 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. See next column for more information.

A cost benefit analysis will be performed by the Natural Hazard Mitigation Committee by the next five-year updated.

COST/BENEFIT REVIEW A cost/benefit review will be needed for any of these projects to be implemented. A cost/benefit analysis will be performed at the time of project selection. The committee assigned preliminary cost/benefit assessments to each identified project, using general terms of ***high***, ***medium***, and ***low*** related to both the cost and benefit. A ***high*** rating on cost means it is unlikely the jurisdiction could accomplish the project without outside funding, while a ***high*** rating on benefit relates to how well the project would mitigate the situation. A ***low*** cost rating, conversely, means that is likely the jurisdiction can accomplish the project without outside funding.

- For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval of the plan.

4) All local units of government included in the Plan must participate in the planning process.

5) 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.

6) 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.

Natural Hazard Mitigation Planning and Sustainability

Sustainability refers to developing communities in a manner that meets the needs of the current

generation without compromising the needs of future generations. Major principles of sustainability include recognizing the interconnectedness of environmental, economic, and social actions; balancing present needs with needs of the future; and recognizing natural and geographic boundaries rather than political boundaries within which to make decisions. Sustainability emphasizes planning as a primary approach to involve local citizens, obtain broad input, and develop real goals and action plans. It is holistic, broad-based, and sensitive to the natural environment and demands local control and responsibility.

If the Plan gives proper attention to the principles of sustainable development and disaster resilience, Athens County should be able to withstand extreme natural hazard events without experiencing them as catastrophic events.

The concept of sustainability is useful in forming the framework of a hazard mitigation program. Working toward sustainability can help reduce losses from disasters. Actions designed to mitigate disasters should also strengthen the community and build resilience to other social, economic, and environmental problems. A sustainability approach accomplishes this. A set of principles for sustainable hazard mitigation is proposed below:

Figure 1b: Sustainable Development

1) Maintain and, if possible, enhance environmental quality. Settlement of hazardous or environmentally sensitive areas has damaged or destroyed the capacity of those areas to moderate certain hazards. Draining wetlands or constructing large areas of impermeable surfaces, for example, has exposed more people to flooding while destroying the natural system that would have helped minimize the effects. Linking environmental quality to hazard mitigation is essential to assuring that these sorts of problems do not grow.

2) *Foster local resiliency and responsibility*. Resiliency to disasters means a locale can withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life without a large amount of assistance from outside the community. Hazards should be approached as integral parts of the much larger contexts of environmental and social issues. The measures used to achieve resiliency will vary based on the types of hazards that are present, the local economic base, and the social factors that influence the local population's vulnerability (e.g. age, ethnicity, income level). Incorporating sustainable hazards mitigation criteria into new development plans and projects would make mitigation an on-going focus.

3) *Recognize that vibrant local economies are essential*. Communities should take mitigation actions that foster a strong local economy rather than detract from one. The concept of sustainability does not inherently conflict with economic development. At the same time, a sustainable economy cannot be based on unlimited population growth, high consumption of natural resources, or dependence on non-renewable resources. There are political, social, and cultural barriers to sustainability in the present system that must be faced.

4) *Ensure inter- and intra-generational equity*. A sustainable community selects mitigation activities that reduce hazards across all ethnic, racial, and income groups, and between genders equally, now and in the future. The costs of today's advances should not be shifted onto later generations or less powerful groups. Future generations should also be considered as stakeholders in the planning process. Sustainable hazards mitigation would not defer costs and hazards to future generations without considering their implications and whether appropriate benefits would accompany them.

5) *Adopt local consensus building*. A sustainable community selects mitigation strategies that evolve from full participation among all public and private stakeholders. The participatory process itself is as important as the outcome.

Relationship to Other Regional & Community Plans

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. Chart 1a 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. 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. This Hazard Mitigation Plan also affects the County Engineer's Plan, Floodplain and Subdivision Regulations, Ohio University mitigation plans. This plan is affected by all of the above as well as the current Flood Insurance Study.

Chart 1a: County Planning Documents

Municipality	Zoning	Subdivision Regulations	Housing Codes	Comprehensive Plan	Land Use/ Land Development Ordinances	Flood Plain Ordinance
Albany	X	X				
Amesville						
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						
Unincorp. Athens County		X		X		X

Chapter 2-Planning Process

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 2006 with the Village of Amesville. The City of Athens, the Village of Trimble, and Athens County also adopted separate plans.[2] The City of Nelsonville and the Villages of Albany, Buchtel, Chauncey, Coolville, Glouster, and Jacksonville adopted a multi-jurisdictional plan.

Initially, 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.

[2] These three entities were the recipients of grants from the Appalachian Flood Risk Reduction Initiative (ODNR). Grants provided funds for planning and flood map upgrades.

Background on Mitigation Planning in Athens County

In order to implement the Plans, The Natural Hazard Mitigation Planning Committee was formed from the most active members of the initial planning committees from all the jurisdictions. It is made up of representation from a wide range of County departments and stakeholder groups.

Members of the first Natural Hazard Mitigation Planning Committee were:

- Lenny Eliason, Athens County Commissioner
- Frank Hare, Mayor, Village of Amesville
- Gary Warner, Mayor, Village of Albany
- Doug Davis, Mayor, Village of Trimble
- John L. Sullivan, Mayor, Village of Buchtel
- Robert Funk, Mayor, Village of Glouster
- Fred Holmes, City Manager, City of Nelsonville
- Doug Bentley, Coordinator, Athens County 9-1-1
- David Underwood, Athens County Red Cross
- Jill Harris, Director, Athens County Emergency Management Agency
- Bob Eichenberg, Planning Director, Athens County Regional Planning Commission
- Ted Jacobson, Cooperative Weather Observer, Athens
- Steve Ferryman, Environmental Specialist, ODNR Floodplain Management Section
- Paula Horan-Moseley, Administrative Assistant, Athens County Regional Planning Commission

Partial funding to help implement the County Plan came from the Athens County Emergency Management Agency. These funds were from the Ohio Emergency Management Agency and specifically earmarked for natural hazard mitigation planning.

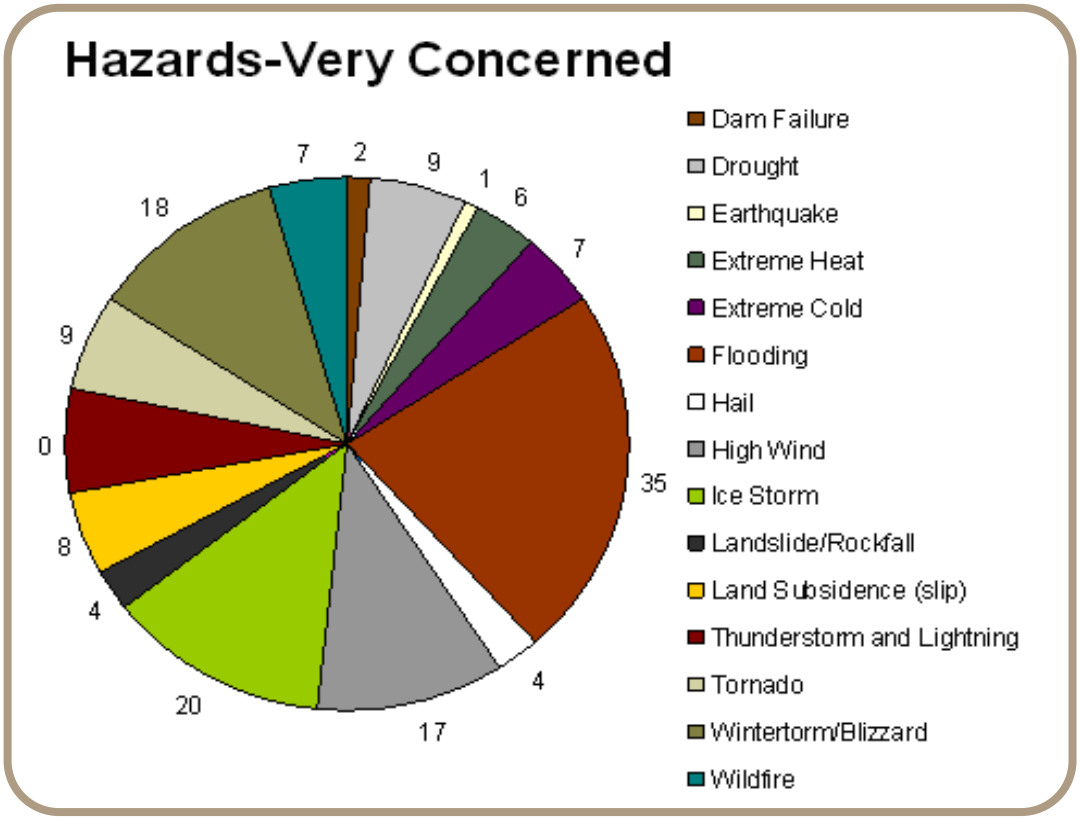
2010 Update Process

The 2010 update to this Natural Hazard Mitigation Plan was a significant effort that included a complete revision to the Plan documents into a Multi-Jurisdictional Plan. The planning process and update of this Plan was initiated in February of 2009 under the coordination of Athens County Commissioners, Athens County Emergency Management (ACEMA), Athens County Regional Planning Commission (RPC) and the Natural Hazard Planning Committee. The Athens County Regional Planning Commission's role was to guide the County during the update process, facilitate planning meetings, research and analyze hazards for the updated risk assessment, and include all participating jurisdictions into a single cohesive document.

The revision process began in February 2009 with a meeting of the Natural Hazard Mitigation Planning Committee. After the initial meeting the county drafted a resolution for adoption by the municipalities in the county to give the regional planning commission the ability to update the Plan. The Natural Hazard Mitigation Committee and the RPC sought public input and state and federal review. The RPC identified key agencies and sent them a letter asking for their input in the process. A public survey was produced and posted on-line to help identify specific areas of concern. Flooding was identified as the number one concern of Athens County residents as shown in the graphic below.

More detail of this survey is provided later in the document.

Figure 2a: Hazard Concerns



The 2011-14 Mitigation Planning Team and Plan Update Process

To seek support for updating the existing mitigation plan, the Athens County Regional Planning Commission and Emergency Management Agency focused on the resources needed to update the existing hazard mitigation plan. 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 intend to formally adopt this plan by passing a Resolution or Ordinance.

The 2011-2014 Mitigation Planning Team was formed by notifying and assembling individuals and organizations that previously served on the team when the plan was first drafted for 2006 and invited them to participate in updating the plan:

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
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 Count	

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 to update the Athens County Natural Hazard Mitigation Plan:

ORGANIZATION	Name	Position/Title
Southern Ohio Chapter of the Red Cross	Peggy Pruitt	Head of Disaster Services
Athens County Regional Planning Commission	Emily Carnahan	County Planner
City of Athens	Paul Wiehl, Paul Logue	Mayor, Planner
Village of Amesville	Gary Goosman	Mayor
Village of Buchtel	John Sullivan	Mayor
Athens County Engineer	Jeff Maiden	County Engineer
Athens County Commissioners	Lenny Eliason	County Commissioner
Athens County EMA	Fred Davis	EMA Director
Ohio State University Extension	Vacant	Vacant
Ohio University	Jill Harris	Emergency Programs Coordinator
Athens County 9-1-1	Dan Pfeiffer	9-1-1 Director
Athens City-County Health Department	Mike Cooper	Environmental Health, R.S.
City of Nelsonville	Steve Pierson	Code Enforcement
Athens City Fire Department	Robert Rymer	Fire Chief

2011-2014 Mitigation Planning Team

Additionally, each of the 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, 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 previously Federally-approved plan. Below is a summary of each participating jurisdiction and their representative:

Participating Jurisdictions

COMMUNITY	Position / Title	Name
Athens County	Commissioner	Lenny Eliason
City of Athens	Mayor and Planner	Paul Wiehl, Paul Logue
City of Nelsonville	Code Director	Steve Pierson
Village of Buchtel	Mayor	John Sullivan
Village of Albany	Mayor	Tim Kirkendall
Village of Glouster	Mayor	Miles Wolf
Village of Coolville	Mayor	Tracy Taylor
Village of Jacksonville	Mayor	Anthony McNickle
Village of Chauncey	Mayor	Robert Mattey
Village of Trimble	Mayor	Douglas Davis
Village of Amesville	Mayor	Gary Goosman

Engaging the Public

Public participation and input to the planning process was first announced through a press release to news media outlets. Copies of the previous plans (before the plan became multi-jurisdictional) were available for public input. Copies of the new plan 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 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. These methods followed the same as those listed above when the public reviewed the previous plan.

Plan Section Review and Analysis

During the 2010 plan update, the Natural Hazard Mitigation Committee (NHMC) and the RPC updated each of the sections of the previously approved plan to include new information, improve organization and formatting of the plan's contents, and include additional goals, policies, and guidelines. The Committee analyzed each section using FEMA's local plan update guidance (July 2008) to ensure that the plan met requirements.

It was determined that nearly every section of the plan would need revision due to the inclusion of the multi-jurisdictional approach, updating natural

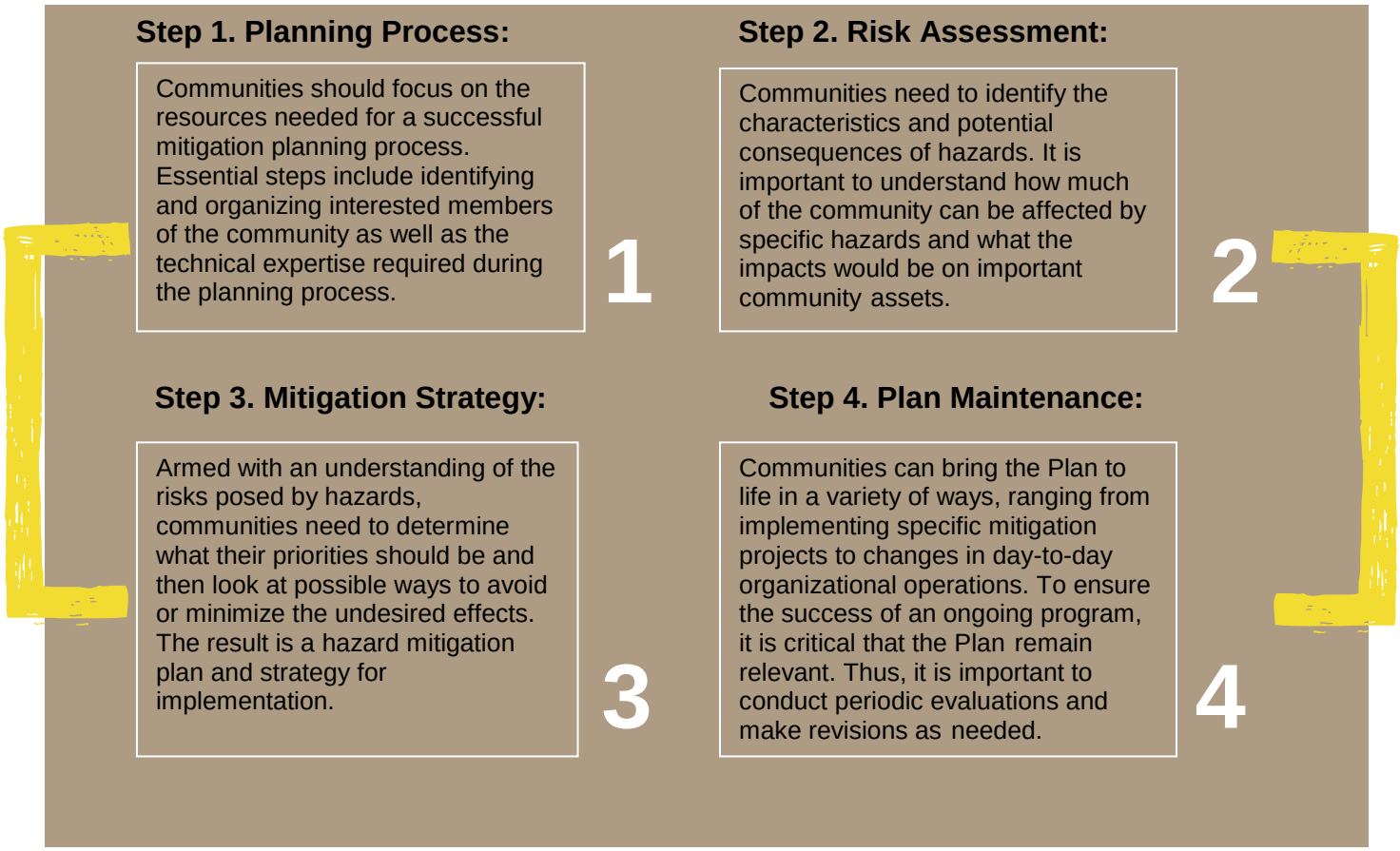
hazard events, and the need to align the Plan with the latest FEMA planning guidelines and requirements.

Once Ohio EMA provided feedback in 2014, the main revisions added were more substantial actions and strategies for mitigation as well as following the Local Mitigation Plan Review Tool suggestions.

2010 Planning Process

Athens County's Natural Hazard Mitigation Plan update followed the DMA planning requirements and FEMA's associated guidance. This guidance is structured around four phases:

Figure 2b: Planning Process



The Athens County process was adapted from the four step process to include several additional components. The additional components are explained in more detail with each step:

Step 1: Planning Process

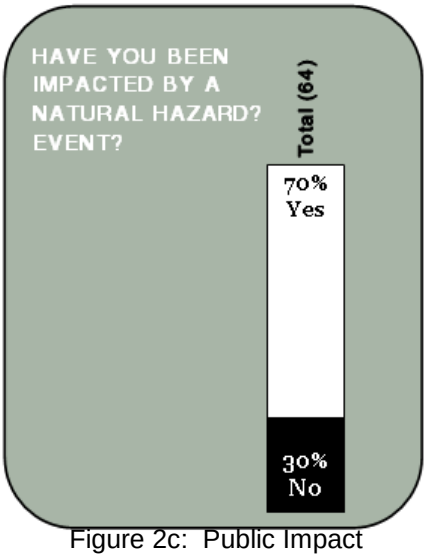


Figure 2c: Public Impact

Public Participation
It is important that the public was involved in this update process and the County sought involvement from the public in many aspects in producing this update.

The effort that produced this Plan was an open process and provided an opportunity to publicize success stories from the Plan implementation and seek additional public comment. The Plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, and press releases to local media.

The public had the chance to provide input during the process and after the plan was created. The public also had the chance to provide input before and after revisions were made in 2014.

Public participation opportunities are detailed below:

Public Survey
As part of the Natural Hazard Mitigation Plan update process, the County produced a survey to engage the public in the planning process and gather public input. The survey questionnaire offered residents an opportunity to share their opinions and participate in the mitigation planning process. The information that was provided helped the county better understand the public's natural hazard concerns and lead to certain additional mitigation activities. A copy of the survey can be found at Appendix 4. The survey was posted on-line, distributed at various public meetings, the county fair, and the Athens Farmer's Market. There were 141 responses to the survey. The online survey gathered 65 responses and the remaining 76 responses were collect at various locations around Athens County including city and village council meetings, Athens Famer's Market, and Athens County Fair.

According to the survey, the greatest

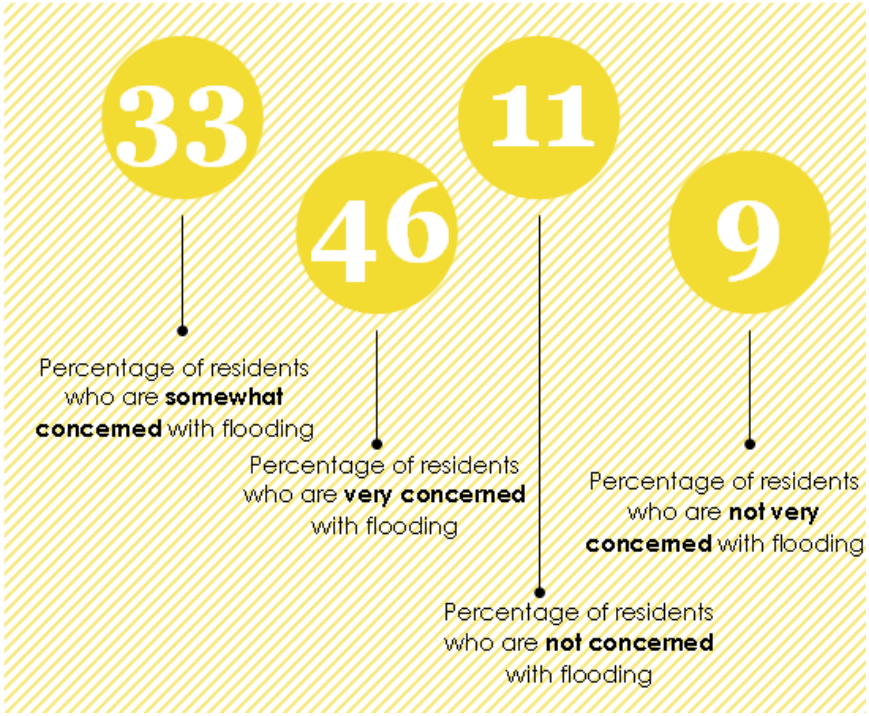


Figure 2d: Flooding Concerns

natural hazard concern for a majority of the residents is with flooding. The graphic below illustrates the respondents' attitudes toward flooding.

Letter to State Agencies

As part of the update process, the County had requested response from several effected and participating agencies. A letter was sent to 47 agencies asking for assistance from these agencies. This letter specifically requested the following from these agencies:

1. Do they have any information on past flood or other natural hazards and on possible solutions to flooding or other natural hazards in the listed Villages or Nelsonville City?
2. Is their agency planning or implementing any natural hazard projects that the County should be aware of that might impact the County's hazard mitigation plans?
3. Does their agency have any financial or technical assistance programs that would help the County?
4. Do they have any suggestions on what types of activities we should be reviewing that would reduce flood and other natural hazard damages in the listed governments?
5. Would they be available to meet with the Natural Hazard Planning Committee (during an evening meeting) to advise the County on their agency's work and recommendations?
6. Which specific areas in the previous plan are weak and need to be strengthened?

Response was very limited to both an initial letter and a follow-up email request sent in June 2010. Appendix 5 contains a copy of the letter and the mailing list.

Notices and Village/City Council Meetings

As part of public participation, the County produced public notices. The County also attended public meetings with all Villages and Cities to explain the process and seek input from the participating jurisdictions. The main natural hazard concern of many of the Cities and Villages was flooding. With the exception of Albany, all of the Cities and Villages have mapped flood hazard areas. Many of these flood concerns led to additional and strengthened mitigation strategies in this document.

Fair Display

To gather additional input from the public, the County participated in the County Fair by creating a fair display that provided details of the Natural Hazard Mitigation Plan update. Several people perused the materials and filled out public surveys. The fair display included information on being prepared for flooding, thunderstorms and extreme heat. The displayed offered the opportunity to discuss the update process with members of the public and provide additional materials regarding natural hazards with the public. The display also provided the public with a brochure that detailed the Natural Hazard Mitigation Plan update process.

Business Newsletter

To provide additional information and create awareness of natural hazards in Athens County, the County also produced a newsletter for business. The newsletter outlined what a business can

do before a flood event to better protect their business. It included information on implementing a plan, ways to protect their property from flooding, and ways to contact agencies for additional information. A copy of this newsletter is provided in Appendix 7.

Assessing Risk

Next, Athens County and its communities reviewed and updated characteristics and potential consequences of hazards. The intent was to understand how much of the community could be affected by specific hazards and what the impacts would be on important community assets. The Mitigation Planning Team began with a review of the county and community inventory and revised data regarding its assets for residential, non-residential and critical facilities. The Team also reviewed each hazard event profile for description, location, extent, history and probability of occurrence. Based on the last several years, the Mitigation Planning Team adjusted the probability of each hazard according to history, location and variations of extent. Coupled with updated inventory data, Mitigation Planning Team estimated the losses projected for the types of buildings, numbers and estimated damage in the County as a whole.

Mitigation Plan Development and Update

Armed with the understanding of the risks posed by hazards, the Mitigation Planning Team determined what their priorities should be and look at possible ways to minimize the effects of each hazard. This resulted in the updated Athens County Natural Hazard Mitigation Plan: and the strategy for implementation. After examining existing mitigation goals and objectives, the Mitigation Planning Team also took new goals and objectives into consideration. A revised approach was formed that identified existing and new mitigation actions that re-prioritized.

The Mitigation Planning Team prepared the implementation strategy that identifies the action, priority, timeline, lead organization and resources needed as well as status. This beginning section of the revised plan documents the planning process of the Montgomery County Mitigation Planning Team.

Implementing the Plan and Monitoring Progress

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

After the State review and Federal approval of the updated Athens County Natural Hazard Mitigation Plan, the County and each participating jurisdiction intend to pass a Resolution or Ordinance to formalize their adoption of this plan.

The plan and its results will be evaluated on a periodic basis to gauge its effectiveness. Some of the criteria include, but is not limited to:

- How effective was the action to accomplish the end result?
- Was the action worth the effort?
- Did the action achieve the goal and it is worth it to repeat it in the future?

Relationship to Other Plans

State of Ohio Hazard Mitigation Plan

The State of Ohio has prepared and adopted a Hazard Mitigation Plan. The plan was updated January 2011. This plan is in accordance with the Disaster Mitigation Act of 2000 which requires that a state must update its hazard mitigation plan every three years. Currently, the State of Ohio Hazard Mitigation Plan is considered a "Standard 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 15% 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.

Much like local jurisdictions, the state faces the challenges of addressing vulnerabilities in the built and the yet to be built environment. Ohio faces numerous hazards, both natural and manmade, which can result in disasters that impact citizens, businesses, and all levels of government. As part of its Plan, the State has identified natural hazards and appropriate steps to mitigate future vulnerabilities.

The State of Ohio Hazard Mitigation Plan is the official statement of Ohio's statewide hazard mitigation goals, strategies, and priorities. The goals of their plan are to significantly reduce life loss and injuries, minimize damage to property from disasters and reduce societal disruptions, better integrate hazard mitigation programs and policies, eliminate vulnerable repetitive loss flood-prone structures, promote education and outreach activities to create a culture of hazard mitigation in Ohio and provide leadership in hazard mitigaiton.

The 2011 update is similar to the 2008 plan approved by FEMA. It consists of four sections and includes elements from the 2008 plan. It also includes a status report on mitigation actions identified in the 2008 plan. **The 2011 plan details Ohio's highest priority hazards: riverine flood, tornado, winter storm, landslide, dam/levee failure, wildfire, seiche/coastal flooding, earthquake, coastal erosion, drought, severe summer storm, invasive species, and land subsidence hazards.** The hazards identified in the State's Plan

include manmade hazards in addition to natural hazards. A list of these is included below:

Natural

1) Animal or insect infestation
2) Human Disease
3) Animal Disease
4) Droughts
5) Earthquakes
6) Floods
7) Fire
8) Landslides, Mudslide, Subsidence
9) Extreme Temperatures
10) Flash Flood
11) Windstorms, Tornado
12) Hail, Ice, Sleet, Snow
13) Lightning Strikes
14) Geomagnetic Storm

Man-Made

1) Air/Water Pollution
2) Building/Structure Collapse
3) Communication System Interruption
4) Energy/Power/Utility Failure
5) Explosion/Fire
6) Fuel/Resource Shortage
7) Hazardous Material Spill
8) Mine Collapse
9) Product defect or contamination
10) Radiological Incidents
11) Space Debris
12) Transportation Accident
13) Water Control Structure
14) Civil Unrest
15) Criminal Activity
16) Cyber Attack
17) Terrorism

City of Athens

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.

<u>Compensatory Storage</u>

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 doesn't exceed 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 than 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.

Community Rating System

The City of Athens has applied to be enrolled in the NFIP's Community Rating System (CRS). CRS is a voluntary incentive program that rewards floodplain management that exceeds minimum requirements by discounting the cost of insurance for payees in enrolled communities. The City of Athens has applied to become a member of the CRS and get insurance discounts of 10%. The city's application is pending at this time.

City of Nelsonville

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.

Other adopted ordinances that will have a positive impact on hazard mitigation include the following:

Ordinance 34-08 created code enforcement office and staffed a director so that existing nuisance and development ordinances would be more effectively enforced.
Ordinance 46-08 adopted a building numbering system to in part more effectively provide emergency service response.
Ordinance 35-09 required the deposit of insurance funds with the City in order to potentially abate nuisance and blight caused by burned structures.
Ordinance 37-09 required the issuance of a demolition permit where structures were either damaged and ordered repaired or so damaged by other means that they required removal and transport to a landfill.
Ordinance 40-09 enabled creation of a wellhead protection team and delineated protection area (now OEPA endorsed).
Ordinance 55-09 adopted new flood damage reduction standards.
Ordinance 56-09 established standards for the placement of permanently sited manufactured homes which included that they be placed and anchored to permanent foundations to resist wind and flood.
Ordinance 05-10 which established subdivision regulations including review standards to minimize hazard to property and person.
Ordinance 22-10 which authorized the demolition of two hazardous structure in the SFHA.
Ordinance 23-10 which authorized the demolition and debris removal of a structure damaged by fire.
Ordinance 35-10 creating codification of ordinances and amending sections pertaining to hazard abatement, blight, and property maintenance.
Ordinance 41-10 which authorized the removal and debris disposal of a hazardous structure burned by fire.
Ordinance 44-10 which created a rental property registration program in order to in part obtain contact information of owners and agents in case of an emergency.
Ordinance 45-10 which created a vacant property registration program to have nuisance and blight abated and obtain emergency contact information from owners.
Ordinance 49-10 which clarified thresholds where non-conforming buildings and uses were required to come into compliance after substantial damage.

The following additions have a mitigation component made to subdivision regulations in Nelsonville:

Preliminary plan content.
The preliminary plan shall contain the following information:

- Location of floodways and floodplains.
- A good-faith effort to identify the location of environmentally sensitive areas.
- Type of water supply and wastewater disposal proposed, approximate locations and dimensions of all proposed utilities and sewer lines, easements, drainage tiles, water mains, culverts, or other underground utilities within the tract or adjacent thereto.

Additional information for the preliminary plan.
The following information does not apply to all projects and may be requested during the site review or required during review and approval of applications:

- Soil types, derived from the United States Department of Agriculture hereinafter referred to "the USDA" *Soil Survey of Athens County, Ohio*. For property located in Athens County, an interpretive soil report, prepared by the Athens County Soil and Water Conservation District hereinafter referred to as "the ACSWCD" is recommended.

- Other information, studies, items, or provisions deemed necessary or prudent to create buildable sites and to promote the public health, safety, and welfare.

Preliminary plan recall.
The Commission or their representative may recall unplatted portions of the preliminary plan

for consideration, and re-approval, modification, or disapproval. A recall may occur if:

- Incomplete, inaccurate or fraudulent information influenced approval.
- Previously unknown or new health, safety or environmental concerns arise.

Final plat contents.
The final plat shall contain the following information:

- Location of all streams, rivers, canals or lakes, and flood hazard boundaries of the area. Base flood elevations shall be determined by the sub-divider's professional engineer, in areas where such information has not been made available by other means, for subdivisions greater than five (5) acres in size.

Suitability of land.
If the Commission finds that land proposed to be subdivided is unsuitable for subdivision development due to poor drainage, flood hazard, topography, inadequate water supply, landslip potential, or other such conditions which may endanger health, life, safety, or property; and, if by any public agencies concerned it is determined that in the best interest of the public the land should not be developed for the purpose proposed, the Commission shall not approve the subdivision unless adequate methods for solving the problems are advanced by the sub-divider.

Subdivision and site design.
Design of the subdivision shall take into consideration any existing applicable comprehensive plans, and shall be based on a site analysis. To the maximum extent practicable, development shall be located to preserve the natural features of the site, to avoid environmentally sensitive areas, and to minimize the negative impacts that may occur by altering natural features. The following specific areas shall be preserved as undeveloped open space, to the extent consistent with the reasonable utilization of land, and in accordance with applicable state or federal regulations:

- Unique and/or fragile areas, including wetlands, as may be defined in *Section 404*, *Federal Water Pollution Act,* as amended; and in Ohio Environmental Protection Agency, hereinafter referred to as "the OEPA", standards.
    - Land in the floodway as identified and mapped using the NFIP Flood Hazard Boundary Maps.
    - Steep slopes in excess of fifteen percent (15%) unless appropriate engineering measures concerning slope stability, erosion, and resident safety are taken into account.
    - Habitats of endangered flora and fauna, as identified on federal and state lists of endangered species.
    - Historically and culturally significant structures and sites as listed on the National Register of Historical Places.

The development shall be laid out to avoid adversely affecting groundwater and aquifer recharge; to reduce cut and fill; to avoid unnecessary impervious cover; to prevent flooding; to minimize disturbance of riparian areas; to provide adequate access to lots and sites; and, to mitigate adverse effects of noise, odor, traffic, drainage, and utilities on neighboring properties. Lot design for building sites shall take into consideration topography, privacy, building height, orientation and drainage, and aesthetics.

Flood areas and storm drainage ditches.
All subdivisions shall comply with *Title 25, Nelsonville City Flood Damage Reduction Code* on file in the City Manager's office or the Flood Damage Reduction standards of the political subdivision of jurisdiction. Appropriate

measures shall be taken to elevate buildings to required levels. A proposed subdivision may be denied if access to the subdivision is periodically blocked by floodwaters. Flood control or storm drainage facilities shall be provided as follows:

A. Access to flood control or storm drainage ditches and channels shall be provided by easements of not less than thirty (30) feet in width, twenty (20) feet of which is located on one side of the flood control or drainage ditch, channel or similar facilities.

B. Flood control or storm drainage easements containing only underground facilities shall have a minimum width of twenty (20) feet.

Soil erosion requirements.
In the development of a subdivision, the sub-divider shall apply best management practices, with both temporary and permanent measures, during all phases of clearing, grading, and construction in order to minimize the amount of sediment flowing into a public or private surface ditch, subsurface drainage, stream, river or lake, or onto an adjoining property. Sediment control shall follow the standards and specifications in *Rainwater and Land Development, 2nd ed., 1996, ODNR,* or any later version that is published as an update.

- When a proposed development area consists of one (1) or more acres of earth-disturbing activities, the owner of record shall develop and submit to the OEPA for review and approval, a soil erosion and sedimentation control plan. Such a plan shall contain sufficient information, drawings and notes to describe how soil erosion and off-site sedimentation will be kept to a minimum, both during and after construction. The soil and erosion control plan shall have OEPA approval before the final plat is submitted to the Commission.

- When a proposed development area involves less than one (1) acre of earth-disturbing activities, it is not necessary to submit a soil erosion and sedimentation control plan; however, the sub-divider shall comply with the standards and specifications in *Rainwater and Land Development, 2nd ed., 1996, ODNR,* or any later version that is published as an update. Upon request, submittal of specific soil erosion and sedimentation prevention measures to be or being implemented may be required to determine compliance.

- Soil erosion and sedimentation control plans shall be certified by a professional engineer registered in the State of Ohio before being submitted to the City Manager for review and approval.

Chapter 3-Risk Assessment

This Natural Hazard Mitigation Plan applies scientific data to obtain a measure of actual risk as opposed to citizen's perceived risk. While it is acknowledged that how safe a person feels has a lot to do with well-being and quality of life, it is the job of Athens County to help keep its citizens safe from actual hazards that may occur.

The hazard's frequency and intensity is something that has been measured during some previous hazard events. Agencies such as the National Weather Service, the Federal Emergency Management Agency, and the United States Geologic Survey keep records of significant hazard events. Geographic information systems now allow for quality mapping of geographically-related hazards. Using these tools, local government can incorporate science and technology into its land planning programs.

The first natural hazard plans written for Athens County's governments utilized data from the National Climatic Data Center (NCDC) to ascertain the intensity and frequency of hazard events. This source was also reviewed for this Plan to include hazard events that occurred during the past five years. The updated data and the previous list can be found at the end of the document in Appendix 8.

Land Use

The largest change in Athens County land cover over the last half century is the succession of fields to forest. In 1970 there were 120,097 acres listed as woodland and in 2013 this figure had increased to 240,000 acres. This is a natural succession driven by agricultural economics. Re-established forestland creates new challenges and opportunities for different land management techniques and new partnerships.

How we use land affects the level of risk exposure to natural hazards. The location of homes, businesses, critical facilities, and other infrastructure affects risk levels. Since humans can greatly reduce risk exposure by employing wise use planning, it is important that local governments apply good planning principles to keep citizens safe.

Planning can involve education, land use controls such as subdivision regulations, zoning, and floodplain management, and mitigation programs and projects that reduce hazard exposure.

Periodic, catastrophic flooding impacted cities and towns, although rural areas were not spared negative consequences. Local, state, and federal governments have more recently established hazard mitigation systems to help inform citizens about and predict flood situations and to reduce the impacts of flooding when it does occur.

Flooding is a natural phenomenon that provides benefits, particularly nutrient enrichment of

floodplain bottomlands for wildlife and agriculture. It is more cost effective to regulate development of hazard areas rather than to try to keep floodwaters away from traditional floodplains.

The Hocking River travels 95 miles through parts of seven counties on its way to the Ohio River at Hockingport in Athens County. Its watershed encompasses 1,200 square miles and includes important tributaries such as Rush, Monday, Sunday, Margaret, and Federal Creeks. It has provided water, transportation (boat, including canals; rail; and highway), soil, food, beauty, economy, and recreation. Its importance to the county is recognized in the Plan. The Hocking River, its floodplain, and its valley walls cover only a small percentage of overall land, yet are a focus of most of the planning topics addressed in the County Land Use Plan.

Appalachian people have a strong sense of place and culture even while living in an economy that lags behind the remainder of the country. There is a strong sense of self-determination and property rights and an aversion to government influence. Consequently, zoning is not a popular land use tool in southeastern Ohio. Unincorporated Athens County and the villages of Buchtel, Jacksonville, Trimble, Glouster, Chauncey, Coolville, and Amesville are not zoned. The Village of Albany and the cities of Athens and Nelsonville have zoning.

All regions with mapped floodplains have regulations regarding location and type of development activity that is allowed. Subdivision regulations have been adopted in unincorporated Athens County and Athens City. The City of Nelsonville plans to adopt subdivision regulations soon.

The growth of Ohio University fueled residential developments in areas surrounding the City of Athens. The City has physical constraints imposed by the previously mentioned floodplain and steep slopes. When additional housing locations, particularly single family, were needed developers purchased land within several miles from City boundaries and built subdivisions remote from the public sewage system utilities. The county is affected by the presence of Ohio University which sets it apart from surrounding counties. The downtown areas of Athens and Nelsonville support restaurants and civic/cultural amenities such as theaters and art galleries. Much of the housing in the county is concentrated in these cities although the number of rental properties to ownership is quite high.

Environmentally Sensitive Areas

Steep Slopes/Slippage

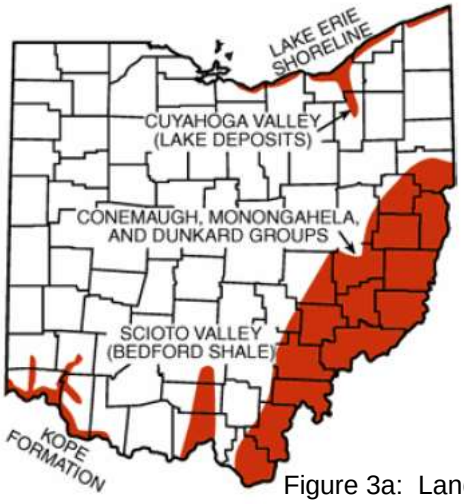


Figure 3a: Landslide/Subsidence

According to the State of Ohio Hazard Identification and Risk Analysis, Landslide, Mudslide and Subsidence are the second major geological threat, underneath earthquakes. District 10, which includes Athens County, on average experiences between 180-200 landslides annually. Figure 3a below illustrates Ohio Subsidence and Landslides. [3]

[3] State of Ohio Hazard Identification and Risk Analysis

Due to its undulating terrain, a large percentage of the total acreage of land in Athens County is associated with either moderate or severe landslip potential. A total of 131, 353.4 acres, or 42%, is considered to be moderate risk, and 55,108.1 acres, or 17.6%, is considered a severe risk.

Floodplain

There are several properties around Athens County that are subject to potential flooding and are within the floodplain boundaries. Of the total acreage of Athens County, approximately 19,700 acres, or 6.1%, of land are located in the mapped floodplain. A majority of this land falls within unincorporated Athens County. The unincorporated areas that fall within the floodplain boundaries total 16,000 acres, or 5.2%.

Repetitive Loss Properties

In accordance with FEMA Requirements, repetitive loss history within Athens County was reviewed. The information, provided within the State of Ohio Enhanced Hazard Mitigation Plan [4]by the Ohio Emergency Management Agency, included all of the repetitive loss data as of January 2011. See chart below.

Repetitive Loss Structures, defined as structures that have twice sustained at least a $1,000 loss within a 10-year time period. Owners of repetitive loss structures will be given information about the increased cost of compliance program (ICC) and efforts will be made to include them in future mitigation buyouts.

Of the 49 repetitive loss properties identified in Athens County, fourteen are located in unincorporated areas.

All these properties will remain vulnerable until they are mitigated to protect against the natural hazards that caused the losses. In both Villages of Chauncey and Trimble, this is predominantly flooding, and elevation or buyout would be the most effective mitigation effort.

Of the repetitive loss properties, none of the structures are identified as a critical facility. There are 10 properties classified as non-residential—two within the Village of Amesville, two within the Village of Glouster, four with the Village of Trimble, and two within unincorporated areas of Athens County.

Critical Facilities

The critical facilities identified in the County include storm shelters; hospitals and other health care facilities; gas, electric, and communication utilities; water and wastewater treatment plants; hazardous waste sites; and schools (see attached Map Appendix 9 - Critical Facilities and Maps).

Chart 3a: Repetitive Loss Properties

Repetitive Loss Properties.

COMMUNITY	Number	TYPE	Number of Losses	Building Payments	Contents Payments	Total Payments
Athens County	13	Residential	31	$ 656,921.62	$ 143,300.59	$ 800,222.21
	2	Non-Residential	16	$ 80,464.52	$ 14,203.84	$ 94,668.36
Village of Amesville	3	Residential	7	$ 299,562.79	$ 47,221.84	$ 346,784.63
	2	Non-Residential	4	$ 41,100.00	$ 25,000.00	$ 66,100.00
Village of Chauncey	11	Residential	35	$ 269,730.38	$ 56,912.18	$ 326,642.56
	0	Non-Residential	0	$ -	$ -	$ -
Village of Glouster	5	Residential	11	$ 83,954.41	$ 24,157.26	$ 108,111.67
	2	Non-Residential	4	$ 54,616.64	$ 3,145.95	$ 57,762.59
Village of Jacksonville	2	Residential	4	$ 42,349.30	$ 19,561.08	$ 61,910.38
	0	Non-Residential	0	$ -	$ -	$ -
Village of Nelsonville	2	Residential	4	$ 12,894.44	$ -	$ 12,894.44
	0	Non-Residential	0	$ -	$ -	$ -
Village of Trimble	10	Residential	25	$ 265,479.83	$ 31,038.07	$ 296,517.90
	4	Non-Residential	9	$ 42,482.60	$ 154,416.85	$ 196,899.45
County and Jurisdictional Totals:	46	Residential	117	$1,630,892.77	$322,191.02	$1,953,083.79
	10	Non-Residential	33	$218,663.76	$196,766.64	$415,430.40

There are no Severe Repetitive Loss (SRL) properties in Athens County or its jurisdictions.

[4] www.ema.ohio.gov/mitigationplan2011

Emergency Preparedness

Athens County's Emergency Management Agency is located on West Washington Street in Athens. The ACEMA office is responsible for developing a disaster response plan for the county and for helping maintain emergency operations during a disaster. Southeast Ohio Emergency Medical Services (SEOMS) serves Athens and parts of four other counties, providing emergency medical services, 911 response and transport to the hospitals. The Athens County stations are in Athens, Glouster, Nelsonville, Coolville and Albany.

The Athens County Chapter of the American Red Cross, located on May Avenue in Athens, provides disaster relief, disaster education, armed forces emergency communications, and health and safety education to Athens, Meigs and Vinton Counties.

Elderly Care

The Athens County Senior Center (ACSC) occupies a wing of the Athens Community Center on East State Street in Athens. Its membership is open to all county seniors. The Center provides space for meetings and classes, equipment and programs for exercise, a nutrition program, and space for casual socialization. ACSC offers transportation, adult day services, socialization, information and referral, health assessment, and outreach.

Many in-home senior services are provided by the Appalachian Community Visiting Nurse Association, Hospice and Health Services (ACVNAHHS). The organization is affiliated with the O'Bleness Healthcare System and operates throughout Athens County as well as Meigs, Hocking and parts of Vinton, Perry and Morgan counties. Opened in 1982 as a visiting nurse program it later added services including Hospice. ACVNAHHS provides in-home nursing and healthcare, housekeeping services, personal care services and delivery of supplies to senior and disabled Athens County residents. This enables seniors who no longer drive to remain in their homes much longer and still receive necessary care up to the time when they require full-time nursing service. ACVNAHHS employees travel most of the roads in Athens County to reach in-home clients and transportation becomes a major part of the agency's expenditures.

In order to address the vulnerability of these populations, the county should develop strategies as part of this Plan that includes collaboration between the county and elderly care services.

Potential Large Gathering Places

In the event of a large-scale natural disaster, there is the potential that the county would need to provide temporary housing to people that are unable to reach their homes or their housing has been damaged and deemed unsafe for habitation.

Community Centers

Athens Community Center provides a fitness center, gymnasium, exercise studio, indoor track, arts and crafts room, licensed childcare facility, and meeting room space for groups and organizations throughout Southeast Ohio. The Center provides flexible meeting space with appropriate sound and visual aid equipment and a catering kitchen. Membership can be purchased by anyone throughout the county. The building was constructed with tax levy money on approximately 11 acres of land which also includes a pool, a skate park, tennis courts and a community garden. Athens County has five smaller community centers in Albany, Shade, Stewart, New Marshfield and Lottridge. Most centers are in older buildings remodeled after schools or other public facilities were no longer being used for their original purpose.

County Fairgrounds

The Athens County Fairgrounds comprises 32.9 acres of land within the City of Athens. Its buildings are used for the county fair each year and to maintain program space at other times. The Athens County Fair Board governs the property.

Participating Jurisdictions

Chart 3b: Percent of Hazard Area by Jurisdiction

		Hazards							
		Floodplain		Landslip, Moderate		Landslip, Severe		Underground Mines	
		Ac.	%	Ac.	%	Ac.	%	Ac.	%
Jurisdiction	Acres								
Unincorporated	312801.8	16127.1	5.2%	131353.4	42.0%	55108.1	17.6%	35558.8	11.4%
Albany	820.4	0.0	0.0%	52.4	6.4%	19.3	2.3%	0.0	0.0%
Amesville	146.5	47.3	32.3%	28.0	19.1%	14.8	10.1%	0.0	0.0%
Athens City	6057.1	1671.7	27.6%	1752.6	28.9%	819.7	13.5%	250.1	4.1%
Buchtel	272.9	125.1	45.8%	41.9	15.4%	2.9	1.0%	63.9	23.4%
Chauncey	334.3	207.9	62.2%	3.4	1.0%	6.9	2.1%	8.9	2.7%
Coolville	642.1	34.4	5.4%	156.2	24.3%	52.1	8.1%	0.0	0.0%
Glouster	812.5	246.7	30.4%	213.5	26.3%	142.0	17.5%	441.8	54.4%
Jacksonville	155.6	52.6	33.8%	17.0	10.9%	32.9	21.1%	74.7	48.0%
Nelsonville	3023.3	1034.2	34.2%	597.8	19.8%	73.9	2.4%	606.1	20.0%
Trimble	443.8	155.5	35.0%	192.2	43.3%	52.0	11.7%	371.5	83.7%
Total Inc.	12708.6	3575.4	28.1%	3055.1	24.0%	1216.3	9.6%	1817.0	14.3%
Total County	325510.4	19702.6	6.1%	134408.5	41.3%	56324.4	17.3%	37375.84	11.5%

Jurisdictional Uniqueness

While many natural hazards can affect all jurisdictions within a county on a somewhat equal basis over time, it is recognized that every jurisdiction possesses its own unique qualities. These unique qualities include the environmental and social factors that will affect the level of severity of a hazardous event and the ability of a community to prepare for and recover from a disaster.

Following is a narrative description, alphabetically by jurisdiction, of the unique attributes that either aid disaster mitigation and recovery or provide additional challenges for disaster mitigation and recovery:

Albany

The Village of Albany is in southwestern Athens County. The topography is more gently sloping than in much of the county, there was no underground coal mining in the immediate vicinity, and the land is elevated enough that no part of the Village lies in a mapped floodplain on a flood insurance rate map. Therefore, issues of land slippage, land subsidence, and flooding are greatly reduced.

Also unique to Albany is its proximity to the Ohio University airport, an asset if access to air-transported supplies or services is needed. The four-lane U.S. Rt. 50 bisects the Village, making ingress and egress easier for supply or evacuation routes. Albany is the only village in Athens County that has a general zoning ordinance. This is a land use tool that could be used for mitigation planning purposes should the Village ever choose to do so.

Amesville

The Village of Amesville is in northeastern Athens County. Relative to transportation routes and larger urban places, it is relatively isolated compared with most villages in Athens County. It witnessed two floods, one in 1997 and one in 1998, which both exceeded the mapped 1%-chance flood level. Following the 1998 flood, the village embarked on a $1.37 million mitigation project funded by OEMA, the Federal Emergency Management Agency and several other sources. Through the project, the village purchased and demolished 23 flood-prone structures and retrofitted another five to elevate utilities above the flood level. Later two additional structures were elevated above levels of the 1997 and 2004 floods.

Currently all structures are above the 100 year flood plain level and two homes and the Village businesses are subject to flood damage only by flooding that exceeds the 100 year flood level by several feet. All of the properties purchased in the Mitigation program following the 1998 flood are owned by the Village and have deed restrictions prohibiting new structures on them. Most of these properties are now part of the Village Park. The value of the Mitigation program following the 1998 flood was demonstrated in the 2004 flood which resulted in almost no residential damage. Damage to Village businesses, however, was heavy.

Most of the village lies above the floodplain, including church, elementary school, and all but two houses. However most of the business district remains in the area flooded in 1968, 1997, 1998, and 2004. It should be noted that most of these properties are not in the 100-year floodplain as defined by the Ohio Department of Natural Resources and FEMA.

The Village showed that with determined leadership and a plan that it could accomplish significant hazard mitigation. In addition, Amesville had a flood on September 17, 2004 similar to the one in 1997.

Amesville is situated at the mouth of McDougal Creek where it flows into Federal Creek. These streams both have the potential for flash flooding if rainfall intensity is great enough. By far the most significant natural disasters associated with the village are flooding. Amesville sits in a bowl at the major confluence of the Federal Creek Watershed; three creeks converge in or just outside of town. This places the Village in an especially vulnerable position and Village leadership is aware of this and continues to take proactive mitigation measures. Both the 1997 and 1998 floods were significantly higher than the 1%-chance flood as mapped by FEMA on the Flood Insurance Rate Map. This indicates that an updated flood study is in order so that the Village can have better mapping.

The village experienced six major floods in the 20th century and one thus far in the 21st century.

1913: A major flood recorded at seven (7) feet deep on the main street.

1920s: A major flood recorded as two (2) inches below the flood of 1913.

1963: A major flood in March that was 5 feet higher than the 50-year frequency flood. Floodwaters were recorded at seven (7) feet deep on the main street.

1968: A major flood recorded at higher than the flood in 1963.

1997: A major flood in March, which is believed to have exceeded the level of the 1963 and 1968 floods and that was approximately 6' deeper than the 100 year flood calculation. Floodwaters at the main intersection of town

(Franklin and State streets) were measured at nearly 3 feet.

1998: A major flood in June, which exceeded the 100-year flood plain by approximately 12' and is the worst flood in recorded village history. Floodwaters at the main intersection of town were measured at over 9 feet.

2004: A major flood in September exceeded the 100 year flood calculation by approximately 6' and was similar to the 1968 and 1997 floods.

In addition, the village routinely experiences minor flooding that closes roads in and out of town and blocks some village streets.

Athens

The City of Athens is the county seat of Athens County. It is unique in many regards, both positive and negative in relation to hazard mitigation. It is home to Ohio University, an institution of higher education with a student population of approximately 27,000. The City has a large percentage of workers in public employment. With its state and federal offices, the City has regional significance in southeastern Ohio.

The City has a large percentage of homes and businesses in the 1%-chance floodplain. Approximately 21.9% of the City's addresses are in the 1%-chance floodplain. Of these, approximately 1,100 structures are within the floodplain boundaries and make up about 23% of the total structures in the city. These structures include 350 structures are rental homes; 70 structures are Ohio University buildings (including dormitories); 200 structures are commercial buildings including churches, government (non-university), medical, and private businesses. A total of 480 structures are residential owner occupied. A map of these structures can be found in Appendix 10. There are also a number of critical facilities, including the hospital and EMS offices, and Ohio University structures that will be impacted by a large flood. Particular planning has already occurred with the issue of either a large-scale student evacuation or a large-scale sheltering-in-place should these ever be necessary.

Other natural hazards that may affect the City and require special note are the wildfire hazard and hillside land slippage. Certain locations in the City possess a unique combination of homesites, vegetation, slope, and aspect to the sun and wind that can raise the fire risk during severe drought conditions. This has not been a problem in the past but there is a potential risk. While additional study and mapping are needed, the wildfire risk is one for which to prepare. The City also has a significant percentage of moderate and severe landslip soils and has some experience with the problems posed by this risk. Good planning is required to insure that structures built in these locations are only done so with proper and adequate design.

The City of Athens also has significant and unique advantages that help with natural hazard mitigation planning. Being the county seat, there are more close-at-hand, first responder resources available in the event of a disaster. The City has its own fire and police departments and Ohio University has a police force. The City also has active code enforcement and planning offices to help ensure that proper site planning takes place. The City is one of the few locations in Athens County that is zoned. Floodplains and hillside slippage are issues that require review before a building permit is issued.

Ohio University

Ohio University is a facet in the City of Athens and has a significant impact on the City and surrounding county. Aside from the impacts from a large student population, it is a major employer in the community and has a significant economic impact. Due to its location

along the Hocking River and vulnerability of a dense population, the University has taken additional steps to protect itself from natural disasters. Ohio University has recently achieved “storm ready” status through the National Weather Service and has been an active participant in the Natural Hazard Mitigation planning efforts.

Buchtel

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 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.

The relatively small drainage area of Snow Fork means that it is possible for the water elevations to rise rapidly and give little warning of an impending flood situation. Evacuation route planning during flood situations is important for the Village of Buchtel. The Village relies on outside help for fire and EMS protection.

Through the Mayor’s office, the Village has been a very active participant with the County Natural Hazard Mitigation Planning Committee. The Village maintains an active floodplain management program and is in compliance with NFIP requirements.

Chauncey

The Village of Chauncey has a large percentage of its residential and commercial structures in the floodplain. The Village has a history of flood-related problems and repetitive losses. The Village is not in compliance with the NFIP. It is actively working to address a number of violations of its floodplain management program. 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.

In the event of serious flooding, the Village has a flood route that takes people north and east to U.S. Rt. 33. It is important that this route continue to be marked and maintained.

Coolville

The Village of Coolville is in the far southeast corner of Athens County at a distance of over 20-miles from the county seat. The Village has only a small portion within the 1%-chance floodplain and no structures within the floodplain. It chooses not to participate in the NFIP. Within its borders the Village has an EMS station and a volunteer fire department.

Glouster

Glouster is the largest village in Athens County. It has a significant floodplain area, significant areas subject to land slippage, and a large area underlain by old coal mines. The Village is home to an EMS station and has its own volunteer fire department. The Village is not zoned and relies on the Mayor’s office for floodplain management. The remnants of a once-thriving downtown core still exist but are in a state of decline.

After a major flood in 2005, the Village (working through Athens County) applied for and received a mitigation grant for the purchase of approximately 10 properties on Locust Street. Subsequent to the initial mitigation grant, federal stimulus funds were used to purchase

and raze additional homes in floodplain areas. Production of a structure and value list for these properties has been completed; however mapping these properties is an activity in the County's five year natural hazard mitigation plan.

Jacksonville

Jacksonville is another Athens County village that only has an approximate A-zone for its Flood Insurance Rate Map. This makes floodplain management more difficult. As with Buchtel Village, there are not enough funds to conduct the necessary studies to upgrade the flood maps. A significant percentage of the Village is also underlain with abandoned coal mines. Production of a structure and value list and mapping for properties and structures within the floodplain and that would be effected by abandoned coal mines is an activity in the County's five year natural hazard mitigation plan.

Nelsonville

Nelsonville has a population slightly above 5,000 residents. It is home to Hocking College with a student population of approximately 6,000. Many of the students are residents of Nelsonville. Nelsonville is another community with a large percentage of its land in the 1%-chance floodplain area. There are also slip prone soils that warrant consideration in site planning.

The City has an office of code enforcement and a trained professional employed full time to administer its codes. The City maintains its compliance with the NFIP. The City has also been very active as a member of the Natural Hazard Mitigation Planning Committee. The City is zoned and has worked with Hocking College's GIS program to keep maps updated.

Nelsonville has its own police and fire departments and an EMS facility within its borders. Doctor's Hospital has 25 beds. Other critical facilities include a prison and a treatment facility for juveniles that have committed minor crimes.

Trimble

The Village of Trimble has a high percentage of floodplain areas and underground mines. There are also slip prone soils to consider with site planning. The Village has been actively removing blighted and repeatedly flooded homes from floodplain areas as time and funding permit. A number of residences have been demolished. Additional mitigation work is needed to remove repetitively flooded properties from floodplain areas. Many of these properties do not have flood insurance and are rental properties. The owners allow renters to move back into dilapidated and unhealthy living situations after flood events.

The Village was a recipient of one of the Appalachian Flood Risk Reduction Initiative Grants in 2005. This allowed the Village to get an updated Flood Insurance Rate Map with AE zones, thus removing some of the guesswork with its floodplain administration. The Village does not have a police or fire department or an EMS facility. Production of a structure and value list and mapping for properties and structures in the floodplain is an activity in the County's five year natural hazard mitigation plan.

Unincorporated Athens County

Athens County is in the rural and least densely populated region of southeastern Ohio. Most of the land is unincorporated and portions of the county are considered to be rugged, due to the hilly topography, and remote, with very low population densities. Primary hazard mitigation issues are floodplain management, site planning for landslips, and site planning for abandoned, underground coal mines. While these are not unique situations in Athens County, certain regions of the County are at

greater risk due to the presence of human populations in proximity to the hazard zones.

Athens County's unincorporated regions are not zoned. Zoning is a land use tool that is not available to local planners, but the County Commissioners are utilizing the placement of infrastructure in a way that will ultimately improve hazard mitigation planning. The area between Athens City and Albany Village is being promoted as a growth corridor and public sewer is proposed in this region that has minimal risk from flooding and land slippage. There are no abandoned underground mines in this region.

Minimal population densities and expansive floodplain bottoms will keep elected officials from building public sewer in the area east of the City of Athens where there is mild pressure to develop. Several miles east of the City of Athens is the community of Canaanville. It has good highway access, but is miles from any urban place. The commercial development that has occurred here is mostly on floodplain fills. Further commercial floodplain development is generally discouraged by the Athens County Regional Planning Commission.

Natural Hazard Assessment

With only a few exceptions, the various natural hazards that might impact the County of Athens at some future time have likely 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. Because the variables are so many and the science about global warming still in its infancy, this Plan will not attempt to predict future weather patterns different from those of the past.

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. Because we are working with chance events however, large floods can occur in close sequence as 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.

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."5*

The first step of hazard identification is the production of a list of the natural hazards that could occur in Athens County. Between the expertise provided by members of the planning committee and historical research from a variety of sources, the following list of hazards for the County was compiled. The list below was created through input from the Natural Hazard Mitigation Committee, local public input, research from previous natural hazard disaster events and declarations, current floodplain maps and risks assessments. The list[6] is alphabetical and not in any particular order of likelihood of occurrence or severity and remains unchanged from the previous plan. No natural hazards were added or removed in this update.

- Dam failure[7]
- Drought
- Earthquake
- Extreme heat
- Extreme cold
- Flooding (flash)
- Flooding (riverine)
- Freezing Rain/Ice Storms
- Hail
- High winds
- Landslide/Rockfall
- Land Subsidence
- Thunderstorms and lightning
- Tornado
- Winter storms/Blizzards
- Wildfire

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 8 shows historical information about previous 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.

The table and chart in Appendix 11 show how the AFRRI planning committee ranked the various natural hazards according to each hazard's relative risk. Risk was determined by

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

[6] 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.

[7] 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.

multiplying a score for the probability of the hazard's occurrence by its possible impact. Probability and impact rating definitions are included.

ODNR, Division of Water, prepared a Multi-Hazard Map (Appendix 12) that accompanies this Plan. The Map displays areas subject to particular hazards showing specific geographic boundaries of floodplains, landslide susceptibility, and land subsidence. Also shown are the major dams in Athens County. The Map also includes an inventory of structures in the 1% annual chance floodplain and the location of streams, roads, and railroads. Copies of the files used to prepare this map can be obtained from the Athens County Regional Planning Commission.

An additional Athens County Hazard Zones Map (Appendix 12) was prepared by the Athens County Regional Planning Commission. The subsurface mine areas show the subsidence hazard locations and the floodplain is the 1% annual chance floodplain. These hazard areas correspond with the ODNR Multi-Hazard Map. The landslip areas on this map utilized soil types and degree of slope to obtain moderate and severe landslip potential locations.[8]

Each hazard identified by the Planning Committee will be described below. The hazard will be defined, explanations about historical events involving the particular hazard will be provided, and sources of information will be described, if necessary.

Dam Failure

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 are Burr Oak Lake, Dow Lake, and the lakes that make up the Margaret Creek Conservancy District. The Margaret Creek Conservancy lakes are Meeks Lake, Lake Snowden, site number 4, site number 5, and Fox Lake. 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, and the Margaret Creek Conservancy District manages the remaining five lakes.

Extent

Burr Oak Lake, impounded by the Tom Jenkins Dam, and Lake Snowden could have an effect 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[9] of storage, or not more than 15 acre-feet of total storage regardless of height.

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."[10] While dam failure is a highly unlikely event it is still possible and any natural hazard plan needs to consider it. The Flood Emergency Plan for Burr Oak Lake discusses inundation maps and states, "The attached maps indicate the area

[8] The moderate and severe landslip classifications were derived from work done for the City of Athens Land Development Ordinance by Dr. Geoffrey Smith, OU Dept. of Geology.

[9] One acre-foot is the amount of water that covers one acre to a depth of one foot or about 326,000 gallons.

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

which would be flooded under the hypothesized conditions of: a) occurrence of a spillway design flood at Tom Jenkins Dam; and b) occurrence of a failure of the dam concurrent with a spillway design flood. The possibility is extremely remote that either condition will occur." Failure of a dam will only occur during a major rainfall event when the impoundment has reached capacity and can no longer hold back the flow. 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.

Previous Occurrences

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 the 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 5 feet of water to the City 24 hours and 30 minutes after the failure.

Inundation maps were produced for the Margaret Creek Conservancy lakes 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:

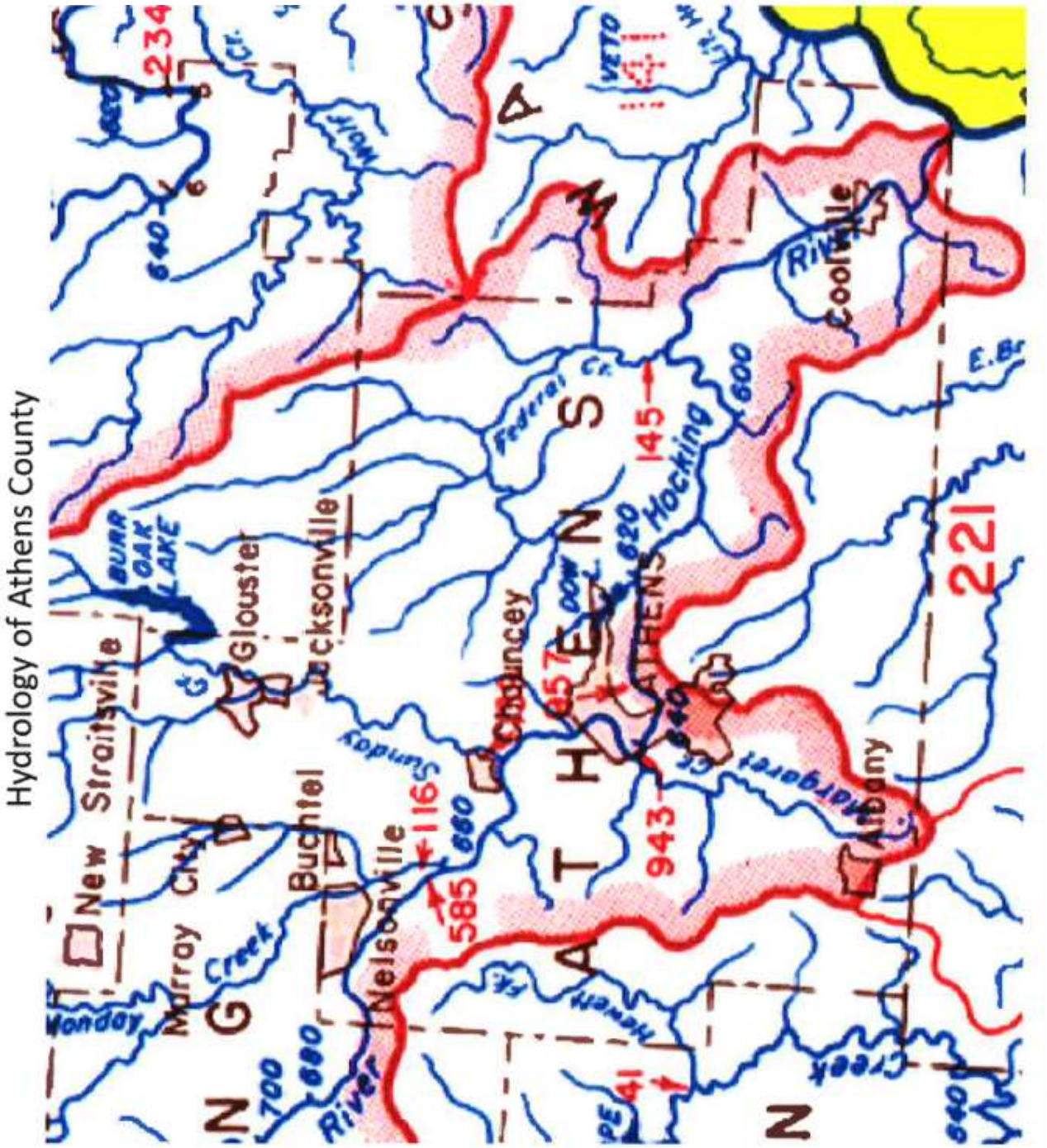
	Spillway Design Flood	
	Without Dam Failure	With Dam Failure
Arrival Time	30 hrs. 00 mins.	11 hrs. 15 mins.
Peak Flood Tim	45 hrs. 30 mins	24 hrs. 30 mins.
Peak Elevation	638.0 feet	647.0 feet

Chart 3c: Spillway Design Flood

Location

Dam failure could potentially affect the portions of the county located downstream from the dams. The following are Class I dams that if failed, would result in a probable loss of life. A failure of the Tom Jenkins Dam at Burr Oak Lake would affect northern parts of the county including Glouster, Trimble and Jacksonville. A failure of the Dow Lake Dam would affect those on the east side of the City of Athens and likely obstruct US 50/Rte 32 East. A failure of Nesbitt Pond Dam off of Rte 682 would affect people east of the City of Athens and likely obstruct 682, another major thoroughfare. Margaret Creek Structures Nos. 1, 2, and 6 would affect those in Lee Township, the Village of Albany as well as US 50/OH32. The Athens Fish and Game Club Dam located in Waterloo Township would also have significant impacts if failed.

Figure 3b: Hydrology of Athens County



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 effect vegetation, crops, and the water supply and can contribute to extreme heat events and wildfires.

Location
This can affect all areas and jurisdictions in the County.

Extent
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.[11]
http://www.drought.unl.edu/index.htm

Previous Occurrences
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. See the Secretarial Disaster Designations for 2012 Crop Disaster Losses in Appendix 13.

[11] Schmidlin, p. 147.

According to the National Climatic Data Center, there have been no other drought events since 2004.

Vulnerability Assessment
Due to the drought in 2012, Athens County experienced significant crop loss. For example, in 2011, the production per bushel (BU) of corn was 352,000 bushels, but the production per bushel of corn in 2012 was only 285,000 bushels, which is a difference of 67,000 bushels. In 2011, the yield in bushels per acre of corn was 161.5, but in 2012 the yield in bushels per acre of corn was 117.8, which is a difference of 43.7 bushels per acre.

Earthquake

Athens County has a relatively low susceptibility to severe and damaging earthquakes. Both low Peak Ground Accelerations (PGA) and only a single recorded earthquake occurring in 1886 characterize it. According to the United States Geological Survey, Athens County has 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.

Location
Athens County's low PGA is consistent with the history of earthquakes in the county. Using the ESRI/FEMA Project Impact Hazard Site (http://data.esri.com/hazards/makemap.html), a Historic Earthquake Map for Athens County

was produced. This map shows one earthquake occurring in Athens County prior to 1930 with a magnitude between 2 and 3.

Previous Occurrences
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 the previously mentioned 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." There have been no significant earthquake events to include in this update.

According to the National Climactic Data Center, between March 1, 2006 (from the last Plan update) and December 31, 2012 there were no earthquake events reported in Athens County. (ncdc.noaa.gov/stormevents/)

Vulnerability Analysis

Building Type	Number of Buildings	Exposure in Study Region
Residential	1,889	$373,194,891.46
Non-Residential	2,125	$183,480,176.21
Critical Facilities	63	$5,439,647.58
Totals:	4,077	$562,114,715.25

Subsection 2d – Extreme Heat

Extent
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.[12]

Location
This can affect all areas and jurisdictions in the County. 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.

Previous Occurrences
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. [13]

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

[12] Schmidlin, p. 129.
[13] Schmidlin, p. 131.

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.[14]

FEMA provides information on Extreme Heat at http://www.fema.gov/rrr/talkdiz/heat.shtm. This site has tips on how individuals can plan for extreme heat, and what to do during a period of extreme heat.

Subsection 2e – 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.[15]

Location
This can affect all areas and jurisdictions in the County.

Previous Occurrences
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^{o} 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^{o} or less than at any previous time on record. There were unofficial temperature readings of –40^{o} in Athens County.[16]

There have been two extreme cold events in the past decade: one on January 6, 2014 and the other on January 27, 2014. Wind chill readings reached to -25 degrees overnight on the 6th and between -5 and -20 on the 27th. Property damage estimates were a combined $150,000.

Flooding

The flood hazard is broken into two types of flooding, flash and riverine.[17] Before discussing the particulars of each type of flooding, some background information about flooding, in general, is warranted. Flooding is the phenomenon of drainage ways (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.

Extent
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

[14] Schmidlin, pp. 133-146.
[15] Schmidlin,
[16] Schmidlin,
[17] 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.

pressure weather systems that can occur in quick succession.

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.

Location
All cities and villages within Athens County could potentially be affected by flooding. The low-lying areas of unincorporated Athens County near rivers and streams are also flood-prone.

Previous Occurrences
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.[18]

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.[19]

Historically, damages from flooding in Athens County have amounted to well over six million dollars.[20] This places flooding as Athens County’s most costly hazard for property damage.

Athens County qualified for natural disaster assistance in 2012 due to being contiguous with counties experiencing excessive rain, flooding and flash flooding in May 4, 2012. Convection dropped from northwestern Ohio during the late afternoon and reached into southeast Ohio during the evening hours of the 4th. This was south of an east to west cold front in northern Ohio. That front was sinking slowly south. Surface dew points were in the mid-60s. The convection consolidated into large cold clusters, first in eastern Ohio. As these weakened, the clusters of showers and thunderstorms to their southwest got stronger. These moved through southeast Ohio. Rain amounts of 1.5 to 2 inches fell in less than 2 hours. A few localized amounts around 2.25 inches were likely. The Jackson cooperative observer measured 2.03 inches. One fatality occurred in Athens County. Most of the flooding was confined to roads. Damage occurred to vehicles that stalled when motorists drove through flooded roads. Several motorists were rescued in Jackson and Gallia Counties. Small streams across the northern portion of the county flooded. An elderly couple was driving home along Linscott Run. This is a small tributary to Federal Creek near Amesville. Close to home, the husband decided to stop his

[18] Schmidlin, p. 172.

[19] U.S. Army Corps of Engineers, *Floodplain Information, Hocking River, Athens, Ohio,* January, 1972, p. 20.
[20] National Climatic Data Center, a summary of severe weather events.

vehicle and wait out some high water. Their vehicle became surrounded by rising water. The couple made an attempt to walk to nearby higher ground. The wife was using a walker due to recent hip surgery. She slipped and the husband could not hold on to her. The current swept her away. The fire department located her body around dawn on the 5th, about a half mile downstream. The husband was helped to safety by neighbors using a garden hose. Route 550 was also flooded in Amesville. Several streets in Nelsonville were flooded including along Dorr Run and Pleasant View Road. Large dump rocks, used in the bypass construction, were even moved by the water. A wall to a garage was knocked over by the water. A house foundation was damaged. A vehicle was flooded along Margaret Creek near Albany. The occupants were unhurt at a nearby home when the local fire department arrived. Property damage was estimated at about $250,000.

Vulnerability Assessment

Building Type	Number of Buildings	Exposure for this Scenario
Residential	511	$ 56,513,208
Non-Residential	61	$ 55,857,732
Critical Facilities	278	$ 14,330,900

Flash Flooding

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.

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. Identifying flash flood areas with more precision using GIS is an activity in the County’s five year natural hazard mitigation plan.

A more recent example of flash flooding occurred on May 3, 2010. A strong southerly flow, ahead of a cold front, transported very moist air through Tennessee, Kentucky and into southeast Ohio. Surface dew points were in the mid and upper 60s. Wave after wave in the mid and upper levels helped trigger widespread showers, with embedded thunderstorms. These training rains first affected Jackson and Vinton Counties between 5am and 6am on Sunday May 2nd. The heaviest rains arched into Athens County and eventually sank slowly south, to affect Lawrence, Gallia, and Meigs Counties later in the day. The rains continued into the evening hours on the 2nd, then diminished during the late evening. However, some light rain lingered until after midnight on the 3rd. The rain amounts over about an 18 to 20 hour period were mostly 3.5 to 4.5 inches across Lawrence, Jackson, Viinton, Gallia, Meigs, and Athens Counties. The town of Athens had 4.1 inches, while Gallipolis had 3.9 inches, and South Point measured 3.8 inches. Small stream flooding was common. Roads were flooded. Some small bridges and culverts were washed out. Two men drowned near the Athens County line in Morgan County. Small streams such as

Dutch Creek began to flood near midday, then became more widespread during the evening hours. About 20 county roads were closed. Several water rescues were done, along roads that had not yet been shut down. Vehicles stalled in the flood waters of Federal Creek near Amesville was one such incident.

Riverine Flooding

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, 13 March. 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 thirteen horses, machines, motors, cars, and other equipment. All homes in Trimble were flooded."[21]

As much as 8 inches of rain fell in the Hocking River watershed during 4-10 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.[22]

Two heavy rain periods within five days of each other brought flooding to the Hocking River valley between May 23rd and May 27th 1968. Three to six inches of rain fell on already saturated soils on 23-24 May. The Hocking River reached flood stage on May 24th.[23] 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.

[21] Schmidlin, pp. 170-171.

[22] "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.).

[23] "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.).

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 will be 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.[24]

FEMA is in the process of modernizing and updating FIRM maps in Athens County. The preliminary maps were ready for review in 2013. There has been an appeal filed and the effective date for the new maps is unknown, although projected to be March 2015.

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 produce 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.[25]

Location
Hail can affect all areas and jurisdictions in the County.

Extent
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.[26] According to the NCDC report, hail caused $0 damage in Athens County in 2012, but a total of $262,000 damage in the years 1996 to 2012.

Previous Occurrences
According to the National Climactic Data Center, between March 1, 2006 (from the last Plan update) and December 31, 2012 there were 30 reported hail events in Athens County. No deaths or injuries were reported with these events. There was only one financially significant hail event since the last update. It occurred on March 23, 2011 and resulted in approximately $25,000 in damage. This was a synoptic scale event. A strong north to south temperature gradient existed along the Interstate 70 corridor in Ohio. Low pressure moved out of Illinois in the morning, reaching western Pennsylvania by evening. Individual thunderstorm cells developed in western Ohio and southern Indiana around midday. Hail was initially the main impact, but higher wind gusts developed as the thunderstorm complex matured. A separate batch of showers and thunderstorms developed closer to the cold front and reached into southeast Ohio during the late evening. Large hail dented a few vehicles.

Vulnerability Assessment
The following chart shows the value of all buildings within Athens County. Since hail can strike anywhere, this is a worst-case scenario if all buildings in the County were damaged.

[24] fema.gov
[25] Schmidlin, p. 303.
[26] Schmidlin, pp. 303-304.

Building Type		# of buildings	Exposure for this scenario
Residential		9008	$ 1,072,400,355
Non-Residential		422	$ 377,485,038
Critical Facilities		4827	$ 138,054,414
	Totals:	14257	$ 1,587,939,807

Hail Summary Information: March 1, 2006 – December 31, 2012:

Number of County/Zone areas affected:	1
Number of Days with Event:	15
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	3
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

High Wind

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.[27]

Extent

Besides tornadoes there are two types of damaging winds in Ohio, large-scale and microburst. 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. Microbursts 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.[28]

Location

High wind can affect all areas and jurisdictions in the County.

Previous Occurrences

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."

Athens County has experienced two high wind events since the last update (March 2006). One was on December 1, 2006 and the other on February 11, 2009. Both these events had a wind speed of 50 kts. During the 2009 event, a strong low pressure center tracked from Missouri to Michigan. Meanwhile, its associated upper level trough pushed a cold front through southeast Ohio just before sunset. A fast moving band of rain, along and immediately ahead of the front, featured a narrow line of embedded showers. These convective showers helped mix down the winds that were located at

[27] Schmidlin, p. 227.

[28] Schmidlin, p. 227.

4 to 6 thousand feet above the ground. Surface wind gusts of 55 to 65 mph were common. Later that night, wind gusts near 60 mph occurred as the colder air poured in. Power outages were common throughout southeast Ohio, as tree branches fell onto power lines. One major utility company reported the electricity remained out until late on the 13th or early on the 14th for some of its customers in southeast Ohio. A gust from the west of 58 mph was recorded at the Albany airport.

Vulnerability Assessment
The following chart shows the value of all buildings within Athens County. Since wind can affect virtually all buildings, this is a worst-case scenario if all buildings in the County were damaged.

Building Type		# of buildings	Exposure for this scenario
Residential		9008	$ 1,072,400,355
Non-Residential		422	$ 377,485,038
Critical Facilities		4827	$ 138,054,414
	Totals:	14257	$ 1,587,939,807

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 create hazardous driving and walking conditions and can add significant weight to overhead utility cables and tree branches.

Extent
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.[29]

Location
Ice Storms can affect all areas and jurisdictions in the County.

Previous Occurrences
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.

There were no recorded ice storms in Athens County between March 2006 and December 2012. The last recorded Ice Storm was on January 22, 2005. A mixture of snow and sleet started around 4am on the 22nd. Yet, the mixture changed quickly to freezing rain. A quarter to a half inch of ice accumulated from freezing rain during the morning. Later that afternoon and evening, the precipitation ended as 1 to 2 inches of snow showers. The Athens County engineer said, "I had one of the most problematic mornings I've ever had in my 25 years at the engineer office." One county dump truck slipped into a ditch while treating roads. For a time, the county road crews pulled over to

[29] Schmidlin, p.7.

wait for better traction. No power outages were reported and no property damage was estimated.

Vulnerability Assessment
The following chart shows the value of all buildings within Athens County. Since ice storms can happen anywhere, this is a worst-case scenario if all buildings in the County were damaged.

Building Type		# of buildings	Exposure for this scenario
Residential		9008	$ 1,072,400,355
Non-Residential		422	$ 377,485,038
Critical Facilities		4827	$ 138,054,414
	Totals:	14257	$ 1,587,939,807

Landslide/Rockfall

Landslide is the "…downward and outward movements of slopes due to rains or melting snow with accompanying damage and debris deposition."[30] 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.[31]

Extent
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, over-steepening 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.[32]

Location
While this can affect all areas and jurisdictions in the County, the U.S. Geological Survey produced a map showing landslide incidence and susceptibility. The eastern one-third of Athens County shows a moderate incidence (1.5% - 15% of the total area involved) of landslide but a high susceptibility (greater than 15% of the area involved) to landslide. This means that while there is a significant percentage of land that may be prone to landslide, the movement actually occurs on a much smaller percentage of the overall area. The western two-thirds of Athens County shows a high susceptibility (greater than 15% of the area involved) but a low incidence (less than 1.5% of the area involved) of landslide.

Previous Occurrences
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

[30] Hazard Analysis and Risk Assessment, OEMA, p. 19.
[31] The Prediction of Unstable Slopes in Southeastern Ohio, John W. Sowers, August, 1975, P. 16.
[32] Ibid., pp. 21-22.

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.

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. 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 impact the surface.

Extent
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. In the past, residents of Athens County had been 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 subsidence 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.

Location
Land subsidence could potentially affect all areas of the county. However, locations with old coal mines are likely more susceptible. These locations are generally in the northern half of the county, particular Trimble, Dover, and York Townships.

The Natural Hazards Risk Map (Appendix 12) shows the areas in Athens County that are susceptible to subsidence. The ODNR Division of Mineral Resource Management can provide information about subsidence that has 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."

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.

Extent
A thunderstorm often brings all three hazards; high winds, lightning, and intense rainfall. Two deaths and one injury were caused by lightning in Athens County in the mid 1990's.

Location
Thunderstorms and lightning can affect all areas and jurisdictions in the County.

There were two more events in recent years: one on May 4, 2012 and the other on June 13, 2013. The May 4, 2012 event occurred when convection dropped from northwestern Ohio during the late afternoon and reached into southeast Ohio during the evening hours of the 4th. This was south of an east to west cold front in northern Ohio. That front was sinking slowly south. Surface dew points were in the mid-60s. The convection consolidated into large cold clusters, first in eastern Ohio. As these weakened, the clusters of showers and thunderstorms to their southwest got stronger. These moved through southeast Ohio. Rain amounts of 1.5 to 2 inches fell in less than 2 hours. The Jackson cooperative observer measured 2.03 inches. One fatality occurred in Athens County. Most of the flooding was confined to roads. Damage occurred to vehicles that stalled when motorists drove through flooded roads. Several motorists were rescued in Jackson and Gallia Counties. A feed store was struck. Property damage was estimated around $5,000.

The thunderstorm and lightning on June 13, 2013 caused approximately $4,000 damage.

Vulnerability Assessment
The following chart shows the value of all buildings within Athens County. Since thunderstorms and lightning can affect all buildings, this is a worst-case scenario if all buildings in the County were damaged.

Building Type		# of buildings	Exposure for this scenario
Residential		9008	$ 1,072,400,355
Non-Residential		422	$ 377,485,038
Critical Facilities		4827	$ 138,054,414
	Totals:	14257	$ 1,587,939,807

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 3c: Images from Sept. 16, 2010 Storm Athens News

Location
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. Tornadoes can affect all areas and jurisdictions in the Count, but more susceptible areas are mostly in the eastern half of the county where the topography is flatter.

Extent

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.

Previous Occurrences

The most 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 County 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 of 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)

While this hazard has proven extreme, incidents are still extremely rare and no deaths were recorded for Athens County from any tornado events. Since the previous plan, there was a tornado/high wind event on September 16, 2010. Due to this event, the committee determined that the potential impact could be elevated from a “3” impact to a “4” impact. Therefore this hazard has received a slightly higher rating than the previous plan. See the rating chart in Appendix 11.

Vulnerability Assessment
The following chart shows the value of all buildings within Athens County. Since tornadoes can affect virtually all buildings, this is a worst-case scenario if all buildings in the County were damaged.

Building Type		# of buildings	Exposure for this scenario
Residential		9008	$ 1,072,400,355
Non-Residential		422	$ 377,485,038
Critical Facilities		4827	$ 138,054,414
	Totals:	14257	$ 1,587,939,807

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, and collapsed roofs.

Extent
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.[33]

Location
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.[34] Winter Storms can affect all areas and jurisdictions in the County.

Previous Occurrences
There have been 8 winter storms since 2004. The most recent was on March 2, 2014 and caused $0 damage. A strong north to south temperature gradient existed in the Ohio Valley as a cold front gradually sank south. The front reached into Perry County just after midnight on the 2nd with freezing temperatures by 5am. Strong dynamics associated with a strengthening wind speed maximum in the flow well above the ground, lead to 3 waves along the front. Each wave enhanced the precipitation and helped push the surface front further south. The first wave caused some mixed snow and freezing rain to reach into Perry County before 6am on the 2nd. This precipitation changed to mostly snow across Perry and Morgan Counties during the morning before diminishing during the afternoon. Accumulations of 2 to 3 inches of snow were noted across Perry County toward Washington County with freezing rain amounts mostly a tenth of an inch. The second wave created freezing rain late on the afternoon of the 2nd across the rest of southeast Ohio before changing to sleet then snow. Again, ice accretion from the freezing rain was limited to mostly a tenth of an inch. The third wave clipped extreme southern counties of southeast Ohio overnight into the morning of the 3rd. The end result was a widespread snow accumulation of 3 to 6 inches in 12 hours. Some counties even declared their highest snow emergency level. The quick drop in temperature after the initial freezing rain, made it difficult to remove the accumulating snow from roadways. Readings dropped from the 30s into the 10 to 15 degree range during this storm. In the wake of the storm, a clear sky allowed temperatures to drop into the single digits for dawn on the 4th.

Vulnerability Assessment
The following chart shows the value of all buildings within Athens County. Since winter storms affect the entire County, this is a worst-case scenario if all buildings in the County were damaged.

Building Type		# of buildings	Exposure for this scenario
Residential		9008	$ 1,072,400,355
Non-Residential		422	$ 377,485,038
Critical Facilities		4827	$ 138,054,414
	Totals:	14257	$ 1,587,939,807

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. Areas with

[33] Schmidlin, p.6.
[34] “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.

a large amount fuel are more at risk of damaging wildfire than areas relatively clean of undergrowth. A fuel model map of the U.S was found at (www.fs.fed.us/land/wfas/nfdr_map.htm), but at this time the accompanying data information is unavailable.

Location
Based on the history of wildfire in Athens County the risk of a devastating wildfire event to occur appears to be relatively low. However, some conditions that are associated with wildfire vulnerability, namely steep and vegetated slopes, are found in Athens County. Wildfire could affect all jurisdictions of the County. The County does not have a wildfire risk map. Production of a risk map for wildfire is an activity in the County's five year natural hazard mitigation plan.

Previous Occurrences
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. These statistics can be found at (www.ohiodnr.com/forestry/Fire/wildstats.htm). Other extensive internet and library research produced no evidence of devastating wildfire in Athens County which caused significant human injury or structural damage.

HAZUS

HAZUS is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes. HAZUS uses Geographic Information Systems (GIS) technology to estimate physical, economic, and social impacts of earthquake, flood, and hurricane disasters. HAZUS was utilized in Athens County to determine the impacts of earthquake and flood events in Athens County.

Overview of Athens County Properties
Containing 15 census tracts, the geographical size of Athens County is 507.94 square miles. The total population for the County is 64,757 people living in over 23,000 residential households in the region. There are an estimated 25,000 buildings in the region with a total building replacement value (excluding contents) of 3,865 (millions of dollars). Approximately 93% of the buildings (and 75% of the building value) are associated with residential housing. The replacement value of the transportation and utility lifeline systems is estimated to be 2,055 and 1,421 (millions of dollars), respectively. In terms of building construction types found in the region, wood frame construction makes up 58% of the building inventory. The remaining percentage is distributed between the other general building types.

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

Critical Facilities

For essential facilities, there are two hospitals in the County with a total bed capacity of 135 beds. There are 24 schools, 10 fire stations, 7 police stations and zero emergency operations facilities. With respect to HPL facilities, there are 14 dams identified in the region. Of these, 8 of the dams are classified as 'high hazard.' The inventory also includes 2 hazardous material sites. There are no military installations or nuclear power plants in Athens County.

Transportation and Utility Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven transportation systems that include potable water, wastewater, natural gas, crude and refined oil, electric power and communications.

The total value of the lifeline inventory is over 3,746 (millions of dollars). This inventory includes over 324 kilometers of highways, 144 bridges, and 4,722 kilometers of pipes. See tables below.

Transportation System Lifeline Inventory

System	Component	# locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	144	146.60
	Segments	88	1,808.00
	Tunnels	0	0.00
	Subtotal		**1,954.70**
Railways	Bridges	0	0.00
	Facilities	0	0.00
	Segments	24	50.80
	Tunnels	0	0.00
	Subtotal		**50.80**
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		**0.00**
Bus	Facilities	1	1.10
	Subtotal		**1.10**
Ferry	Facilities	0	0.00
	Subtotal		**0.00**
Port	Facilities	0	0.00
	Subtotal		**0.00**
Airport	Facilities	1	10.70
	Runways	1	38.00
	Subtotal		**48.60**
	Total		**2,055.20**

Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	47.70
	Facilities	2	69.90
	Pipelines	0	0.00
	Subtotal		**117.70**
Waste Water	Distribution Lines	NA	28.60
	Facilities	16	1,118.90
	Pipelines	0	0.00
	Subtotal		**1,147.50**
Natural Gas	Distribution Lines	NA	19.10
	Facilities	1	1.10
	Pipelines	0	0.00
	Subtotal		**20.20**
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
	Subtotal		**0.00**
Electrical Power	Facilities	2	231.00
	Subtotal		**231.00**
Communication	Facilities	8	0.80
	Subtotal		**0.80**
	Total		**1,517.20**

Earthquake

A HAZUS scenario was completed for an Earthquake for Athens County. It was estimated that about 4,706 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 hat 362 people will seek temporary shelter in public shelters. Building related losses are broken into two categories: direction building losses and business interruption losses. Total building losses for this scenario were 357.91 millions of 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 this scenario, there were no losses computed by HAZUS for business interruption due to transportation and utility lifeline outages. For additional detail on this scenario, see the full report in Appendix 17.

Flooding

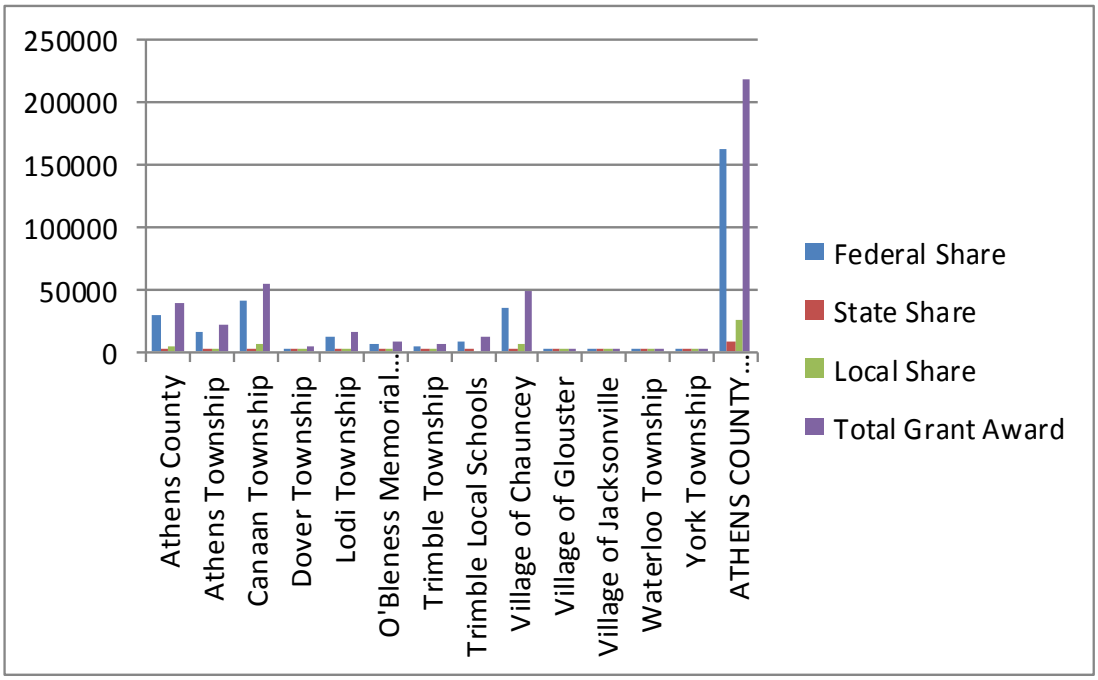
The previous Plan had determined flooding potential and total assets. These are included in this update. However, a more detailed HAZUS is necessary for a flooding scenario. This is included in the Mitigation Action items below. It would be best to recognize structures that have been slated for demolition within the flood hazard area.

Public Assistance Funds

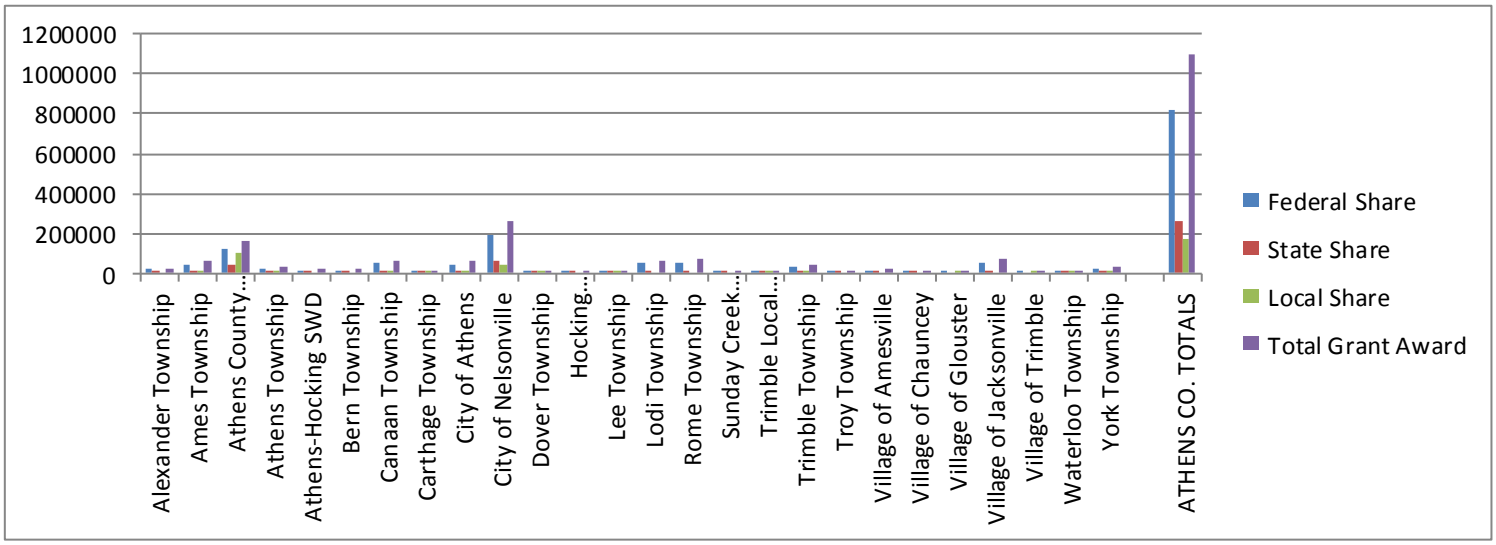
The following charts below illustrate the total amounts of public assistance that have been spent in Athens County on Natural Hazard events since 1990.

Public Assistance Funds since 1990 for Athens County

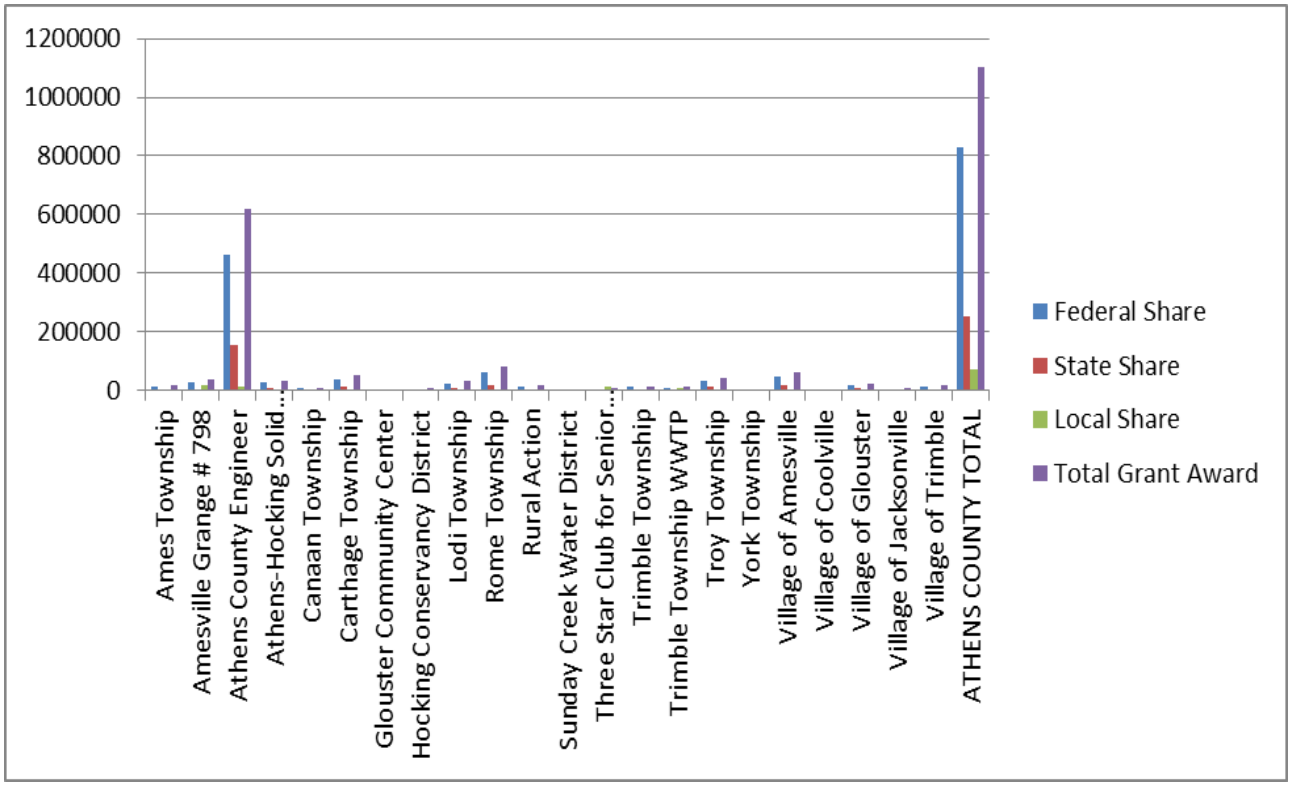
Shadyside 1990; Flood



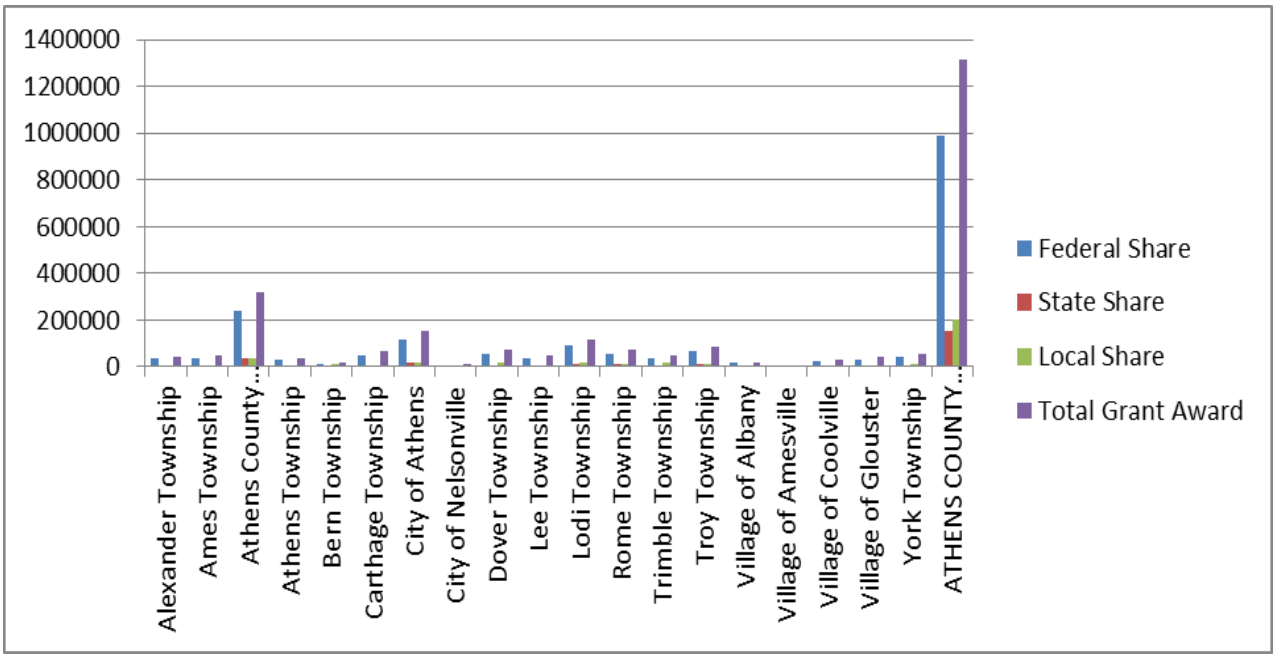
March 1997; Flood



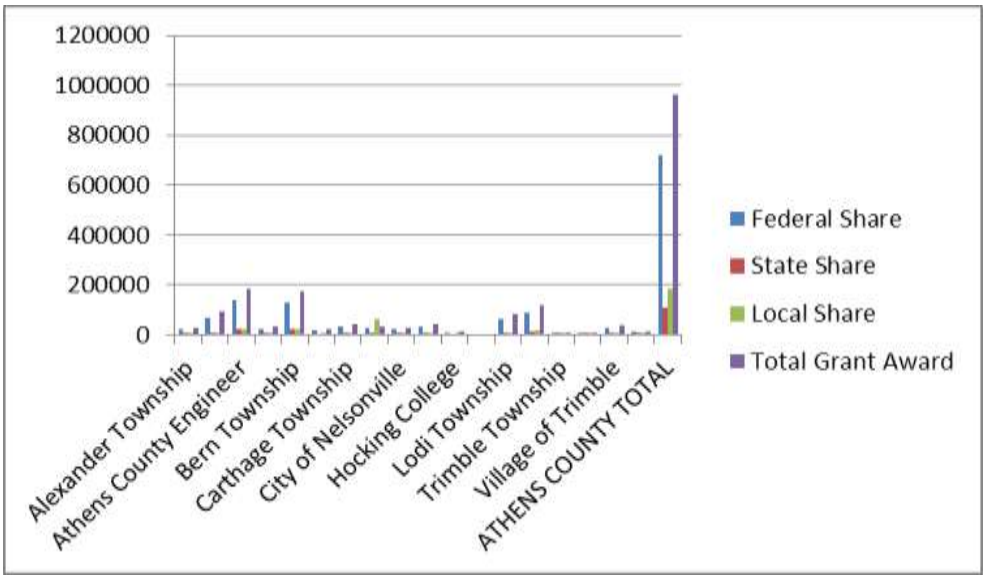
July 1998; Flood



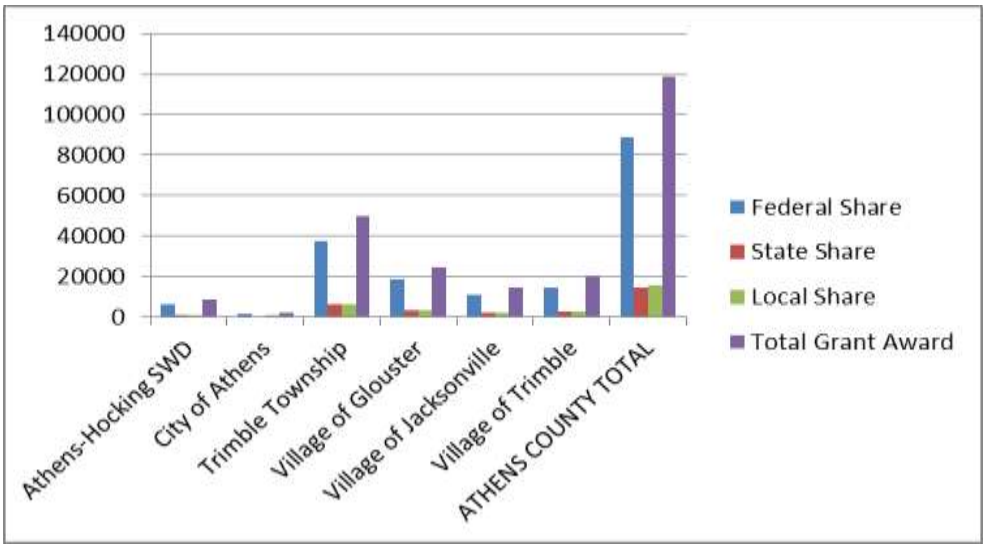
February 2003; Winter Storm



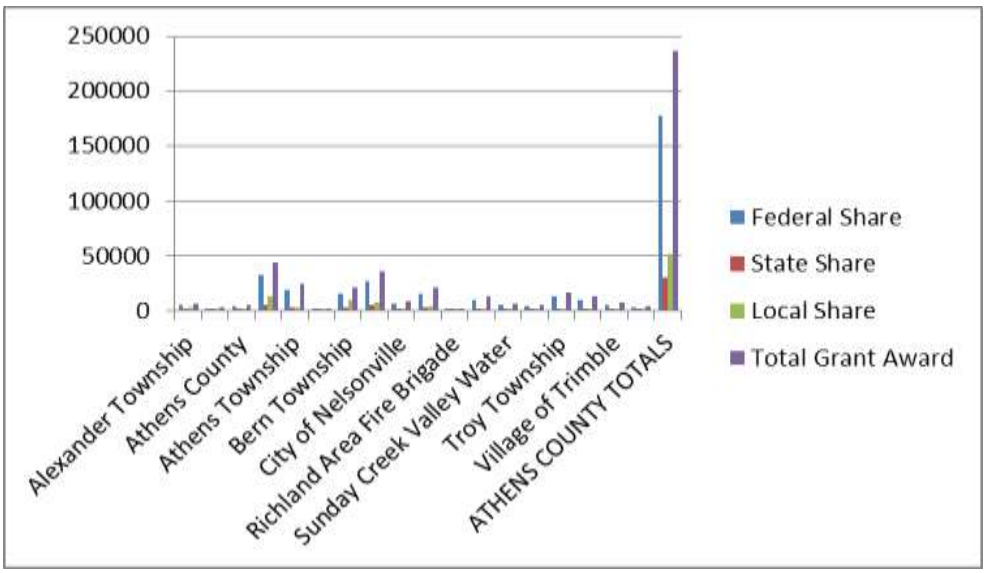
January 2004; Flood



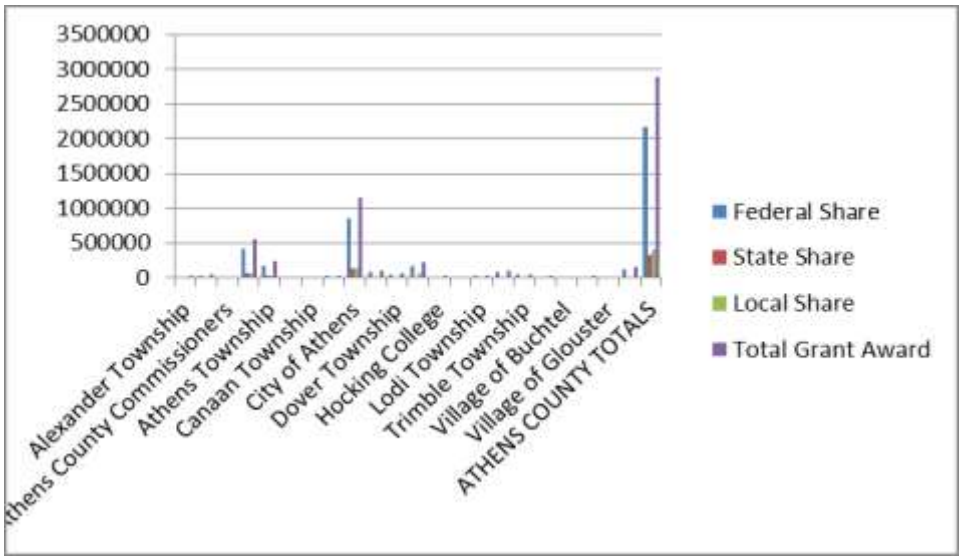
May-June 2004; Flood



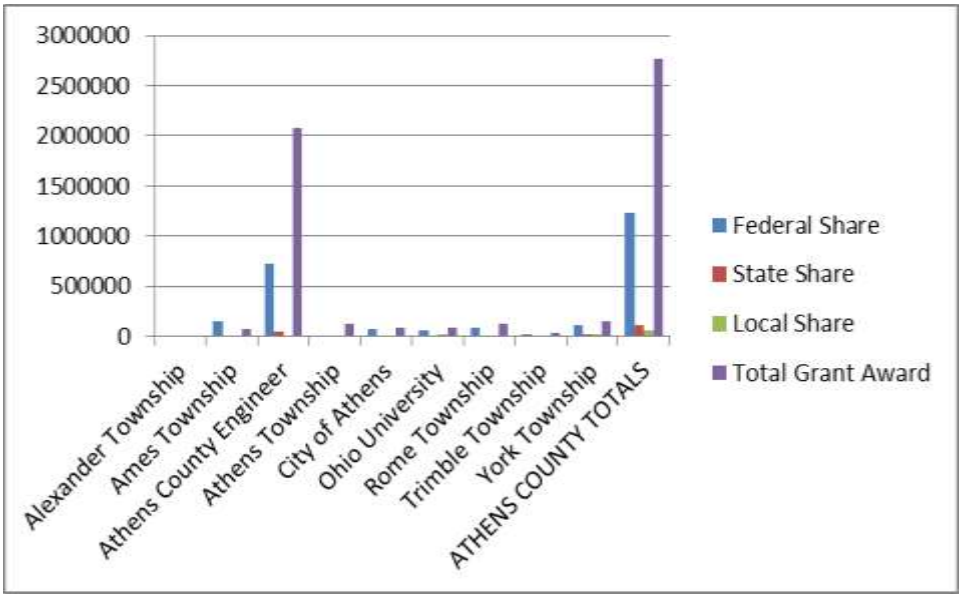
September 2004; Flood



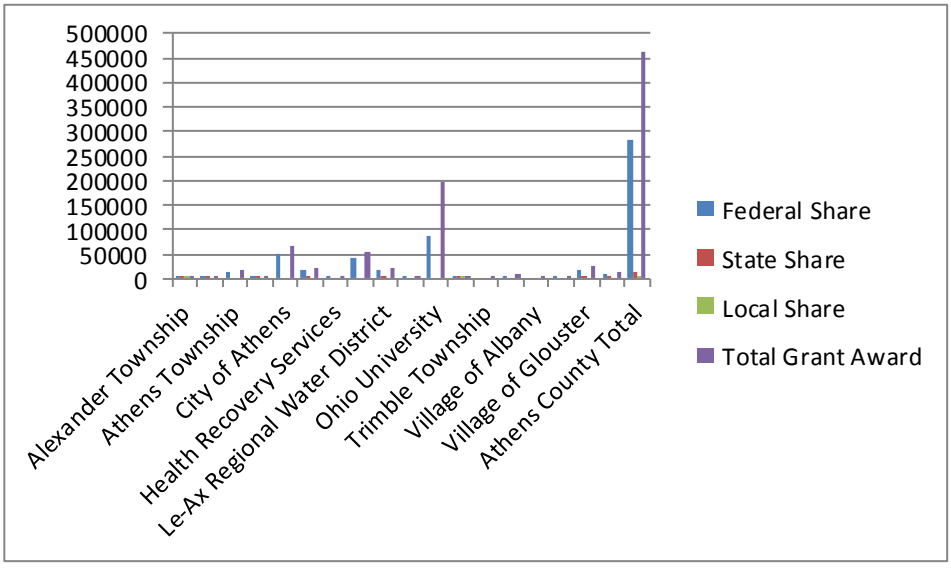
Dec.04-Feb.05; Winter Storm & Flood



April-May 2011; Flood



June-July 2012; Severe Storm



HAZARD PRIORITIZATION

After the hazard profile for the community is completed, the core group will have the information necessary to prioritize the hazards for the planning effort. The descriptions below are meant to serve as guidelines when the community is evaluating the probability and impact of a particular disaster. After the appropriate number ranking has been assigned to each hazard, multiply the probability of occurrence ranking by the impact ranking to determine the hazard's priority score and overall rank.

Defining Probability of Occurrence

5 (Nearly Certain) There is a history or record in the *past 100 years of frequent* occurrences of this hazard, some of which *caused a disaster or that could have escalated* to the level of a disaster if the event or incident had persisted over a longer period of time. Hazards of this ranking should have a high priority in planning.

4 (High Probability) There is a history in the *past 100 years of frequent* occurrences of this hazard *that could have escalated* to the level of a disaster. Hazards with this ranking should also have a high priority in planning.

3 (Low Probability) There is a history in the *past 100 years of periodic occurrences of this hazard that could have escalated to the level of a disaster* if the event or incident had not been brought under control, or if the event had persisted over a longer period of time. Since the hazard could recur, planning for this hazard should have a moderate priority.

2 (Low Probability) There is a history in the *past 100 years of periodic occurrences of this hazard* but at no time did the event escalate to the level of disaster, and only with extraordinary circumstances could a disaster occur. Mitigation planning for these hazards can reduce the probability that an emergency could occur or escalate to the level of disaster.

1 (Not Probable) No emergencies from this hazard have occurred, and *conditions make it highly unlikely that an event or incident would occur.*

0 (Not applicable in this community) Physical or other conditions make it improbable or impossible that such an event or incident would ever occur.

Defining Impact

5 Casualties, including deaths and injuries, and/or extensive property damage in the millions of dollars occur throughout the region, and the community could need outside assistance to recover from the event. Potential for critical facilities to be affected that could trigger additional hazards. Federal Disaster declaration.

4 Casualties, including deaths and injuries, and/or extensive property damage in the millions of dollars *could occur* throughout the area and critical facilities could be affected. The community would need outside assistance to recover from the event.

3 Casualties and extensive property damage would probably occur to specific target groups, or this hazard could cause injuries and property damage that requires multi-agency and multi-jurisdictional response and disaster assistance for recovery.

2 Casualties may occur and property damage from this hazard would occur as a local emergency.

1 No casualties from this hazard will occur and property damage may occur but is unlikely to occur. The incident would be treated as a local emergency but would not escalate to a disaster.

0 Physical or other conditions make it highly improbable that this event or incident would occur, or cause casualties or property damage.

Formula: Probability of Occurrence rank X Impact rank = Hazard Risk

(High 17-25; Medium 9-16; Low 1-8)

Vulnerability and Losses

Since 1990, the major declared natural hazard events have included flooding, winter storm and summer storm events. Because of this, the following portion of the hazard vulnerability analysis and assets identification focuses on these natural hazards. Flooding is the most prevalent natural hazard in Athens County. Since 1990 public assistance funds have totaled $9,404,152.14 for the County. More detail on flooding assets and potential losses is provided in the analysis above.

In terms of population and loss potential the average 10 year cumulative loss estimate for Athens County for summer storm events would be $324,000 or $0.52 Per-Capita Annual Summer Storm Losses.

Changes to Risk Assessment [35]

- Flooding-Riverine: See updated NCDC list (Appendix 8)
- Flooding-Flash: See updated NCDC list (Appendix 8)
- Blizzard: See updated NCDC list (Appendix 8)
- High Winds: See updated NCDC list (Appendix 8)
- Thunderstorm/Lightning: See updated NCDC list (Appendix 8)
- Extreme Cold: Research has indicated no changes since creation of last risk assessment
- Heat Wave: Research has indicated no changes since creation of last risk assessment
- Ice Storm: See updated NCDC list (Appendix 8)
- Hailstorm: See updated NCDC list (Appendix 8)
- Drought: Research has indicated no changes since creation of last risk assessment
- Landslide: Research has indicated no changes since creation of last risk assessment
- Wildfire: Research has indicated no changes since creation of last risk assessment
- Subsidence: Research has indicated no changes since creation of last risk assessment
- Tornado: Research has indicated no changes since creation of last risk assessment
- Dam Failure: Research has indicated no changes since creation of last risk assessment
- Earthquake: Research has indicated no changes since creation of last risk assessment

Problem Statements by Hazard

Problem statements were developed regarding natural hazards effecting Athens County. These statements can be found in Appendix 14 at the end of the document.

Asset Identification

The purpose of asset identification is to make County leaders and residents aware of the

[35] fema.gov; esri.com; geohazards.cr.usgs.gov/; library.humboldt.edu; ncdc.noaa.gov; nws.noaa.gov; stormeyes.org; tornadohistoryproject.com

extent of vulnerability to natural hazards. Numbers of residents and numbers of structures and their values are analyzed to arrive at potential loss estimates. The term "asset", for purposes of this Plan, was primarily used to mean building. Rolling stock, other equipment, and critical facilities were not included in the replacement cost calculations.

The 2010 census revealed a population of 64,757 and a housing count of 26,385 with 23,578 units occupied and 2,807 units vacant. Data available from the County Auditor made it possible to obtain the replacement costs of single family homes. County Auditor data was not available in digital format for industrial, public, or commercial structures.

Single Family Residential Property

The County Auditor listed 7,086 structures as residential real estate. The replacement value of these structures is $661,718,570 and the average replacement value computes to $93,384. Estimates were also made for the number of mobile homes (singlewides and doublewides) in the County. These estimates were made by using aerial photography to analyze a random sample of 50 parcels, out of a population of 2,003 parcels that were listed as containing mobile homes. The results of the sample analysis were that 16 parcels contained no mobile homes[36], 13 parcels contained 1 singlewide, 6 parcels contained 2 singlewides, 2 parcels contained 3 singlewides, 9 parcels contained 1 doublewide, 3 parcels contained 2 doublewides, and 1 parcel contained both a singlewide and a doublewide. Using this information, the entire population of mobile homes is estimated at 1,281 singlewides and 641 doublewides.

The replacement value for a mobile home was determined by contacting a local mobile home dealer.[37] The replacement value of a single-wide mobile home is $25.97 per square foot based on a sale price of $24,000 for a home measuring 66'X14'. The replacement value of a doublewide mobile home is $36.46 per square foot based on a sales price of $35,000 for a home measuring 40'X24'. The total value of 1,281 singlewides is $30,744,000. The total value of 641 doublewides is $22,435,000. The total of real estate and mobile home replacement costs is therefore $714,897,570.

Commercial Property

The County Auditor's commercial property database includes apartments, temporary lodging, and mobile home and RV Parks. A random sample of 50 commercial parcels was analyzed. Structures on the 50 parcels were measured for square footage using a GIS program. FEMA's per foot replacement costs were then supplied to yield a total replacement cost of $21,202,167 or an average of $424,043 for the sample. Applying the average to the population of 403 commercial parcels yielded a total replacement cost of $170,889,329.

Industrial

A total of 19 parcels were listed as industrial. Measuring the square footage of building space and utilizing replacement cost values yielded a total value of $14,282,552 for industrial structures.

Other

It is assumed that 50% of the residential dwellings (real estate plus mobile homes) have an accessory building with them and that the average replacement value of these accessory buildings is $10,000. There are an estimated 4,504 such structures and it is estimated that they have an average replacement cost of

[36] They may have been moved off the property and the Auditor's records do not yet indicate this.

[37] Brian Call, salesman, at Dupler's Homes on US Rt 33, Nelsonville, OH.

$10,000 placing their total replacement cost at $45,040,000.

Exempt Property

The County Auditor listed a total of 323 parcels as the population of exempt property. This includes all public and non-profit buildings such as fire stations, schools, and public works. Taking a random sample of 50 such parcels and utilizing FEMA's replacement cost values yielded a total replacement cost of $5,455,475 and an average replacement cost of $109,109 for the sample. The total replacement cost for the population of 323 parcels is therefore $35,242,207.

Critical Facilities

The Federal Emergency Management Agency defines critical facilities as:

- Essential-these are necessary for the health and welfare of everyone and are particularly needed after a disaster. Examples are hospitals, police and fire stations, emergency operations centers, and evacuation shelters.
- Transportation-examples include airports, bridges, railways, and roadbeds.
- Lifeline Utilities-examples are water and wastewater systems, oil, natural gas, electric power and communication systems.
- High Potential Loss Facilities-these would have a high loss (life and/or property) associated with their destruction. Examples include dams and nuclear power plants.
- Hazardous Materials Facilities-these house industrial hazardous materials such as corrosives, explosives, flammables, radioactive materials, and toxins.

A list of critical facilities has been developed as part of the Athens County Comprehensive Plan. However, the exact values have not been determined for these properties. Production of a value list for critical facilities is an activity in the County's five year natural hazard mitigation plan.

Appendix 9 lists critical facilities for Athens County. Essential services, transportation facilities, and lifeline utilities are rated according to how important it is that the facility remains functional during a natural hazard event. High potential loss facilities are rated according to likelihood of failure and degree of loss of life and property in the event of failure. Hazardous materials facilities are rated according to the degree of hazard posed should a release occur. Additionally, the facilities have listed which geographic-specific hazard (flood or landslide), if any, affects them. It is assumed that any of the non-geographic-specific hazards could affect any of the facilities.

Due to the number of critical facilities in the County and the limited time available for plan preparation, critical facilities only replacement costs for high risk areas were analyzed. This satisfies one of the activities for the five year mitigation effort to analyze replacement costs

Chart 3d: Total Assets

Asset Type	Total Number	Average Replacement Value	Total Replacement Value	Total Contents Value
Single Family Residential				
Real Estate	7,086	$93,384	$661,718,570	$330,859,285
Singlewide Mobile Homes	1,281	$24,000	$30,744,000	$15,372,000
Doublewide Mobile Homes	641	$35,000	$22,435,000	$11,271,500
Commercial	403	$424,043	$170,889,329	$170,889,329
Industrial	19	$751,713	$14,282,552	$21,423,828
Other	4,504	$10,000	$45,040,000	$22,520,000
Exempt	323	$109,109	$35,242,207	$35,242,207
TOTALS	14,257		$980,351,658	$607,524,149

for high priority facilities in the floodplain.

The table above summarizes the replacement values of the County's assets[38]:

Potential Loss Estimates

Background

For purposes of this plan, only the high risk, geography-specific hazards were used to calculate potential losses. The Committee believed that limited planning resources are better spent on planning for those hazards with a higher degree of risk than spreading thin those same resources over all the hazards. Most resources were spent on the riverine and flash flooding hazard since they pose the greatest risk. Blizzard is also a high risk hazard but does minimal damage to physical assets. It is a far greater risk to human life and safety. High winds, thunderstorm/lightning, extreme cold, extreme heat, and ice storm are medium-risk hazards that have not created major damages to residential and commercial structures but pose serious threats to human life and to lifeline utility systems.

Flooding (Riverine and Flash)

A Geographic Information System (GIS) is a powerful tool for use in calculating losses from specific natural hazard events. Particularly for geography-specific hazards, a GIS can readily locate assets that lie within certain hazard zones. GIS was used to isolate assets in flood zones.[39]

In the County's 1% annual chance floodplain there are 358 single family residential and small multifamily[40] structures, 153 mobile homes, 57

Chart 3e: Loss Figures

Asset Type	Total Number in Floodplain	Average Replacement Value	Total Replacement Value in Floodplain	Total Contents Value in Floodplain
Single Family Residential				
Real Estate	358	$ 93,384	$33,431,472	$16,715,736
Singlewide Mobile Homes	101	$ 24,000	$2,424,000	$1,212,000
Doublewide Mobile Homes	52	$ 35,000	$1,820,000	$910,000
Commercial	57	$ 424,043	$24,170,451	$24,170,451
Industrial	4	$ 751,713	$3,006,852	$4,510,278
Other	228	$ 10,000	$2,280,000	$1,140,000
Exempt	50	$ 109,109	$5,455,450	$5,455,450
TOTALS	850		$72,588,225	$54,113,915

Asset Type	% Structure Loss	Structure Loss	% Contents Loss	Contents Loss
Single Family Residential				
Real Estate	20%	$ 6,686,294	30%	$ 5,014,721
Singlewide Mobile Homes	63%	$ 1,527,120	90%	$ 1,090,800
Doublewide Mobile Homes	63%	$ 1,146,600	90%	$ 819,000
Commercial	20%	$ 4,834,090	30%	$ 7,251,135
Industrial	20%	$ 601,370	30%	$ 1,353,083
Other	20%	$ 456,000	30%	$ 342,000
Exempt	20%	$ 1,091,090	30%	$ 1,636,635
TOTALS		$ 16,342,565		$ 17,507,375
Total Structure & Contents Loss			$ 33,849,940	

[38] Critical facilities that are buildings are included under commercial or public assets. Time did not permit a replacement cost analysis for critical facilities that are not buildings. Therefore, the total number presented is low since high cost items such as bridges, water towers, water wells, and utility pumping stations were not included.

[39] The GIS flood zone was created by a process of digitizing the FEMA Flood Insurance Rate Maps.

[40] Converted single family homes and duplexes

commercial[41] buildings, 4 industrial buildings, 50 exempt buildings, and 228 other buildings. Planning resources did not allow for a detailed study of lowest floor elevations, one of the items needed to use FEMA's Loss Estimation Tables. The County also has many "A" zones on its floodplain maps so 1% annual chance flood elevations are not known. Flood elevation is the second item needed to use the Loss Estimation Tables.

For purposes of loss estimation for the flood hazard, figures of 20% building loss (63% for mobile homes) and 30% contents loss (90% for mobile homes) were chosen.[42] These figures were chosen because they are reflective of two other asset loss studies that were performed in Athens County. The Village of Trimble had a structure loss of 34% of total replacement cost and a contents loss of 48% of total contents value. The City of Athens had a structure loss of 6% of total replacement cost and a contents loss of 9% of total contents value. The County's percentage losses would be in between the City's and the Village's because the County and the City, unlike the Village of Trimble, do not have major percentages of their assets in floodplain areas where high flood depths are expected. The City and County have also had very active floodplain management programs that help to minimize losses. However, the County's settlement pattern and value and type of assets has something in common with the Village so that its loss figures would be accordingly higher than those of the City of Athens.

Loss figures for the flood hazard in Athens County can be estimated and summarized as the Chart 3e: Loss Figures illustrates above.

[41] Includes apartments, temporary lodging, and mobile home parks

[42] Figures taken from FEMA's Loss Estimation Tables for a one or two story building with a basement and for mobile homes, all with a flood depth of two feet above the lowest floor elevation.

It should be noted that many of the estimating calculations were held from the previous plan. Population has remained relatively unchanged with differences in population falling by less than 300 persons with little development in the flood hazard area.

Winter Storm/Blizzard

The losses from a winter storm or blizzard are not geographically predictable within Athens County. Severe blizzard conditions have caused loss of life in Ohio but it is also difficult to predict such an occurrence. For purposes of calculating potential loss from a winter storm or blizzard, an economic indicator will be used. It is assumed that a severe blizzard will effectively shut down all but emergency and essential operations within Athens County for a one week period. The unincorporated area of Athens County has a population of 29,519 and 9,188 households with job earnings. These 9,188 households earn a total of $393,372,846 in annual income or $7,564,862 each week. If we assume that 95% of the work force will be away from work for one week in the event of a severe blizzard, the unincorporated portion of Athens County will lose the productive equivalent of $7,186,619 in wages.

Development Trend Analysis

The population for Athens County is only expected to increase slightly over the next decade. The table below shows population figures in the 1900's for the County.

Chart 3f: Population Figures

Place	1900	1910	1920	1930	1940	1950
Athens County	38,730	47,798	50,430	44,175	46,166	45,839
State of Ohio	4,157,545	4,767,121	5,759,394	6,646,697	6,907,612	7,946,627
29 Appalachian Counties	971,844	1,017,030	1,056,812	1,075,512	1,130,970	1,133,978
	1960	1970	1980	1990	2000	2010
Athens County	46,998	54,889	56,399	59,549	62,223	64,757
State of Ohio	9,706,397	10,652,017	10,797,630	10,847,115	11,353,140	11,536,504
29 Appalachian Counties	1,226,559	1,237,660	1,376,130	1,372,893	1,455,313	2,042,040

The economy of Athens County is largely dependent upon Ohio University. The University provides stability because it is not affected by swings in the economy as much as other businesses. University enrollment is likely to increase slightly over the next decade but should not have any major impacts on development issues in Athens County.

Several new subdivisions are proposed in the County. These proposed developments are within three miles of the City of Athens so the City Planning Commission has review authority with advice from the County Regional Planning Commission. Floodplain and landslip issues are closely examined by both Planning Commissions before subdivision approvals are given.

The Village of Albany, in the southwest corner of Athens County, will get a public sewer system in two years. There will be development pressure from this new system as subdivision proposals are already being discussed. The area between Athens City (center of the County) and the Village of Albany is likely to have some growth from subdivisions. The two housing developments discussed in the previous paragraph are in this region. In general, this region does not have the flooding and landslip problems seen in other parts of the County.

An area experiencing some commercial activity is along U.S. Route 50 east of the City of Athens. Floodplain areas along the Hocking River are filled and businesses are established.

A lot of this area is still mapped as "A" zone[43] and this poses a problem for floodplain management. The County is working towards getting this area mapped. The AFRRI program mapped at least one mile of stream length in this area and developers proposing larger than 5-acre developments also have to provide mapping and flood elevations on their properties. The County requires a six-inch freeboard[44] in areas where flood elevations are known.

The following structures are proposed for construction in the unincorporated areas of Athens County within the next five years or have been recently constructed:

- New County Engineer Facility ($2.5-3 million) – the Athens County Engineer may sell his existing transportation maintenance facility in

[43] A zones show approximate floodplain boundaries but do not have flood elevations or floodways established.
[44] Freeboard is the height above the base flood elevation to which a building's lowest floor must be elevated. It is an added measure of protection since the base flood elevation may increase over time due to development in floodplain areas.

the City of Athens and relocate to a rural site in the Canaanville area. No construction will take place in the floodplain area. There are no slip prone lands associated with this site.
- New 9-1-1 Facility ($1.5 million) – the proposed location in The Plains, Ohio, has no geographic-specific hazards associated with this site.

There is also likely to be additional private development in several floodplain areas during this period. These areas are primarily east of the City of Athens adjacent to the Hocking River. New construction will have to meet current floodplain regulations that require lowest floor elevations to be elevated six inches above the base flood elevation. Therefore, no new building losses are expected from a flood at base flood elevations.

Hazard Analysis

A hazard analysis was performed to determine the risk of the natural hazard events that may affect Athens County. Each hazard was given a score for a variety of factors that may increase the impact of a natural hazard event. These factors include frequency, average response, onset, magnitude, business, human, and property.

Frequency

Frequency of a natural hazard was determined on a scale of 1 to 5. If a hazard/event does not apply it is given a value of NA. If a hazard/event resulted in no local disaster declarations, it scored a one. If the hazard/event resulted in one – two local disaster declarations, it has a Low Probability of occurrence and scored a two. If it resulted in three – five declarations, it has a Medium Probability and numerical score of three. If the hazard/event resulted in six – eight local disaster declarations, it has a High Probability and scored a four. If the hazard/event resulted in nine or more declarations, it should receive an Excessive Probability rating and a score of five.

Average Response

Average Response Duration may be defined as "time on the ground" or the time-period of response to a hazard, or event. Transportation accidents may last a few hours whereas a tire fire may last a week or a flood several weeks. Duration, therefore, may not always be indicative of the degree of damage but it remains an important planning factor.

This range was from (1) <1/2 Day; (2) <1 Day; (3) <1 Week, (4) <1 Month; (5)> 1 Month

Onset

Average Speed of Onset may affect all other factors due to lack of warning or time to prepare for impact. The lead-time required protecting lives and property varies greatly with each event. For instance, a winter storm may develop so slowly that there is time to alert crews and emplace plows, but flash floods can occur with no warning.

This range was from: (1) Over 24 hours; (2) 12-24 Hours; (3) 6-12 Hours; (4) <12 Hours

Magnitude

Magnitude is the geographic dispersion of the hazard. This would be how much of Athens County would be impacted by a flood or other natural hazard event.

This range was from: (1) Localized- < 10% land area; (2) Limited- <10%-25% land area; (3) Critical 25%-50% land area; (4) Catastrophic >50% land area.

Business

The Impact on Business refers to enduring economic impact of the hazard on the community by an event. A score of one compares to a shutdown of critical facilities for less than 24 hours. Two equals a complete shutdown of critical facilities for one week. A score of three means a complete shutdown of critical facilities for at least two weeks. A score of four equals a complete shutdown of critical facilities for 30 days or more.

Human

This factor relates to the number of lives potentially lost to a particular hazard agent. This factor can vary between jurisdictions based on economic, geographic, and demographics of the particular populations. Therefore, some generalization need be inflected on this factor.

This range was from: (1) Minimum-Minor Injuries; (2) Low-Some Injuries; (3) Medium-Multiple Severe Injuries; (4) High-Multiple Deaths

Property

This factor relates to the amount of property potentially lost to a particular hazard agent. This factor can vary between jurisdictions based on economics, geographic amount owned, and demographics of the particular populations.

This range was from: (1) <10% Damaged; (2) 10%-25% Damaged; (3) 25%-50% Damaged; (4) >50% Damaged

Each jurisdiction responded to these factors and averages of these were taken to determine overall impact for the factors during a natural hazard event to determine the overall impact in the County.

The table below summarizes the responses:

Vulnerability Analysis

The individual vulnerability analyses for each hazard can be found at the end of each hazard profile. A vulnerability analysis was performed that identifies each type of building (residential, non-residential, and critical facility), the numbers per building type, and the total estimated damage in dollars to each type of building for each identified natural hazard event. These assets are shown on the following

Hazard	Response	Onset	Adjusted Magnitude	Business	Human	Property
Flooding- Riverine	4	1	3	3	3	4
Flooding- Flash	2	4	3	1	3	2
Blizzard	3	1	4	2	4	2
High Winds	3	1	3	1	2	1
Thunderstorm/lightning	2	3	2	1	1	1
Extreme Cold	3	1	3	2	3	1
Heat Wave	3	1	2	1	4	1
Ice Storm	3	1	2	2	2	1
Hailstorm	2	1	2	1	1	1
Drought	4	1	2	1	1	3
Landslide	4	4	3	1	2	2
Wildfire	3	4	2	1	1	1
Subsidence	3	4	2	1	2	1
Tornado	3	4	2	2	3	1
Dam Failure	3	4	1	1	3	1
Earthquake	2	4	4	3	4	4

page. Based on National Climactic Data on natural hazard events, rate of occurrences of natural hazard events, and the hazard analysis, the Committee had focused on high risk events for the vulnerability analyses. Flooding is the greatest risk for the County and potential losses are detailed in this Plan. The potential losses due to a blizzard event are noted as well. In the occurrence of a severe landslip event, total losses would be limited since a majority of the 56,324.4 acres of sever landslip potential are undeveloped in Athens County.

Critical Facilities-High Risk

There are 198 critical facilities in Athens County and 39 of these facilities are considered to be of high priority to the community. For purposes of this document, the Committee assessed these facilities. Furthermore, of these 39 facilities, 8 facilities are within a natural hazard risk area. These structures would be considered vulnerable to a natural hazard event. After assuming an average cost of replacement at approximately $160.00 per square foot, the total replacement value for these facilities would be $18,793,280. The replacement values are shown below.

Critical Facilities-High Risk

Village		**Sq. Foot**	**Replacement**			
SR 78 Culvert	SR 78	580	$92,800	public	high	flood
City						
O'Bleness Hospital	Hospital Dr.	93626	$14,980,160	public	high	flood
Red Cross HQ	S. May Ave.	1360	$217,600	private	high	flood
SEOEMS Station 1	W. Union St.	5000	$800,000	public	high	flood
Kimes Reservoir	Blackburn Rd.	N/A		public	high	sev. Slip
Peach Ridge Water Tower	Peach Ridge Rd.	200	$32,000	public	high	sev. Slip
County Engineer's Depot	555 E. State St.	5000	$800,000	public	high	flood-partial
ODOT Facility	W. Union St.	11692	$1,870,720	public	high	flood-partial

	Asset Type	Total Number	Average Replacement Value	Total Replacement Value	Total Contents Value
County	**Single Family Residential**				
	Real Estate	7,086	$93,384	$661,718,570	$330,859,285
	Singlewide Mobile Homes	1,281	$24,000	$30,744,000	$15,372,000
	Doublewide Mobile Homes	641	$35,000	$22,435,000	$11,217,500
	Commercial	403	$424,043	$170,889,329	$170,889,329
	Industrial	19	$751,713	$14,282,552	$21,423,828
	Other	4,504	$10,000	$45,040,000	$22,520,000
	Exempt	323	$109,109	$35,242,207	$35,242,207
	TOTALS	14,257		$980,351,658	$607,524,149
Village	**Residential**				
	Real Estate	147	$57,911	$8,512,980	$4,256,490
	Mobile Homes	64	$26,827	$1,716,946	$858,473
	Commercial	17	$86,310	$1,467,265	$1,467,265
	Public	1	$51,070	$51,070	$51,070
	Other	53	$5,000	$265,000	$132,500
	Critical Facilities	9	$159,333	$1,434,000	
	TOTALS	291		$13,447,261	$6,765,798
City	**Single Family Residential**				
	Real Estate	2646	$112,922	$298,790,509	$149,395,255
	Mobile Homes	8	$24,000	$192,000	$96,000
	Multifamily Residential				
	Apartment Buildings	152	$1,424,784	$216,567,270	$108,283,635
	Detached Structures	905	$112,922	$102,194,033	$51,097,017
	Commercial	497	$831,695	$413,352,415	$413,352,415
	Other	764	$10,000	$7,640,000	$3,820,000
	University	162	$5,323,380	$862,387,586	$862,387,586
	TOTALS	4972		$1,901,123,813	$1,588,431,907

Chapter 4-Mitigation Strategy

This section describes the mitigation strategy process and mitigation action plan for the Athens County Multi-Hazard Mitigation Plan, Phase 3 of FEMA's 4-phase guidance. This process included the following steps:

- Set Goals
- Draft an Action Plan
- Adopt the Plan

The Plan Committee followed a process of identifying a desired state or a series of desirable conditions of reduced risk to natural hazards. With good planning and a will to achieve, the County could better survive a natural hazard than they have previously. In addition to the list of desired conditions, a second list of problem statements, or reasons why the desired state could not be achieved, was developed (see Appendix 14 for a list of problem statements by hazard type).

Activities are prioritized based on available resources. Limited staff hours required that the activities be spread over a five year period with highest priority tasks implemented earlier in the time frame. Some of the activities may require a more detailed cost/benefit analysis that can be performed in the future.

The desired state and problem statements were then used to formulate two overarching goals and a series of nine objectives. Subsequently, activities to meet the objectives were developed. The activities each have a time frame, a cost, and an individual or group who is responsible for implementing the activity.

The culmination of this planning effort is the implementation of the recommendations in this plan. 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.

Foundations

The basis and purpose of this plan includes pursuing sustainability and encouraging partnerships between County and local governments, businesses, and community service providers. These concepts permeate throughout the Plan and are integrated into the goals, policies, and objectives.

Please view the NFIP Participation table on page 72.

Partnerships

Establishment of public-private partnerships 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. This effort can be successful only if these groups work together toward this common goal.

There is a range of actions that could be taken to reduce the overall vulnerability in Athens County, and a successful mitigation program will be a sum of many individual steps. Most of the assets, properties, and critical and vulnerable infrastructure at risk in the County are not County-owned or regulated. As a result, individuals, businesses, and other levels of government must take many of the needed actions. Many of these projects are outside of the County's direct influence. Working partnerships with builders, architects, insurance companies, business organizations, community service groups, local governments, and others are necessary to ensure that mitigation programs are well-designed, broadly supported, and implemented.

Goals

A profile of the County's vulnerability to natural hazards resulted from this effort, which is documented in the preceding chapter. The resulting goals, policy statements, and mitigation actions were developed based on this profile. The HMPC developed this aspect of the plan based on a series of meetings and worksheets designed to achieve a collaborative mitigation planning effort as described further in this section.

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. Objectives define strategies to attain the goals and are more specific and measurable. In many hazard mitigation plans specific mitigation "actions" are developed to meet the objectives.

GOALS

The following five goals provide the direction for reducing future hazard-related losses within Athens County. They are listed below, with their related policy statements.

1) Minimize human, economic, and environmental disruption from natural hazards.

• Continue compliance with the National Flood Insurance Program

• Identify, conserve, and restore land of potential flood mitigation value. Lands of potential flood mitigation value are wetlands, floodplain corridors, upland storage, closed depressional basins, and areas of high infiltration potential.

• Facilitate programs to clear and maintain drainage channels to decrease flooding.

• Encourage local units of government within the County to employ hazard mitigation concepts when forming, reviewing, and updating local ordinances.

• Broaden existing partnerships with community support groups and service providers to better prepare for and respond to the needs of vulnerable populations in a disaster.

2) Educate and encourage property owners to take action to decrease their vulnerability to the impacts of natural hazards.

• Facilitate the use of existing tools and develop new educational tools to inform local officials, developers, property owners, and other stakeholders about preventing, mitigating, and responding to floods; taking advantage of flood events as an opportunity to get the word out.

• Provide an opportunity for homeowners to take advantage of state and federal flood mitigation funding to decrease their risk to flooding.

• Provide information on sources of funding and technical assistance to help individuals take actions to decrease their vulnerability to other hazards.

• Assist local businesses in planning for and responding to natural hazard events when they do occur.

3) Encourage hazard mitigation planning and incorporate that planning into other related plans.

• Engage in planning and data gathering efforts that make progress toward achieving sustainability while increasing efforts in hazard mitigation.

• Address flooding as a significant component of the County's comprehensive plan.

• Support a systematic update of FEMA's Flood Insurance Rate Maps (FIRM) for Athens County, including consideration of future conditions development and hydrology.

4) Facilitate and coordinate solutions to multi-jurisdictional issues that involve government, citizens, stakeholders, and policy-makers at all levels.

• Facilitate multi-jurisdictional, high priority flood project activities involving stakeholders, and incorporated and unincorporated units of government where they are consistent with the goals and policies of this plan.

• Manage the Hocking River and tributaries as an integrated system to minimize flood risk.

• Improve the flood-fighting response capabilities of Athens County and local units of government.

5) Improve the disaster resistance of existing buildings, structures, critical facilities, as well as infrastructure whether new construction, expansion, or renovation.

• Encourage local units of government to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities.
• Encourage critical facilities to employ hazard mitigation and sustainability concepts when building or remodeling their facilities.
• Employ hazard mitigation concepts and support on-going sustainability concepts when building, remodeling, or otherwise improving its facilities or infrastructure.
• Take steps to reduce flood damage to roadways and drainage structures and maintain emergency vehicle access to all residences.
• Facilitate the establishment of public/private partnerships with the local insurance industry, building industry, planners, architects, utilities, and their related associations to better inform and provide technical assistance to individuals about sustainable construction methods and hazard mitigation practices, and create incentives for action.
• Assist in establishing public/private partnerships with local power, water, and wastewater utilities to further fortify their systems and reduce power outages and related losses caused by natural hazards.
• Encourage local businesses to apply structural hazard mitigation and sustainability concepts when building or remodeling their facilities and when constructing residential and commercial buildings for others.

A note about Athens County's policy on Continued Compliance with the National Flood Insurance Program

Athens County recognizes the importance of the availability of flood insurance to citizens. The County will make every effort to remain in good standing with 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 local units 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.

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 provided by the regional planner or designee.

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						

Prioritization Methodology

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?

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.

Chart 4a: STAPLEE Criteria and Cost Benefit Analysis

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, 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 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?

• **Economic**: 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 (Multiple Objective Management)?

Mitigation Action Plan

This section outlines the development of the final mitigation action plan. 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. Detail on each objective is in Appendix 14 for County objectives; refer to the respective jurisdictional annexes for related objective detail.

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. Additional information on Mitigation Action Items has been placed in the State Hazard Analysis Resource and Planning Portal (SHARPP) on the State of Ohio EMA website. See Appendix 15 below for status on Mitigation Action items.

Chapter 5-Plan Adoption and Maintenance

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 Federal approval, Athens County and its participating jurisdictions intend to formally adopt the Plan by Resolution or Ordinance (see Appendix 16).

IMPLEMENTATION

Implementation through Existing Programs
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, and the County 9-1-1 Office will work cooperatively and utilize assistance from organizations such as the Red Cross 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 Appendix 14 of this Plan.

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

- The Regional Planning Commission employs a full time planner.
- 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.
- An active geographic information system that provided the data for preparation of this mitigation plan.

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 include:

• **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.

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 Appendix A for the County, and in the objectives in each jurisdictional annex. 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.

Role of Hazard Mitigation Committee

With adoption of this Plan, the Hazard Mitigation Committee will be tasked with plan implementation and maintenance. The committee will act as an advisory body to the County Commissioners and Mayors. Its primary duty is to see the Plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities.

Incorporation into Existing Planning Mechanisms

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, where possible, through these other program mechanisms. These existing mechanisms include:

- → Athens County Comprehensive Plan;
- → 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. The purpose of this coordination is to address these problems as specific projects.

Coordination at the project level 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 municipalities within the County. Involving different levels of government also allows for the pooling of resources, thereby increasing the chance of project completion and success.

Specific elements pertaining to maintenance, monitoring, and updating follows.

Maintenance, Monitoring & Updating

PLAN MAINTENANCE IMPLIES AN ONGOING EFFORT TO MONITOR AND EVALUATE PLAN IMPLEMENTATION AND TO UPDATE THE PLAN AS REQUIRED OR AS PROGRESS, ROADBLOCKS, OR CHANGING CIRCUMSTANCES ARE RECOGNIZED. THE STRATEGY FOR IMPLEMENTATION OF THIS PLAN IS OUTLINED WITHIN THE RECOMMENDATIONS OF THE PREVIOUS SECTION. IN ADDITION, THE PLAN WILL REQUIRE PERIODIC EVALUATION TO DETERMINE IF REVISION IS NECESSARY. THE COUNTY'S HAZARD MITIGATION PLANNING COMMITTEE WILL CONDUCT AN ANNUAL EVALUATION OF THE PLAN.

At a minimum, the evaluation 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:

A] 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.

B] Insuring 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?

C] 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. A tabletop display about hazard mitigation and planning has been and will continue to be present at fairs around Athens County. 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.

Figure 5a: Maintenance

Plan Updates

Updates to this Plan will follow the latest FEMA and OEMA planning guidance. Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the Plan.

Changes in vulnerability can be identified by noting:
• Decreased vulnerability as a result of implementing recommended actions;

• Increased vulnerability as a result of failed or ineffective mitigation actions; and/or

• Increased vulnerability as a result of new development (and/or annexation).

The HMPC will use the following process to evaluate progress and any changes in vulnerability as a result of plan implementation:

• A representative from the responsible entity identified in each mitigation measure will be responsible for tracking and reporting on an annual basis to the HMPC on project status and provide input on whether the project as implemented meets the defined objectives and is likely to be successful in reducing vulnerabilities.

• If the project does not meet identified objectives, the committee will determine what alternate projects may be implemented.

• New projects identified will require an individual assigned to be responsible for defining the project scope, implementing the project, and monitoring success of the project.

• Projects that were not ranked high priority but were identified as potential mitigation strategies will be reviewed as well during the monitoring and update of this Plan to determine feasibility of future implementation.

• Changes will be made to the Plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with established criteria, the time frame, priorities, and/or funding resources.

Updates to this Plan will:
• Consider changes in vulnerability due to project implementation;

• Document success stories where mitigation efforts have proven effective;

• Document areas where mitigation actions were not effective;

• Document any new hazards that may arise or were previously overlooked;

• Document hazard events and impacts that occurred within the five-year period;

• Incorporate new data or studies on hazards and risks;

• Incorporate new capabilities or changes in capabilities;

• Incorporate documentation of continued public involvement;

• Incorporate documentation to update the planning process that may include new or additional stakeholder involvement;

• Incorporate growth and development-related changes to building inventories;

• Incorporate new project recommendations or changes in project prioritization;

• Include a public involvement process to receive public comment on the updated plan prior to submitting the updated plan to OEMA/FEMA; and

• Include re-adoption by all participating entities following OEMA/FEMA approval.

Maintenance and Monitoring Schedule

The Regional Planning Commission and Athens County Emergency Management are responsible for initiating the annual Plan review. The annual review will be held in January.

Following a disaster or a major event, Athens County will review and update this Plan to reflect the status of current mitigation efforts; to expand the Plan as necessary; and to address new issues, recommendations, and activities based on the impacts of the current disaster.

This plan will be updated, approved, and adopted within a five-year cycle as per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000. The initial approval of this plan will occur in December 2014, which will be considered the anniversary date. The plan will need to be updated, re-approved by the Ohio Emergency Management (OEM) and FEMA Region V, and re-adopted by all participating jurisdictions no later than December 2019.

Continued Public Involvement

The effort that produced this Plan was an open process and the implementation must be as well. The success of the Plan depends on it. The update process provides an opportunity to publicize success stories from plan implementation and seek additional public comment. When the Natural Hazard Mitigation Committee conducts the annual review, success stories of implementation will be identified for potential press releases. The Committee will also identify opportunities to promote the Plan and its implementation successes. When producing the next update, the Committee will coordinate with all stakeholders participating in the planning process—including those that joined the Committee since the planning process began—to update and revise the plan. The plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, and press releases to local media.

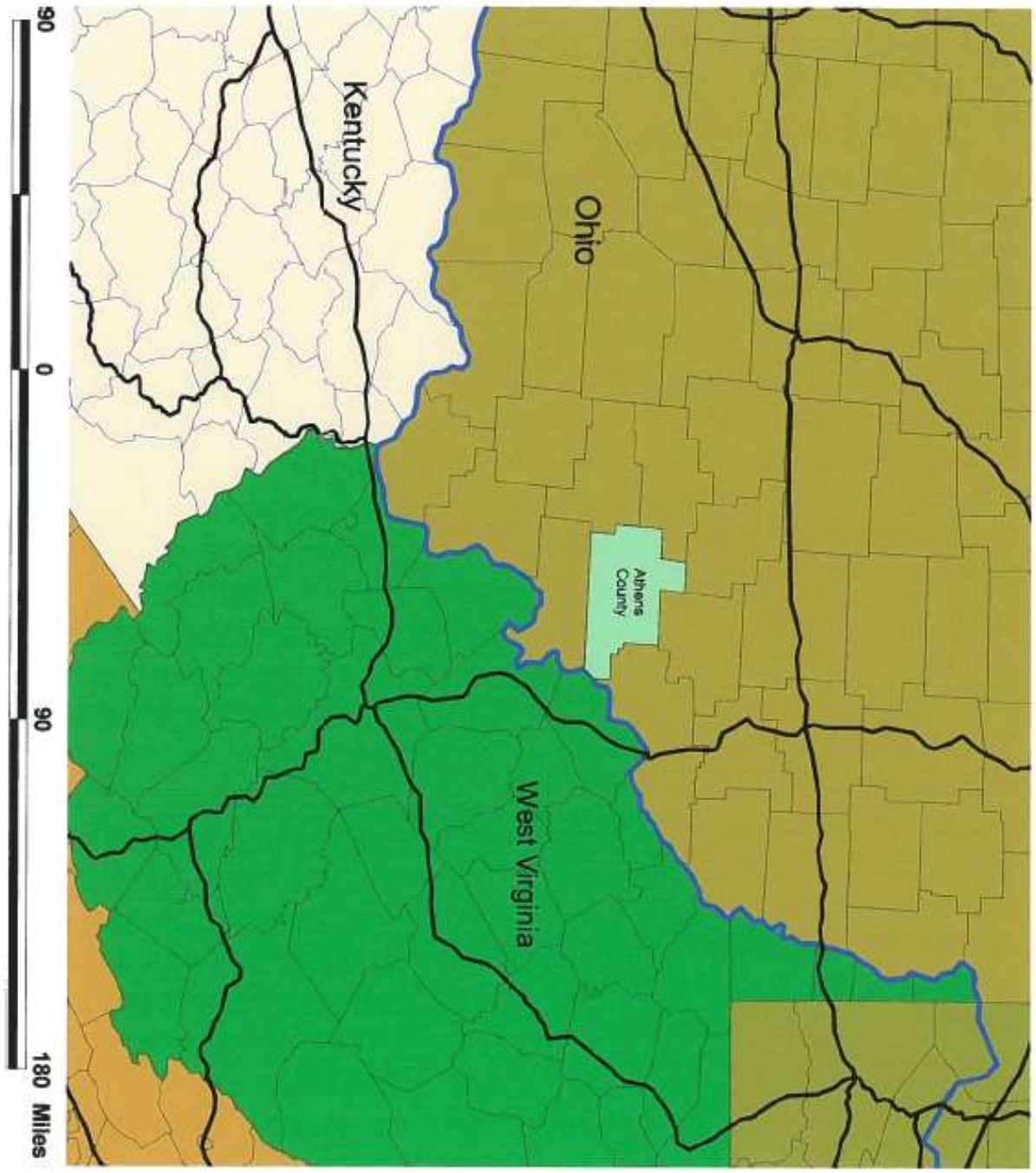
Appendix 1: County Census Data

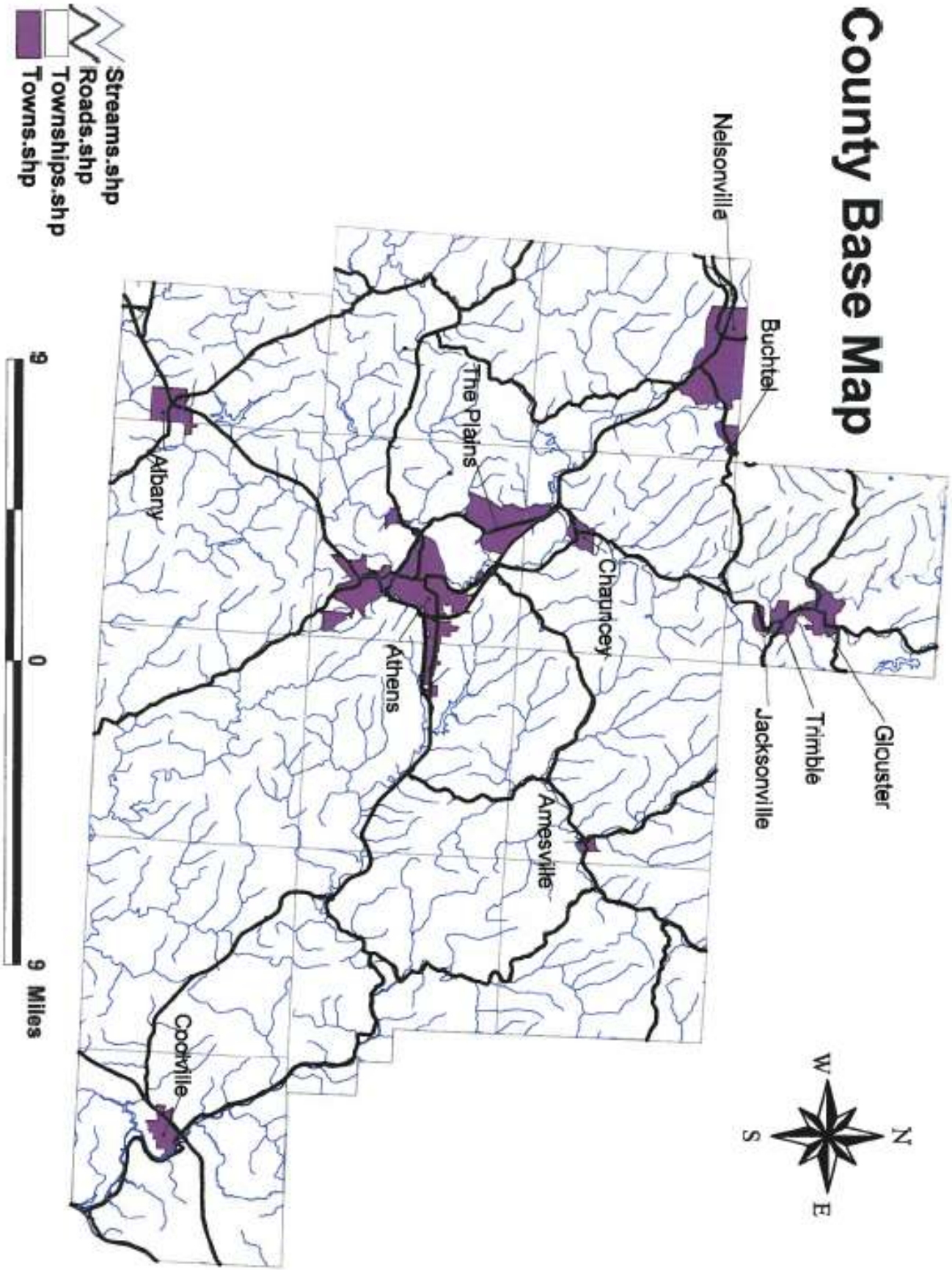
American Fact finder, Census Summary File 1

Subject	Number	
SEX AND AGE		
Total population	64,757	
Male population	32,427	
Female population	32,330	
RACE		
Total population	64,757	
One Race	63,384	
White	59,448	
Black or African American	1,774	2.7
American Indian and Alaska Native	162	0.3
Asian	1,747	2.7
Native Hawaiian and Other Pacific Islander	16	0.0
Some Other Race	237	0.4
Two or More Races	1,373	2.1
Race alone or in combination with one or more other races: [4]		
White	60,708	93.7
Black or African American	2,365	3.7
American Indian and Alaska Native	739	1.1
Asian	2,088	3.2
Native Hawaiian and Other Pacific Islander	59	0.1
Some Other Race	338	0.5
HISPANIC OR LATINO		
Total population	64,757	100.0
Hispanic or Latino (of any race)	1,002	1.5
Not Hispanic or Latino	63,755	98.5
HISPANIC OR LATINO AND RACE		
Total population	64,757	100.0
Hispanic or Latino	1,002	1.5
Not Hispanic or Latino	63,755	98.5
RELATIONSHIP		
Total population	64,757	100.0
In households	55,412	85.6
In group quarters	9,345	14.4
HOUSEHOLDS BY TYPE		
Total households	23,578	100.0

Subject	Number
HOUSING OCCUPANCY	
Total housing units	26,385
Occupied housing units	23,578
Vacant housing units	2,807
Homeowner vacancy rate (percent) [8]	2.3
Rental vacancy rate (percent) [9]	7.4
HOUSING TENURE	
Occupied housing units	23,578
Owner-occupied housing units	13,414
Renter-occupied housing units	10,164

Appendix 2: Athens County Locator




County Base Map
Nelsonville
Buchtel
The Plains
Albany
Chauncey
Athens
Amesville
Coolville
Glouster
Trimble
Jacksonville
W
N
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Roads.shp
Townships.shp
Towns.shp
9
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9 Miles

Appendix 3: PSA and Public Notice

Athens County Regional Planning Commission
Office of the Planning Director

To: Area Media
Date: 4/27/2010
Re: Survey for Hazard Mitigation Plan

For Immediate Release:

Important, New Public Survey Released!!

Athens County is updating Plans to help citizen's, government officials, utility companies, and emergency service providers be better prepared for natural hazards such as flooding, lightning, high winds, and extreme cold or heat. By identifying and understanding natural hazards and their potential impacts, we can comfortably survive them instead of being victims. In this case, an ounce of prevention really is worth a pound of cure.

The Athens County Regional Planning Commission has produced a public survey to help identify natural hazards and to assess citizen's preparedness in the event of a natural hazard occurrence. A brief online survey has been posted at http://www.surveymonkey.com/s/DJKFW9J. In just a few minutes you can provide valuable input and your comments will be heard. The survey will be kept online through September 1, 2010.

The current Plans can be viewed online at the Athens County Regional Planning Commission's website at http://www.seorf.ohiou.edu/~xx181/HazardMit.htm. The staff can answer questions or take comments if you prefer a phone call or email. You may reach Bob Eichenberg, Planning Director, at 740-594-6069 or by email at beichenberg@ci.athens.oh.us.

28 Curran Drive
Athens, OH 45701

PHONE (740)594-6069
FAX (740)594-6343
E-MAIL beichenberg@ci.athens.oh.us
WEB SITE http://www.seorf.ohiou.edu/xx181

August 21, 2014

To: The Athens Messenger
Fax: 740-592-4647

From: Emily Carnahan, County Planner
Athens SWCD

Subject: Natural Hazard Mitigation Plan Public Input Announcement

The Natural Hazard Mitigation Committee is seeking comments from the public concerning the 2011 Athens County Multi-jurisdictional Natural Hazard Mitigation Plan. The plan can be found online at http://www.seorf.ohiou.edu/~xx181/HazardMit.htm . Copies can also be found on c.d. at your local Athens County Public Library. The comment period will begin August 22, 2014 and end September 8, 2014. Comments can be mailed to the Athens County Planner at 69 S. Plains Rd, The Plains, Ohio, 45780 or emailed to emilycarnahan@athensswcd.org.

Appendix 4: Public Survey

Athens County is planning to be less vulnerable to natural disasters, and your participation is important to us!

The Athens County Regional Planning Commission, participating local towns, and other partners are preparing an update to our Natural Hazard Mitigation Plan. The purpose of this update is to identify our natural hazard risks like flooding and wind storms and determine how to reduce those risks. Upon completion, the updated Plan will provide a list of actions to make our towns and county safer. The current Plans (by town) can be viewed online at http://www.seorf.ohiou.edu/~xx181/HazardMit.htm. If possible, we recommend that you review them before completing the survey.

This survey questionnaire provides an opportunity for you to share your opinions and participate with planning. The information you provide will help us better understand your concerns and can lead to activities that lessen the impact of future natural hazard events.

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the Athens County Natural Hazard Mitigation Plan, please contact the Athens County Regional Planning Commission. You may reach Bob Eichenberg, Planning Director, at 740-594-6069 or by email at beichenberg@ci.athens.oh.us

1. Where do you live? Please mark the area that applies.

City of:	
Athens	
Nelsonville	
Unincorporated Athens County:	
Alexander Township	
Ames Township	
Athens Township	
Bern Township	
Canaan Township	
Carthage Township	
Dover Township	
Lee Township	
Lodi Township	
Rome Township	
Troy Township	
Trimble Township	
Waterloo Township	
York Township	
Village of:	
Albany	
Amesville	
Buchtel	
Chauncey	
Coolville	
Glouster	
Jacksonville	
Trimble	

2. Have you ever been impacted by a natural disaster (ie: flooding, ice storm, blizzard, landslide, etc.) ?
   - ○ Yes
   - ○ No
   - ○ Not Sure

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

- ○ Property Damage or Loss
- ○ Bodily Injury
- ○ Loss of Access to Home or Business
- ○ Emotional Stress
- ○ Other (please explain):

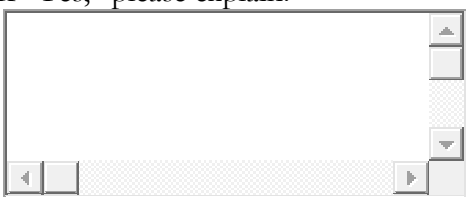
3. How concerned are you about the following natural hazards:

Natural Hazard	Very Concerned	Somewhat Concerned	Undecided	Not Very Concerned	Not Concerned
Dam Failure					
Drought					
Earthquake					
Extreme Heat					
Extreme Cold					
Flooding					
Hail					
High Wind					
Ice Storm					
Landslide/Rockfall					
Land Subsidence (Slip)					
Thunderstorm and Lightning					
Tornado					
Winterstorm/Blizzard					
Wildfire					

4. Is there another natural hazard not listed above that you think is a threat to your neighborhood?

- Yes
- No

If "Yes," please explain:



5. Do you live in a flood hazard area?

- Yes
- No

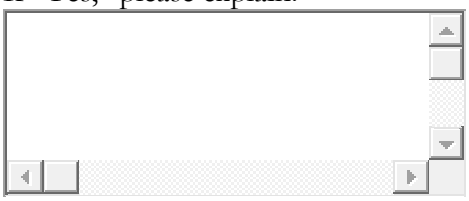
6. Do you have flood insurance?

- Yes
- No

7. Have you taken any actions to make your home, neighborhood (including rural areas), or auto safe during a natural hazard event?

- Yes
- No

If "Yes," please explain:



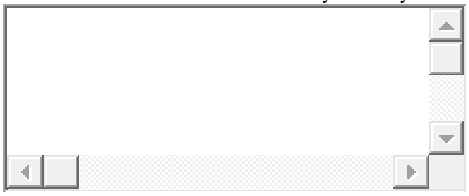
8. In your opinion, what are some steps your local government, organizations and individuals could take to reduce or eliminate the risk of future natural hazard damages in your community? (Such as identifying evacuation routes, notification/alert procedures, or providing checklists for homeowners during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

9. Mark which of the following items you currently own to help ensure your safety in the event of a natural hazard event:

Natural Hazard Emergency Item	YES	NO
Preparedness/Response Plan including a neighborhood resource directory and communications network		
Water—one gallon per person, per day (at least a 3-day supply for evacuation, 2-week supply for home). Also include an electrolyte solution.		
Food—nonperishable, easy-to-prepare items (at least a 3 day supply for evacuation, 2week supply for home)		
Dishware and utensils (mess kit)		
Flashlight(s)		
Battery powered or handcrank radio (NOAA Weather Radio, if possible)		
Extra batteries and rechargeable batteries		
First aid kit and manual		

Hand sanitizer		
Medications (7 day supply) and medical items and means for temperature control for medications		
Multipurpose tool		
Sanitation and personal hygiene items with enough extra water (consider a non-potable source) to periodically flush toilet and		
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)		
Cell phone with chargers		
Family and emergency contact information		
Extra cash		
Emergency blanket and additional blankets		
Map(s) of the area		
Tire repair kit, jumper cables, flares, signage, chains, sand, shovel, scraper, frozen lock solution, extra keys		
Candles for light & warmth		
Deck of cards, games, puzzles, books, spiritual readings		
Waterproof container for matches or a flint set		
Supplies for pets, livestock; care/shelter plans in the event of evacuation		
Paper & pencil		

10. 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?



OPTIONAL: This survey may be submitted anonymously. However, if you would like to provide your contact information below, we will have the ability to follow up with you to learn more about your ideas or concerns.

First Name

Last Name

Street Address

Apt/Suite/Office

City

State

Postal Code

Email Address

Phone Number

SURVEY RESPONSES	Very Concerned	Online Survey		Somewhat Concerned	Online Survey		Not Very Concerned	Online Survey	Not Concerned
Dam Failure	2	1	3	16	15	31	17	12	29
Drought	9	5	14	29	29	58	22	19	41
Earthquake	1	1	2	6	4	10	19	15	34
Extreme Heat	6	7	13	33	28	61	18	15	33
Extreme Cold	7	9	16	28	24	52	23	17	40
Flooding	35	26	61	25	22	47	7	6	13
Hail	4	4	8	29	26	55	30	26	56
High Wind	17	16	33	45	38	83	12	10	22
Ice Storm	20	23	43	38	29	67	11	11	22
Landslide/Rockfall	4	3	7	17	19	36	20	15	35
Land Subsidence (slip)	8	6	14	20	19	39	23	21	44
Thunderstorm and Lightning	10	9	19	35	29	64	21	16	37
Tornado	9	7	16	26	23	49	26	23	49
Wintertorm/Blizzard	18	19	37	35	26	61	13	12	25
Wildfire	7	6	13	22	21	43	26	20	46

	Yes			No			No Answer		
Preparedness/ Response Plan	13	13	26	59	50	109	4	2	6
Water Supply	31	22	53	24	41	65	21	2	23
Food Supply	53	40	93	23	23	46	0	2	2
Dishware	51	46	97	16	16	32	9	3	12
Flashlights	66	60	126	1	2	3	9	3	12
Radio	51	46	97	18	17	35	7	2	9
Extra batteries	60	53	113	9	10	19	7	2	9
First Aid Kit	57	50	107	12	13	25	7	2	9

Hand Sanitizer	53	47	100	14	15	29	9	3	12
Medications	48	46	94	21	17	38	7	2	9
Multi-purpose Tool	52	50	102	16	13	29	8	2	10
Sanitation and Personal Hygiene	31	26	57	36	35	71	9	4	13
Copies of Personal Documents	17	12	29	51	50	101	8	3	11
Cell Phone	65	59	124	4	4	8	7	2	9
Family Contact Information	52	48	100	17	15	32	7	2	9
Extra Cash	42	37	79	26	25	51	8	3	11
Emergency Blanket	59	55	114	9	8	17	8	2	10
Maps	49	45	94	21	19	40	6	1	7
Tire Repair Kit	37	34	71	31	28	59	8	3	11
Candles	61	55	116	8	8	16	7	2	9
Deck of Cards	60	57	117	11	6	17	5	2	7
Waterproof Container for Matches	37	35	72	32	28	60	7	2	9
Supplies for Pets	37	38	75	36	26	62	3	1	4
Paper and Pencil	67	63	130	2	0	2	7	2	9
Total Respondents	76	65	141						

Appendix 5: Agency Letter

Athens County Regional Planning Commission

Office of the Planning Director
28 Curran Drive
Athens, OH 45701

Telephone 740.594.6069
Fax 740.594.6343
Email beichenberg@ci.athens.oh.us

March 12, 2010

Dear Partnering Agency:

Athens County is updating its Natural Hazard Mitigation Plan to make communities less vulnerable to natural disasters. Government and non-profit agency participation is a crucial part of the planning process. This process is particularly important because the Disaster Mitigation Act of 2000 (DMA2K) requires that a Natural Hazard Mitigation Plan be developed before a community can be eligible for some forms of federal disaster relief funds. The current plans can be found on the Regional Planning Commission's website at http://www.seorf.ohiou.edu/~xx181/HazardMit.htm.

A Natural Hazard Mitigation Plan provides the means for a region's population to live safely protected from the extremes of nature's forces. For purposes of this Plan, hazards are limited to those events, such as earthquakes, tornadoes, or floods, not primarily activated by human activity. The following governments are joining in a multi-jurisdictional Natural Hazards Mitigation Plan to find ways to protect their citizens from flooding and other natural hazards:

Albany Village
Amesville Village
Athens County unincorporated
Athens City
Buchtel Village
Chauncey Village
Coolville Village
Glouster Village
Jacksonville Village
Nelsonville City
Trimble Village

Natural hazard mitigation planning involves participation in a process that accomplishes the following:

- Natural hazards analysis – Previous natural hazard events are studied to determine which natural hazards should be given priority status in the Plan.
- Asset identification – Structures and utilities that are vulnerable to natural hazard events are identified.
- Loss estimation – The amount of loss from a given scale hazard event (such as the 1% chance flood) is calculated.
- Mitigation strategy – Goals and actions that reduce risk from hazard events are proposed.
- Public dialogue – Citizen input is sought and information about the planning process is provided.

The attached questionnaire provides an opportunity for various stakeholders to participate in the mitigation planning process. The information you provide will help us better understand specific natural hazard concerns

and can lead to mitigation activities that should help lessen the impact of future natural hazard events. **Our goal is to receive a response (email preferred) from all contacted agencies**. Your response is very helpful and greatly appreciated.

We have convened a natural hazards mitigation committee to review the natural hazards and possible ways to reduce damage from flooding and other natural hazards.

This letter is a request for assistance from your agency. I ask that you take a moment to visit the Regional Planning Commission website listed in the first paragraph and then respond to these questions:

7. Do you have any information on flood or other natural hazard events that took place since the previous planning effort in 2005? We utilized historic hazard data from the National Climatic Data Center for that effort and will utilize their database again but could use any data in addition to the NCDC.

8. Do you have any suggestions or possible solutions to solve flooding or other natural hazard threats in Athens County? The County and most municipalities participate in FEMA's floodplain management program. The County has an active Emergency Management Agency.

9. Is your agency planning or implementing any natural hazard mitigation projects that we should be aware of that might impact our hazard mitigation plans?

10. Does your agency have any financial or technical assistance programs that can help us?

11. Do you have any suggestions on what types of activities we should be reviewing that would reduce flood and other natural hazard damages in the listed governments?

12. Would you be available to meet with the Natural Hazard Planning Committee (during an evening meeting) to advise us on your agency's work and recommendations?

13. Which specific areas in the previous plans are weak and need to be strengthened?

Agency:
Contact Person:
Telephone:
Email:

We would appreciate your response no later than April 5, 2010 in order for the committee to review the comments and suggestions prior to our next meeting. If you have any questions, please contact me at (740)594-6069.

Thank you for your assistance in this important planning project.

Sincerely,

Bob Eichenberg
Planning Director

NAME	ASSOCIATION	ADDRESS	CITY/STATE
Archie Stanley	Athens County Engineer	16000 US Hwy 50	Athens, OH 45701
Steve Ferryman	Ohio EMA	2855 W. Dublin-Granville Rd.	Columbus, OH 43235
Renee Young	Ohio EMA	2855 W. Dublin-Granville Rd.	Columbus, OH 43235
Roger Deardorff	Athens County Volunteer Fire Association	5441 Radford Rd.	Athens, OH 45701
George Collins	ODOT	338 Muskingum Drive	Marietta, OH 45750
	National Weather Service	400 Parkway Rd.	Charleston, WV 25309
	SEOEMS	564 West Union St.	Athens, OH 45701
	US Army Corps of Engineers	502 8th St.	Huntington, WV 25701
	American Electric Power	9135 SR 682	Athens, OH 45701
	Hocking College	3301 Hocking Parkway	Nelsonville, OH 45764
Pam Martino	American Red Cross	100 S. May Ave.	Athens, OH 45701
Peggy Pruitt	American Red Cross	100 S. May Ave.	Athens, OH 45701
NOAA	14th St. & Constitution Ave.	NW Room 6013	Washington, DC 20230
	Wayne National Forest	13700 US HWY 33	Nelsonville, OH 45764
	ODNR, Division of Forestry	360 E. State St.	Athens, OH 45701
US Dept. of Interior	USGS		Reston, VA
Governor's Office of Appalachia		308 Front St.	Marietta, OH 45750
Columbia Gas of Ohio		P.O. Box 117	Columbus, OH 43116
Sprint		906 E. State Street	Athens, OH 45701
ILGARD	Ohio University	Building 22, The Ridges	Athens, OH 45701
Hocking Conservancy District		560 W. Union St.	Athens, OH 45701
Tuppers Plains-Chester Water District	Donald Poole, General Manager	39561 Bar 30 Road	Reedsville, OH 45772
Burr Oak Regional Water District		PO Box 396	Corning, OH 43730
Le-Ax Water District	John Collins	P.O. Box 97	The Plains, OH 45780
Sunday Creek Valley Water District		15945 Second St.	Millfield, OH 45761
Athens County	Office of County Superintendent	507 Richland Ave	Athens, OH 45701
Alltel		1015 E. State St.	Athens, OH 45701
Adelphia		205 W. Second St.	Logan, OH 43138
Time Warner		28 Station St.	Athens, OH 45701
Coolville Fire Dept.		P.O. Box 417	Coolville, OH 45723
Albany Water Works		P.O. Box 153	Albany, OH 45710
Albany Wastewater		P.O. Box 153	Albany, OH 45710
Albany VFD		P.O. Box 224	Albany, OH 45710
Mary Ann Hawk	NRCS	70 N. Plains Rd.	The Plains, OH 45780
Rich Kasler	Athens Co. Water & Sewer	36 N. Plains Rd.	The Plains, OH 45780
Arcadia Nursing		East Main St.	Coolville, OH 45723
Federal Hocking School District		8461 SR 144	Stewart, OH 45778
Norfolk-Southern Railroad		Three Commercial Place	Norfolk, VA 23510-9217
Nelsonville-York School District		2 Buckeye Drive	Nelsonville, OH 45764
Jacksonville VFD		P.O. Box 166	Jacksonville, OH 45740
Glouster Fire Department		98 Front St.	Glouster, OH 45732

York Township VFD		15255 Elm Rock Rd.	Nelsonville, OH 45764
Chauncey-Dover VFD		P.O. Box 224	Chauncey, OH 45719
Nelsonville Water Treatment Plant		211 Lake Hope Drive	Nelsonville, OH 45764
Nelsonville TV Cable		1 West Columbus St.	Nelsonville, OH 45764
Nelsonville Police Department		211 Lake Hope Drive	Nelsonville, OH 45764
Nelsonville Fire Department		211 Lake Hope Drive	Nelsonville, OH 45764

Appendix 6: Public Survey Brochure

ATHENS COUNTY NATURAL HAZARD MITIGATION PLAN PUBLIC SURVEY

Athens County is planning to be less vulnerable to natural disasters, and your participation is important to us!

The Athens County Regional Planning Commission, participating local towns, and other partners are preparing an update to our Natural Hazard Mitigation Plan. The purpose of this update is to identify our natural hazard risks like flooding and wind storms and determine how to reduce those risks. Upon completion, the updated Plan will provide a list of actions to make our towns and county safer. The current Plans (by town) can be viewed online at http://www.seorf.ohiou.edu/~xx181/HazardMit.htm.

This survey questionnaire provides an opportunity for you to share your opinions and participate with planning. The information you provide will help us better understand your concerns and can lead to activities that lessen the impact of future natural hazard events.

If you have any questions regarding this survey or would like to learn about more ways you can participate in the development of the Athens County Natural Hazard Mitigation Plan, please contact the Athens County Regional Planning Commission. You may reach Bob Eichenberg, Planning Director, at 740-594-6069 or by email at beichenberg@ci.athens.oh.us

Appendix 7: Business Newsletter

What To Do for Your Business *Before* A Flood Event

flood control

Floods are the most common and prevalent of all natural disasters. Spring rain, heavy thunderstorms, and winter snow thaws can all cause flooding. Due to its climate and extensive river system, Athens County is prone to flooding and flash flood events. Most flood events develop over a period of days whereas flash floods are sudden and are like walls of water. Flash floods can be caused by dam failure or intense storms and develop in a matter of minutes. It is important for individuals and businesses to be prepared for flood events.

Steps for Implementing a Plan for Businesses:

Step 1: Establish a Planning Team

Step 2: Analyze Capabilities and Hazards

Step 3: Develop the Plan

Step 4: Implement the Plan

Detailed information about developing a plan for your business can be found at www.fema.gov

Contact Information:

For **flood elevations**
floodproofing ideas
floodplain permitting

Outside Cities and Villages:
Athens County Regional Planning Commission
740-594-6069

City of Athens-City Planner
740-592-3238

City of Nelsonville-Code Director
740-753-1314

For Villages, contact Village Mayor

The most effective way to protect your business from the effects of a flood event it is to be prepared and to plan ahead. There are certain plans to make when preparing for flood events. It is important to determine whether your business is within the floodplain and to determine the elevation of your business in relation to the flood level. You can also review Athens County's emergency plan and learn evacuation routes. Contact the Athens County Emergency Management Agency for more information on the county emergency plan. It is important to work with your business and employees to establish warning and evacuation procedures for your facility. Be sure to make plans for assisting employees who may need transportation. Another consideration is to inspect areas in your business that are subject to flooding. Identify records and equipment that can be moved to a higher location and make plans to move records and equipment in case of flood.

If your business is located within a flood hazard area, it is especially important to take steps to protect your property from floodwaters. The Federal Emergency Management Agency addresses several methods that can be used to protect business properties from the effects of flooding:

Protect Your Property from Flooding

- Build With Flood Damage Resistant Materials
- Dry Floodproof Your Building
- Add Waterproof Veneer to Exterior Walls
- Raise Electrical System Components
- Anchor Fuel Tanks
- Raise or Floodproof HVAC Equipment
- Install Sewer Backflow Valves
- Protect Wells From Contamination by Flooding
- Protect Business Records and Inventory
- Install a Generator for Emergency Power

While some nominal flooding is a regular occurrence in Athens County, an epic flood event is also possible at anytime. While serious events are not as common, it is important for residents and business owners to be aware of flood hazards. With proper planning and preparedness, businesses can reduce serious impacts from flooding. It is important to establish guidelines to keep employees safe and take steps that will minimize damage before a flood event occurs.

Appendix 8: Updated NCDC Chart

Date	Time	Type	Mag	Dth	Inj	PrD	CrD
				2	13	6.403M	0.00K
6/22/2006	14:15	Hail	0.75 in.	0	0	0.00K	0.00K
7/3/2006	18:55	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
8/7/2006	16:10	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
10/11/2006	20:36	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
12/1/2006	9:00	High Wind	50 kts. EG	0	0	0.00K	0.00K
2/7/2007	15:00	Winter Weather		0	0	0.00K	0.00K
6/8/2007	14:30	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
7/15/2007	16:05	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
7/24/2007	16:10	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
8/9/2007	19:10	Hail	0.75 in.	0	0	0.00K	0.00K
8/20/2007	15:25	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
8/25/2007	16:20	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
9/26/2007	18:10	Hail	1.00 in.	0	0	0.00K	0.00K
12/5/2007	4:00	Winter Weather		0	0	0.00K	0.00K
2/6/2008	2:50	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
2/6/2008	2:50	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
2/6/2008	2:55	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
3/4/2008	9:30	Flood		0	0	2.00K	0.00K
3/7/2008	8:00	Winter Storm		0	0	0.00K	0.00K
3/19/2008	14:00	Flood		0	0	10.00K	0.00K
6/1/2008	12:20	Hail	0.88 in.	0	0	0.00K	0.00K
6/3/2008	20:53	Thunderstorm Wind	55 kts. EG	0	0	2.00K	0.00K
6/3/2008	21:45	Flash Flood		0	0	10.00K	0.00K
6/4/2008	9:05	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
6/10/2008	3:33	Hail	0.88 in.	0	0	0.00K	0.00K
6/16/2008	16:58	Hail	0.75 in.	0	0	0.00K	0.00K
6/23/2008	15:36	Hail	0.88 in.	0	0	0.00K	0.00K
6/23/2008	16:50	Hail	0.88 in.	0	0	0.00K	0.00K
7/8/2008	14:45	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
7/8/2008	19:25	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
7/22/2008	3:20	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
9/14/2008	14:00	Strong Wind	40 kts. MG	0	0	5.00K	0.00K
1/27/2009	1:00	Winter Storm		0	0	0.00K	0.00K
2/11/2009	17:48	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
2/11/2009	21:00	High Wind	50 kts. MG	0	0	0.00K	0.00K
6/2/2009	17:30	Hail	0.75 in.	0	0	0.00K	0.00K
6/19/2009	9:30	Flash Flood		0	0	50.00K	0.00K
8/12/2009	14:15	Hail	0.75 in.	0	0	0.00K	0.00K

8/20/2009	16:18	Hail	0.75 in.	0	0	0.00K	0.00K
8/20/2009	16:20	Funnel Cloud		0	0	0.00K	0.00K
8/20/2009	16:20	Hail	1.75 in.	0	0	2.00K	0.00K
8/20/2009	16:21	Hail	1.25 in.	0	0	0.00K	0.00K
8/20/2009	16:25	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
8/20/2009	17:25	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
2/5/2010	17:00	Winter Storm		0	0	0.00K	0.00K
5/2/2010	10:45	Flood		0	0	200.00K	0.00K
5/8/2010	1:15	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
6/2/2010	20:30	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
8/4/2010	13:50	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
8/11/2010	13:00	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
8/11/2010	13:55	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
9/16/2010	17:48	Hail	1.00 in.	0	0	0.00K	0.00K
9/16/2010	17:54	Tornado	EF2	0	7	750.00K	0.00K
9/16/2010	17:59	Thunderstorm Wind	87 kts. EG	0	6	2.000M	0.00K
9/16/2010	18:45	Hail	1.00 in.	0	0	0.00K	0.00K
9/16/2010	18:52	Hail	1.25 in.	0	0	0.00K	0.00K
10/26/2010	14:23	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
10/26/2010	15:05	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
12/16/2010	8:00	Heavy Snow		0	0	0.00K	0.00K
1/20/2011	11:00	Heavy Snow		0	0	0.00K	0.00K
2/28/2011	7:20	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
2/28/2011	7:30	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
3/11/2011	9:00	Flood		0	0	0.00K	0.00K
3/23/2011	15:15	Hail	1.75 in.	0	0	25.00K	0.00K
3/23/2011	15:25	Hail	0.88 in.	0	0	0.00K	0.00K
3/23/2011	15:40	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
3/23/2011	15:50	Hail	0.88 in.	0	0	0.00K	0.00K
4/19/2011	9:30	Flood		0	0	50.00K	0.00K
5/23/2011	20:26	Thunderstorm Wind	50 kts. EG	0	0	20.00K	0.00K
6/23/2011	18:00	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
6/23/2011	18:53	Hail	0.75 in.	0	0	0.00K	0.00K
7/3/2011	20:45	Flash Flood		0	0	5.00K	0.00K
7/11/2011	14:48	Thunderstorm Wind	43 kts. EG	0	0	2.00K	0.00K
7/11/2011	22:20	Flash Flood		0	0	5.00K	0.00K
7/20/2011	11:00	Heat		0	0	0.00K	0.00K
7/28/2011	11:00	Heat		0	0	0.00K	0.00K
8/25/2011	6:45	Flash Flood		0	0	10.00K	0.00K
10/18/2011	8:00	Heavy Rain		0	0	0.00K	0.00K
1/20/2012	19:00	Winter Storm		0	0	80.00K	0.00K

3/18/2012	19:55	Hail	1.75 in.	0	0	5.00K	0.00K
3/18/2012	20:00	Hail	1.00 in.	0	0	0.00K	0.00K
3/18/2012	20:04	Hail	1.00 in.	0	0	0.00K	0.00K
3/18/2012	20:05	Hail	1.25 in.	0	0	0.00K	0.00K
3/19/2012	1:06	Hail	0.88 in.	0	0	0.00K	0.00K
3/19/2012	1:07	Hail	0.75 in.	0	0	0.00K	0.00K
3/19/2012	1:08	Hail	1.00 in.	0	0	0.00K	0.00K
3/19/2012	1:12	Hail	1.00 in.	0	0	0.00K	0.00K
3/19/2012	1:56	Hail	1.25 in.	0	0	0.00K	0.00K
3/19/2012	14:06	Hail	0.75 in.	0	0	0.00K	0.00K
3/30/2012	21:05	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
5/4/2012	20:51	Flash Flood		1	0	250.00K	0.00K
5/4/2012	21:13	Lightning		0	0	5.00K	0.00K
6/29/2012	17:10	Thunderstorm Wind	52 kts. EG	0	0	2.500M	0.00K
6/29/2012	17:12	Thunderstorm Wind	56 kts. MG	0	0	150.00K	0.00K
6/29/2012	17:15	Thunderstorm Wind	51 kts. MG	0	0	10.00K	0.00K
7/26/2012	17:15	Thunderstorm Wind	60 kts. EG	0	0	10.00K	0.00K
7/26/2012	17:15	Thunderstorm Wind	65 kts. MG	0	0	0.00K	0.00K
12/29/2012	0:30	Heavy Snow		0	0	0.00K	0.00K
2/4/2013	13:00	Winter Weather		0	0	0.00K	0.00K
6/13/2013	3:57	Lightning		0	0	4.00K	0.00K
7/9/2013	21:00	Flood		0	0	5.00K	0.00K
7/10/2013	16:21	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
11/1/2013	1:26	Hail	0.88 in.	0	0	0.00K	0.00K
11/17/2013	20:20	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
11/17/2013	20:25	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
11/17/2013	20:40	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
11/17/2013	20:45	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
11/17/2013	20:45	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
11/17/2013	20:47	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
12/22/2013	1:35	Thunderstorm Wind	56 kts. MG	0	0	0.00K	0.00K
1/6/2014	2:00	Winter Weather		1	0	0.00K	0.00K
1/6/2014	15:00	Extreme Cold/wind Chill		0	0	100.00K	0.00K
1/21/2014	20:00	Cold/wind Chill		0	0	0.00K	0.00K
1/25/2014	4:00	Winter Weather		0	0	0.00K	0.00K
1/27/2014	8:00	Extreme Cold/wind Chill		0	0	50.00K	0.00K
2/2/2014	18:00	Heavy Snow		0	0	0.00K	0.00K
2/4/2014	20:00	Winter Storm		0	0	0.00K	0.00K
2/11/2014	1:00	Cold/wind Chill		0	0	0.00K	0.00K
3/2/2014	7:00	Winter Storm		0	0	0.00K	0.00K
4/30/2014	10:00	Flood		0	0	10.00K	0.00K

Appendix 9: Critical Facilities List and Maps
Villages Critical Facilities

Facility Name	Location-Rd.	Cat.	Public/Private	Size	Replacement $	Priority	Hazard Area
AEP Substation	SR 13	LUS	private		$ 750,000.00	med	flood
SR 13 Bridge	SR 13	ES	public	3200	$ 320,000.00	high	flood
Walnut St. Bridge	Walnut St.	ES	public	1220	$ 122,000.00	low	flood
SR 78 Culvert	SR 78	ES	public	580	$ 58,000.00	high	flood
Congress Run Bridge 1	Congress Run	ES	public	400	$ 40,000.00	med	flood
Congress Run Bridge 2	Congress Run	ES	public	200	$ 20,000.00	med	flood
Center St. Bridge	Center St.	ES	public	1000	$ 100,000.00	med	flood
E. Sycamore St. Bridge	E. Sycamore St.	ES	public	240	$ 24,000.00	med	flood
Water Tank	Hill above Mason St.	LUS	public				mod. Slip
					$1,434,000.00		

Athens City Critical Facilities Facility Name	Location-Rd.	Category	Public/Private	Priority	Hazard Area
Athens Community Center	701 E. State St.	ES	public	med	flood
Athens County EOC	W. Washington St.	ES	public	high	mod. Slip
Athens County Health Department	W. Union St.	ES	public	med	
Athens County Sheriff	Union St.	ES	public	high	mod. Slip
Athens Fire Station 1	Columbus Rd.	ES	public	high	mod. Slip
Athens Fire Station 2	Richland Ave.	ES	public	high	
Athens High School	Johnson Rd.	ES	public	med	
Athens Middle School	W. State St.	ES	public	med	mod. Slip
Athens Police Department	College St.	ES	public	high	mod. Slip
City Hall	E. Washington St.	ES	public	low	mod. Slip
Doctor's Hospital	Mt. St. Mary Dr.	ES	public	high	mod. Slip
East Elementary School	Wallace St.	ES	public	med	
Morrison Elementary School	W. Union St.	ES	public	med	
O'Bleness Hospital	Hospital Dr.	ES	public	high	flood
Ohio Highway Patrol Post	E. State St.	ES	public	med	

Ohio University Campus Security	University St.	ES	public	high	
OU-Convocation Center	Shafer St.	ES	public	low	
Red Cross HQ	S. May Ave.	ES	private	high	flood
Richland Area Fire Dept.	Hooper Rd.	ES	public	high	
SEOEMS Station 1	W. Union St.	ES	public	high	flood
Southeastern Psychiatric Hospital	Hospital Dr.	ES	public	low	flood
The Plains Fire Dept.	Connett Rd.	ES	public	high	
West Elementary School	Central Ave.	ES	public	med	
AEP Regional Headquarters	SR 682	HMF	private	low	
Athens Landmark	Kurtz St.	HMF	private	low	
Bobcat BP	Columbus Rd.	HMF	private	low	flood
BP Oil Co.	Elliot St.	HMF	private	low	flood
Cline Welding Supply	Elmwood Pl.	HMF	private	low	flood
OU Clippinger Labs	S. Green Dr.	HMF	public	low	flood
OU-Biochemistry	W. State St.	HMF	public	low	
OU-Irvine Hall	West Green	HMF	public	low	
OU-Konneker Research	Ridges	HMF	public	low	mod. Slip
OU-Life Sciences	West Green	HMF	public	low	flood
OU-Multiphase Technologies	W. State St.	HMF	public	low	
OU-Stocker Hall	West Green	HMF	public	low	
Pallini Industries	Rock Riffle Rd.	HMF	private	low	flood
Pepsi Cola Bottling Co.	E. State St.	HMF	private	low	flood
Burr Oak Lake Dam	SR 13	HPLF	public	low	flood
Fisher Rd. Lake Dam	Fisher Rd.	HPLF	private	low	flood
Fox Lake Dam	Fox Lake Rd	HPLF	public	low	flood
Lake Snowden Dam	Perry Rd.	HPLF	public	low	flood
Meek's Lake Dam	Hebbardsville Rd.	HPLF	private	low	flood
Oxley Rd. Lake Dam	Oxley Rd.	HPLF	private	low	flood
AEP Substation	Curran Dr.	LUS	private	med	
AEP Substation	Strouds Run Rd.	LUS	private	med	
AEP Substation-OU physical plant	Riverside Dr.	LUS	public	med	
AEP Substation-Ridges Area	Blackburn Rd.	LUS	private	med	mod. Slip
Athens WWTP	E. State St.	LUS	private	low	flood
City water wellfields		LUS	public	med	flood
Columbus Rd. water pumping sta.	Columbus Rd.	LUS	public	med	flood
Currier St. sewer pumping station	Currier St.	LUS	public	med	flood
Curtis St. pump for Longview Tower	Curtis St.	LUS	public	med	mod. Slip
Highland Reservoir	Highland Ave.	LUS	public	high	mod. Slip

Kimes Reservoir	Blackburn Rd.	LUS	public	high	sev. Slip
Leax Water System	Industrial Dr.	LUS	private	med	flood/sev. Slip
Longview Water Tower	Longview Hts.	LUS	public	high	
OU Physical Plant	Riverside Dr.	LUS	public	med	flood
Peach Ridge Water Tower	Peach Ridge Rd.	LUS	public	high	sev. Slip
Pump station for Peach Ridge tower	Columbia Ave.	LUS	public	med	mod. Slip
Ridges Water Tower	Ridges	LUS	public	low	mod. Slip
Tennessee Gas Pipeline		LUS	private	med	flood/sev. Slip
Tennessee Gas Pumping Station	SR 50	LUS	private	med	
Texas Eastern Pipeline		LUS	private	med	flood/sev. Slip
Texas Eastern Pumping Station	Fisher Rd.	LUS	private	med	
The Plains Water/WW District	Jackson Dr.	LUS	public	med	flood
Verizon-Downtown Athens	W. Washington St.	LUS	private	med	mod. Slip
Verizon Telephone Co.	W. Union St.	LUS/HMF	private	med	
26 Rt. 33/Rt. 50 Highway Bridges		TS	public	med	flood
County Engineer's Depot	555 E. State St.	TS	public	high	flood-partial
Norfolk Southern Railroad		TS	private	low	flood
ODOT Facility	W. Union St.	TS	public	high	flood-partial
Ohio University Airport	US Rt. 50	TS	public	med	
Richland Ave. Bridge (Hocking R.)	Richland Ave.	TS	public	med	flood
Richland Ave. Old Bridge	Richland Ave.	TS	public	med	flood
Stimson Ave. Bridge	Stimson Ave.	TS	public	med	flood
W. Union St. Bridge	W. Union St.	TS	public	med	flood

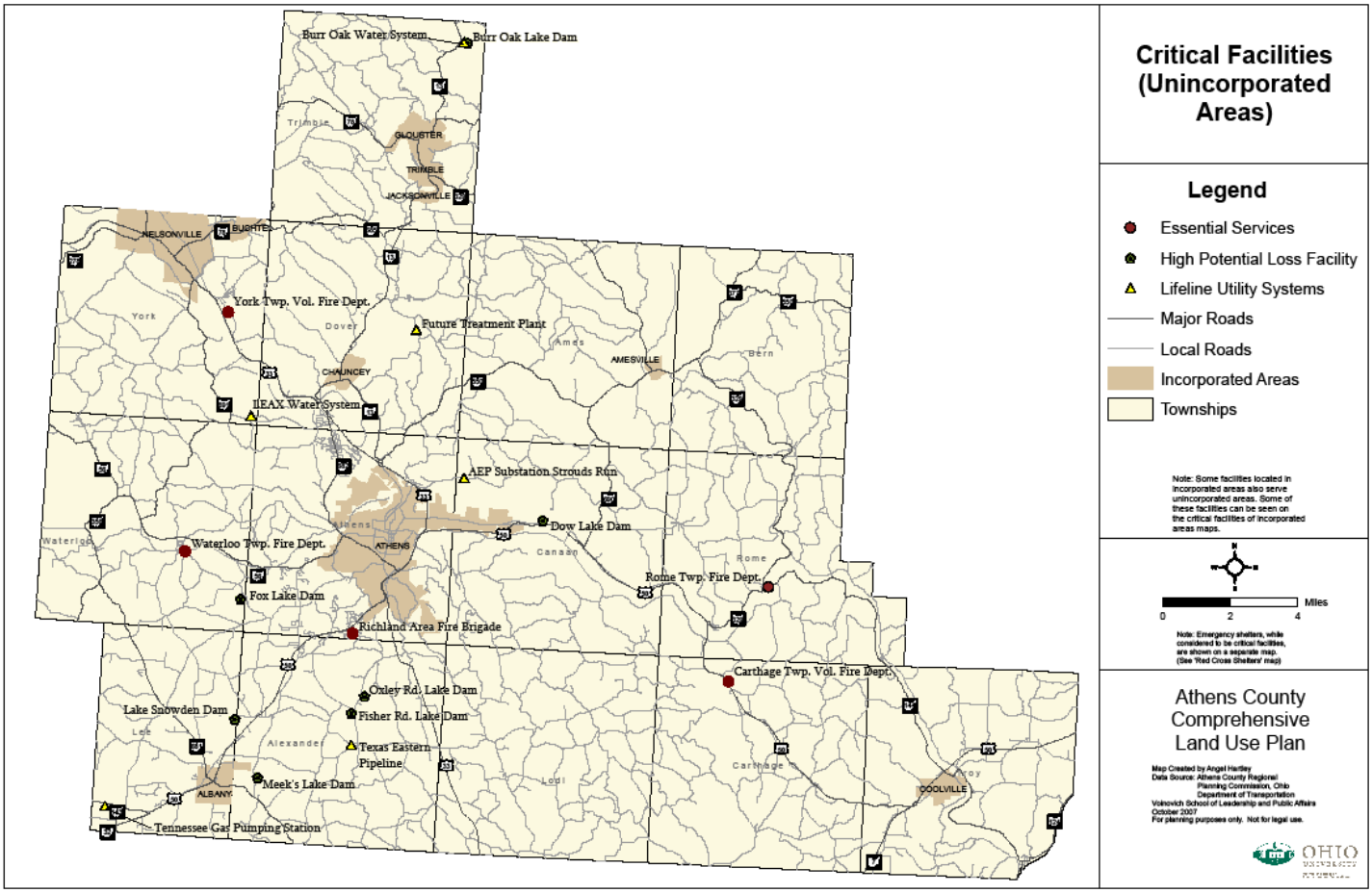
Athens County Critical Facilities						
Facility Name	Location-Rd.	Location-City	Category	Public/Private	Priority	Hazard
Athens Community Center	701 E. State St.		ES	public		flood
Athens County EOC	W. Washington St.		ES	public		mod. Slip
Athens County Health Department	W. Union St.		ES	public		
Athens County Sheriff	Union St.	Athens	ES	public	high	mod. Slip
Athens Fire Station 1	Columbus Rd.	Athens	ES	public	high	
Athens Fire Station 2	Richland Ave.	Athens	ES	public	high	
Athens High School	Johnson Rd.		ES	public		

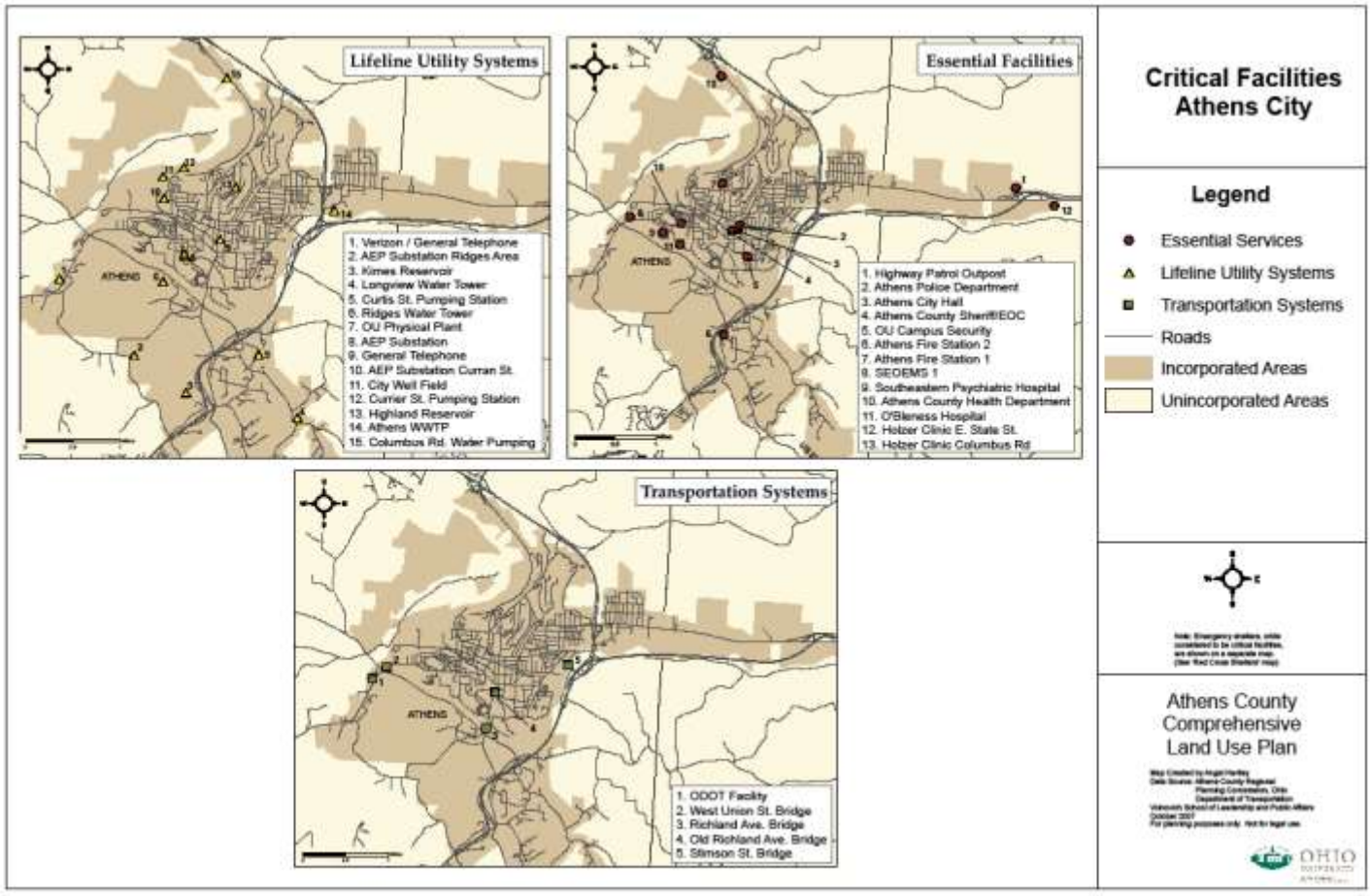
Athens Middle School	W. State St.		ES	public		mod. Slip
Athens Police Department	College St.		ES	public		mod. Slip
City Hall	E. Washington St.		ES	public		mod. Slip
Doctor's Hospital	Mt. St. Mary Dr.	Nelsonville	ES	public	high	
East Elementary School	Wallace St.		ES	public		
Morrison Elementary School	W. Union St.		ES	public		
O'Bleness Hospital	Hospital Dr.		ES	public	high	flood
Ohio Highway Patrol Post	E. State St.		ES	public		
Ohio University Campus Security	University St.		ES	public		
OU-Convocation Center	Shafer St.		ES	public		
Albany Fire Dept.	W. Clinton St.	Albany	ES	public	high	
Amesville Fire Dept.	Maple St.	Amesville	ES	public	high	
Coolville Fire Dept.	2770 6th St.	Coolville	ES	public	high	
Chauncey Fire Dept.	SR 13	Chauncey	ES	public	high	
Rome Twp. Fire Dept.	SR 144	Stewart	ES	public	high	
Richland Area Fire Dept.	Hooper Rd.	Athens Twp.	ES	public		
SEOEMS Station 1	W. Union St.	Athens	ES	public	high	flood
Southeastern Psychiatric Hospital	Hospital Dr.		ES	public		flood
The Plains Fire Dept.	Connett Rd.		ES	public		
SEOEMS Station 2	SR 78	Glouster	ES	public	high	
SEOEMS Station 3	Main St.	Coolville	ES	public	high	
SEOEMS Station 4	67 Fayette St.	Nelsonville	ES	public	high	
SEOEMS Station 5	Washington St.	Albany	ES	public	high	
Nelsonville Fire Dept.	SR 278	Nelsonville	ES	public	high	
Glouster Fire Dept.	32 Water St.	Glouster	ES	public	high	
York Township Fire Dept.	Elm Rock Rd.	Nelsonville	ES	public	high	
Waterloo Fire Dept.	Hawk Rd.	New Marshfield	ES	public	high	
The Plains Fire Dept.	Connett Rd.	The Plains	ES	public	high	
Jacksonville Fire Dept.	6th St.	Jacksonville	ES	public	high	
West Elementary School	Central Ave.		ES	public		
AEP Regional Headquarters	SR 682		HMF	private		
Athens Landmark	Kurtz St.		HMF	private		
Bobcat BP	Columbus Rd.		HMF	private		flood
BP Oil Co.	Elliot St.		HMF	private		flood
Cline Welding Supply	Elmwood Pl.		HMF	private		
OU Clippinger Labs	S. Green Dr.		HMF	public		flood
OU-Biochemistry	W. State St.		HMF	public		
OU-Irvine Hall	West Green		HMF	public		
OU-Konneker Research	Ridges		HMF	public		mod. Slip
OU-Life Sciences	West Green		HMF	public		flood
OU-Multiphase Technologies	W. State St.		HMF	public		
OU-Stocker Hall	West Green		HMF	public		
Pallini Industries	Rock Riffle Rd.		HMF	private		flood
Pepsi Cola Bottling Co.	E. State St.		HMF	private		flood

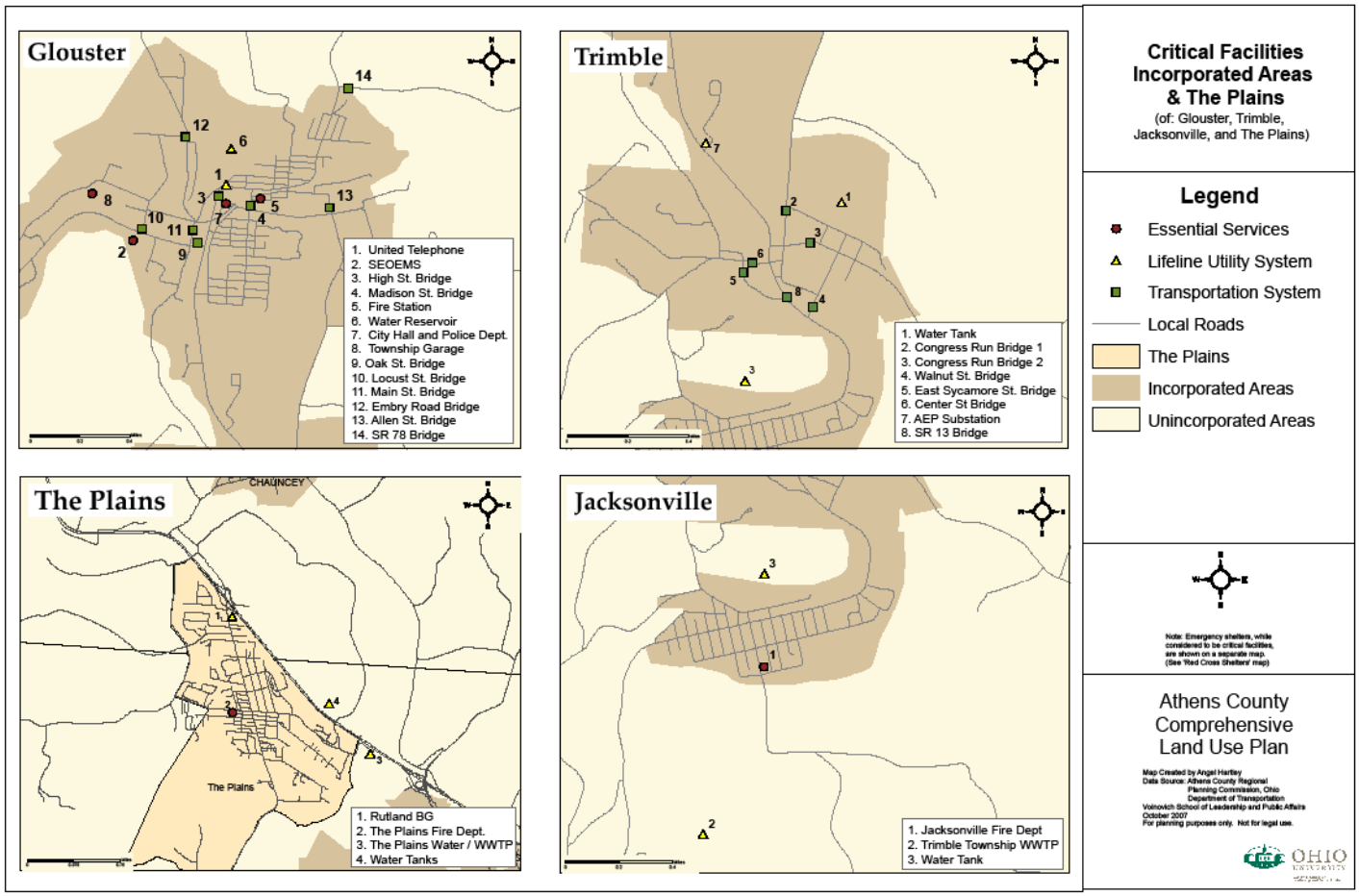
Facility Name	Location-Rd.	Location-City	Category	Public/Private	Priority	Hazard
Burr Oak Lake Dam	SR 13		HPLF	public		flood
Fisher Rd. Lake Dam	Fisher Rd.		HPLF	private		flood
Fox Lake Dam	Fox Lake Rd		HPLF	public		flood
Lake Snowden Dam	Perry Rd.		HPLF	public		flood
Meek's Lake Dam	Hebbardsville Rd.		HPLF	private		flood
Oxley Rd. Lake Dam	Oxley Rd.		HPLF	private		flood
Sprint	14 E. Main St.	Glouster	LUS	private	med	
Alltell	83 Main St.	Coolville	LUS	private	med	
AEP Substation	Curran Dr.	Athens	LUS	private		
AEP Substation	Strounds Run Rd.	Athens	LUS	private		
AEP Substation	SR 13	Trimble	LUS	private		
AEP Substation-OU physical plant	Riverside Dr.		LUS	public		
AEP Substation-Ridges Area	Blackburn Rd.		LUS	private		mod. Slip
AEP Substation	Monk Rd.	Nelsonville	LUS	private	med	
AEP Substation		Nelsonville	LUS	private	med	
Athens WWTP	E. State St.		LUS	private		flood
City water wellfields			LUS	public		flood
Columbus Rd. water pumping sta.	Columbus Rd.		LUS	public		
Currier St. sewer pumping station	Currier St.		LUS	public		
Curtis St. pump for Longview Tower	Curtis St.		LUS	public		mod. Slip
Highland Reservoir	Highland Ave.		LUS	public		mod. Slip
Kimes Reservoir	Blackburn Rd.		LUS	public		
Leax Water System	Industrial Dr.		LUS	private		
Longview Water Tower	Longview Hts.		LUS	public		
OU Physical Plant	Riverside Dr.		LUS	public		
Peach Ridge Water Tower	Peach Ridge Rd.		LUS	public		Sev. Slip
Pump station for Peach Ridge tower	Columbia Ave.		LUS	public		mod. Slip
Ridges Water Tower	Ridges		LUS	public		mod. Slip
Tennessee Gas Pipeline			LUS	private		
Tennessee Gas Pumping Station	SR 50		LUS	private		
Texas Eastern Pipeline			LUS	private		
Texas Eastern Pumping Station	Fisher Rd.		LUS	private		
The Plains Water/WW District	Jackson Dr.		LUS	public		
Verizon-Downtown Athens	W. Washington St.		LUS	private		mod. Slip
Verizon Telephone Co.	W. Union St.		LUS/HMF	private		
26 Rt. 33/Rt. 50 Highway Bridges			TS	public		
County Engineer's Depot	555 E. State St.		TS	public		
Norfolk Southern Railroad			TS	private		
ODOT Facility	W. Union St.		TS	public		
Ohio University Airport	US Rt. 50		TS	public		
Richland Ave. Bridge (Hocking	Richland Ave.		TS	public		

R.)						
Richland Ave. Old Bridge	Richland Ave.		TS	public		
Stimson Ave. Bridge	Stimson Ave.		TS	public		
W. Union St. Bridge	W. Union St.		TS	public		

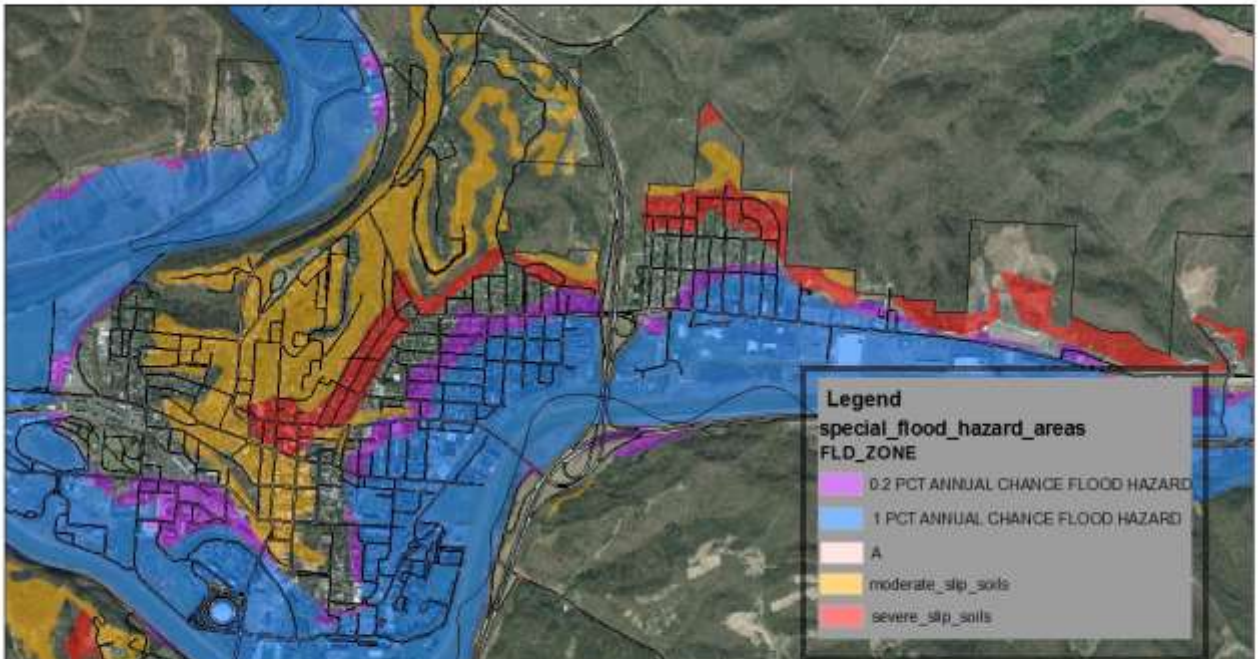
Categories:
ES-Essential Facility
TS-Transportation System
LUS-Lifeline Utility System
HPLF-High Potential Loss Facility
HMF-Hazardous Material Facility

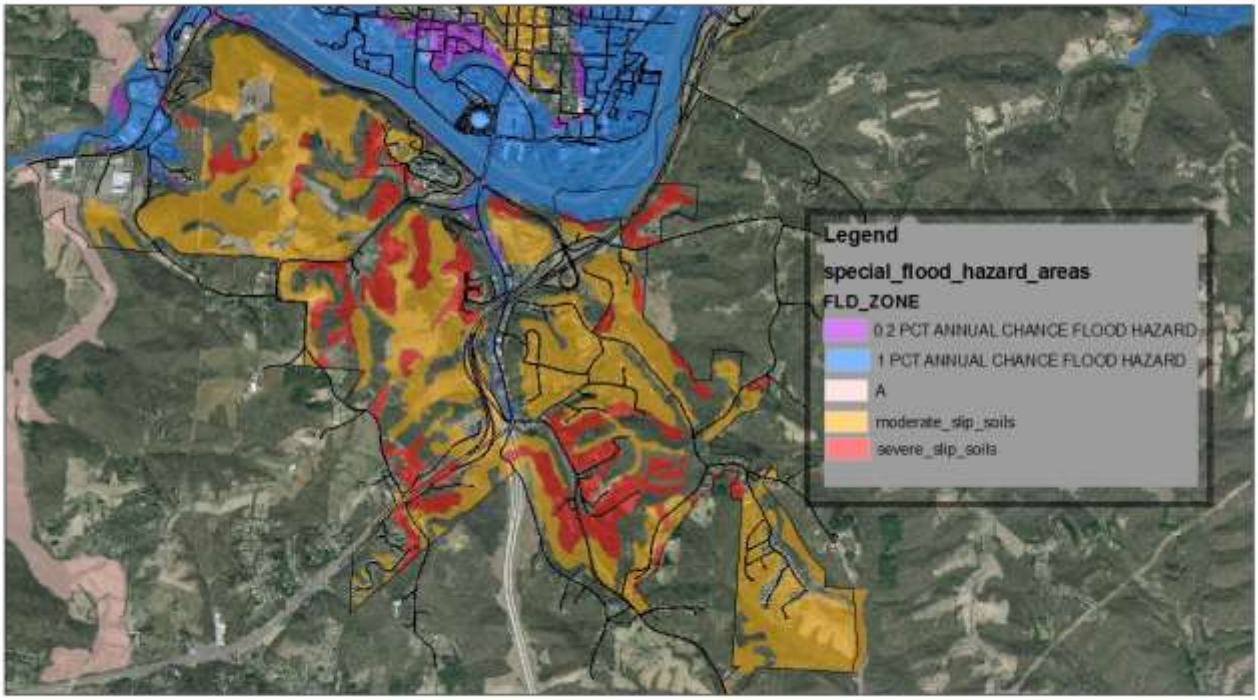



Lifeline Utility Systems
1. Verizon / General Telephone
2. AEP Substation Ridges Area
3. Kimes Reservoir
4. Longview Water Tower
5. Curtis St. Pumping Station
6. Ridges Water Tower
7. OU Physical Plant
8. AEP Substation
9. General Telephone
10. AEP Substation Curran St.
11. City Well Field
12. Currier St. Pumping Station
13. Highland Reservoir
14. Athens WWTP
15. Columbus Rd. Water Pumping
ATHENS
Essential Facilities
1. Highway Patrol Outpost
2. Athens Police Department
3. Athens City Hall
4. Athens County Sheriff/EOC
5. OU Campus Security
6. Athens Fire Station 2
7. Athens Fire Station 1
8. SEOEMS 1
9. Southeastern Psychiatric Hospital
10. Athens County Health Department
11. O'Bleness Hospital
12. Holzer Clinic E. State St.
13. Holzer Clinic Columbus Rd
ATHENS
Transportation Systems
1. ODOT Facility
2. West Union St. Bridge
3. Richland Ave. Bridge
4. Old Richland Ave. Bridge
5. Stimson St. Bridge
ATHENS
Critical Facilities
Athens City
Legend
Essential Services
Lifeline Utility Systems
Transportation Systems
Roads
Incorporated Areas
Unincorporated Areas
Athens County
Comprehensive
Land Use Plan


Glouster
1. United Telephone
2. SEOEMS
3. High St. Bridge
4. Madison St. Bridge
5. Fire Station
6. Water Reservoir
7. City Hall and Police Dept.
8. Township Garage
9. Oak St. Bridge
10. Locust St. Bridge
11. Main St. Bridge
12. Embry Road Bridge
13. Allen St. Bridge
14. SR 78 Bridge
Trimble
1. Water Tank
2. Congress Run Bridge 1
3. Congress Run Bridge 2
4. Walnut St. Bridge
5. East Sycamore St. Bridge
6. Center St Bridge
7. AEP Substation
8. SR 13 Bridge
The Plains
CHAUNCEY
The Plains
1. Rutland BG
2. The Plains Fire Dept.
3. The Plains Water / WWTP
4. Water Tanks
Jacksonville
1. Jacksonville Fire Dept
2. Trimble Township WWTP
3. Water Tank
Critical Facilities
Incorporated Areas
& The Plains
(of: Glouster, Trimble, Jacksonville, and The Plains)
Legend
Essential Services
Lifeline Utility System
Transportation System
Local Roads
The Plains
Incorporated Areas
Unincorporated Areas
Note: Emergency shelters, while considered to be critical facilities, are shown on a separate map. (See 'Red Cross Shelters' map)
Athens County
Comprehensive
Land Use Plan
Map Created by Angel Hartley
Data Source: Athens County Regional Planning Commission, Ohio Department of Transportation
Voinovich School of Leadership and Public Affairs
October 2007
For planning purposes only. Not for legal use.
OHIO UNIVERSITY

Appendix 10: City of Athens Flood Maps



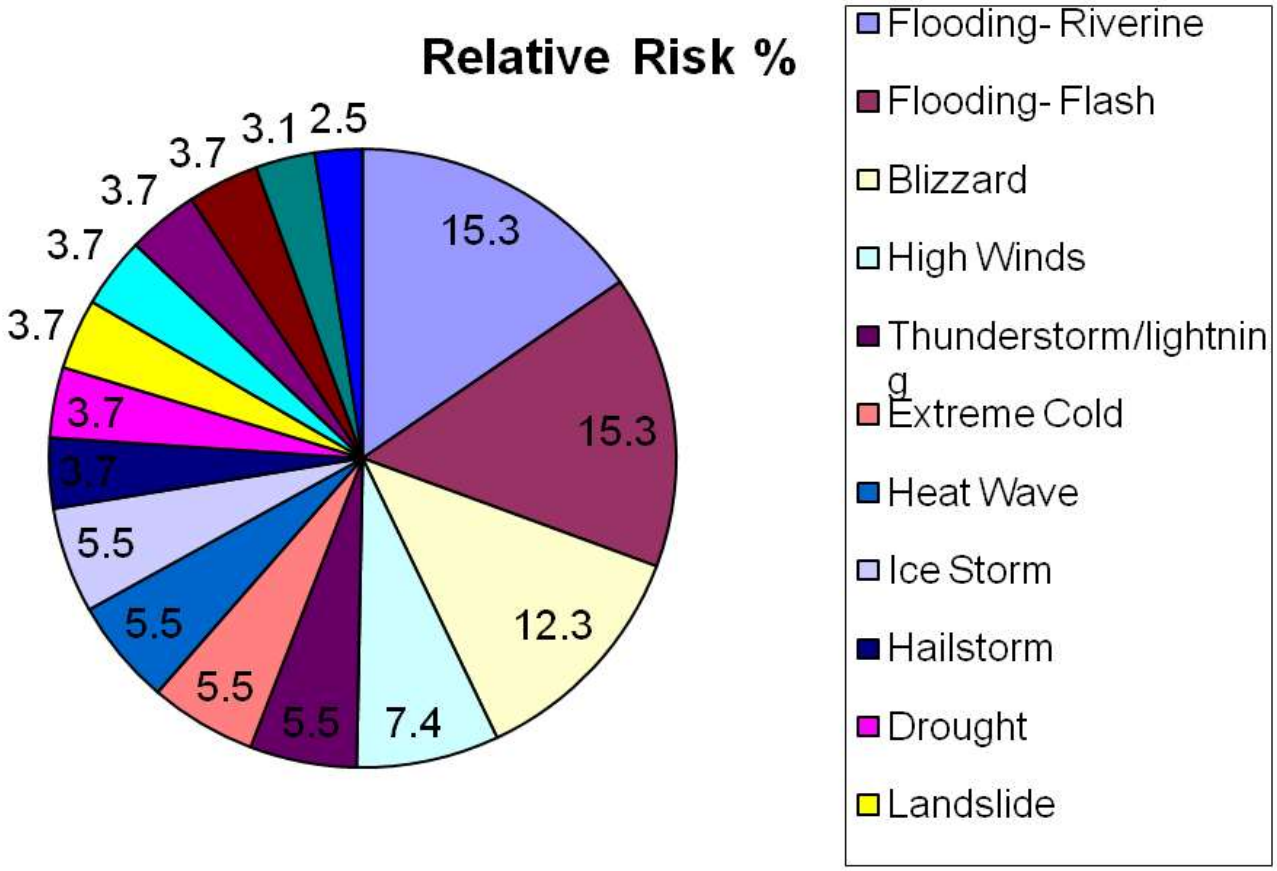


Appendix 11: Natural Hazard Ranking

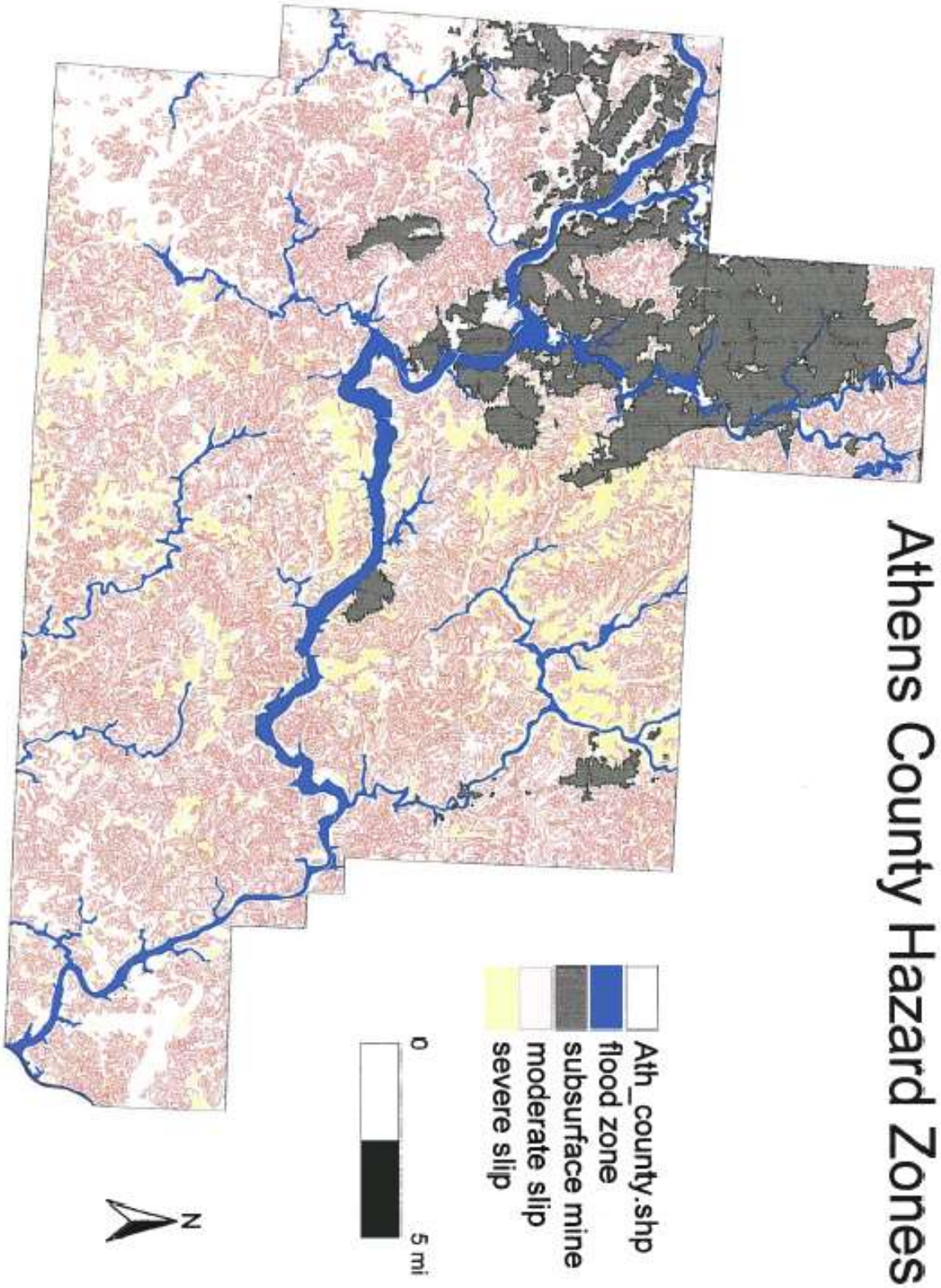
Athens County Natural Hazard Risk Assessment

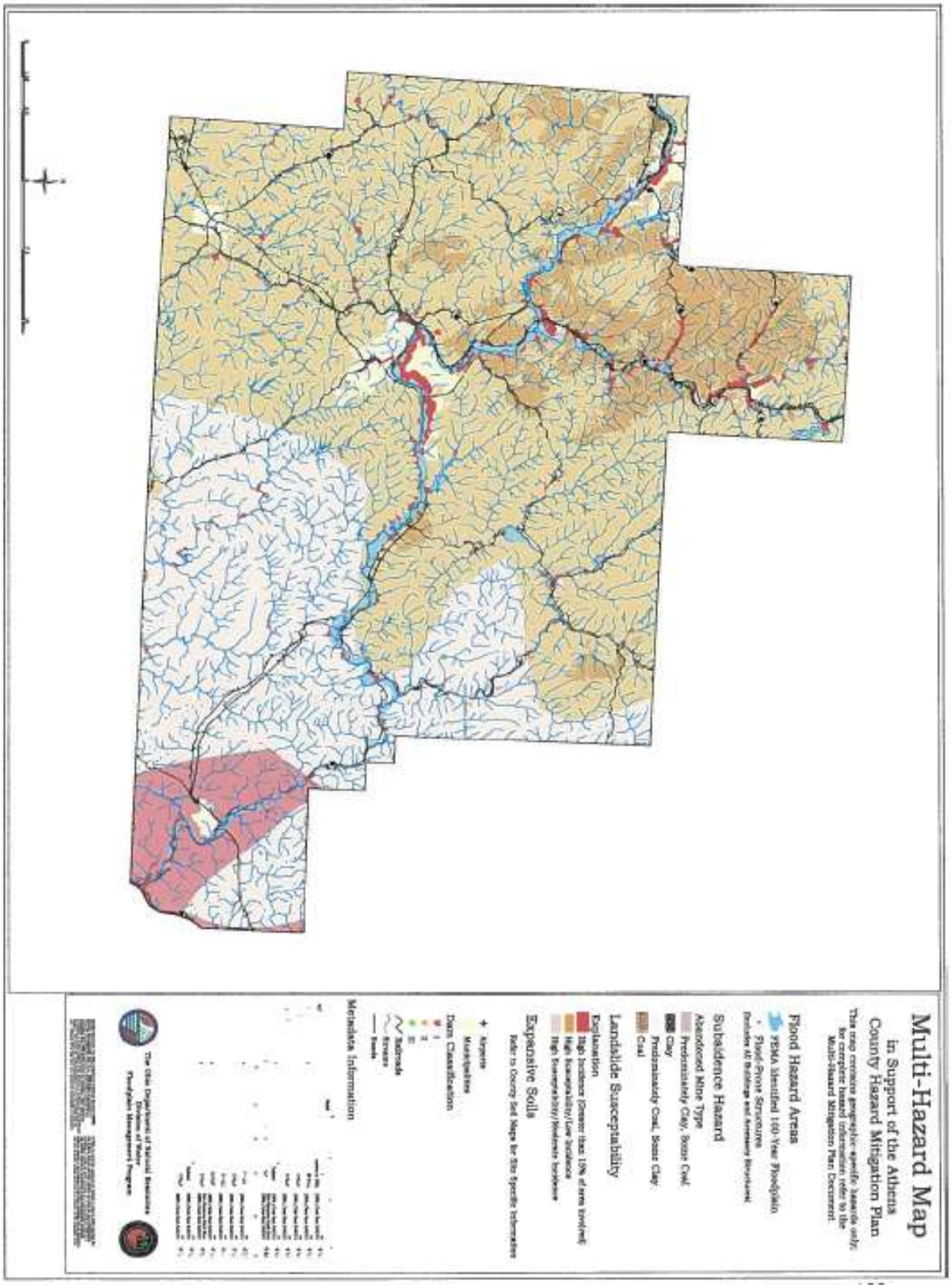
Hazard	Probability	Impact	Priority Score (Risk)	Hazard Rating	Relative Risk %	Likely Occurrence per Year of Large Magnitude Event
Flooding- Riverine	5	5	25	High	15.2	0.01
Flooding- Flash	5	5	25	High	15.2	0.02-0.03
Blizzard	5	4	20	High	12.1	0.02
High Winds	4	3	12	Medium	7.3	0.05
Thunderstorm/lightning	3	3	9	Medium	5.5	0.05
Extreme Cold	3	3	9	Medium	5.5	0.05
Heat Wave	3	3	9	Medium	5.5	0.05
Ice Storm	3	3	9	Medium	5.5	0.05
Hailstorm	3	2	6	Low	3.6	0.01
Drought	2	3	6	Low	3.6	0.01
Landslide	3	2	6	Low	3.6	0.01
Wildfire	3	2	6	Low	3.6	0.001
Subsidence	2	3	6	Low	3.6	0.0001
Tornado	2	4	8	Low	4.8	0.0005
Dam Failure	1	5	5	Low	3.0	0.00001
Earthquake	1	4	4	Low	2.4	0.0001
Total			**165**		**100.0**	

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

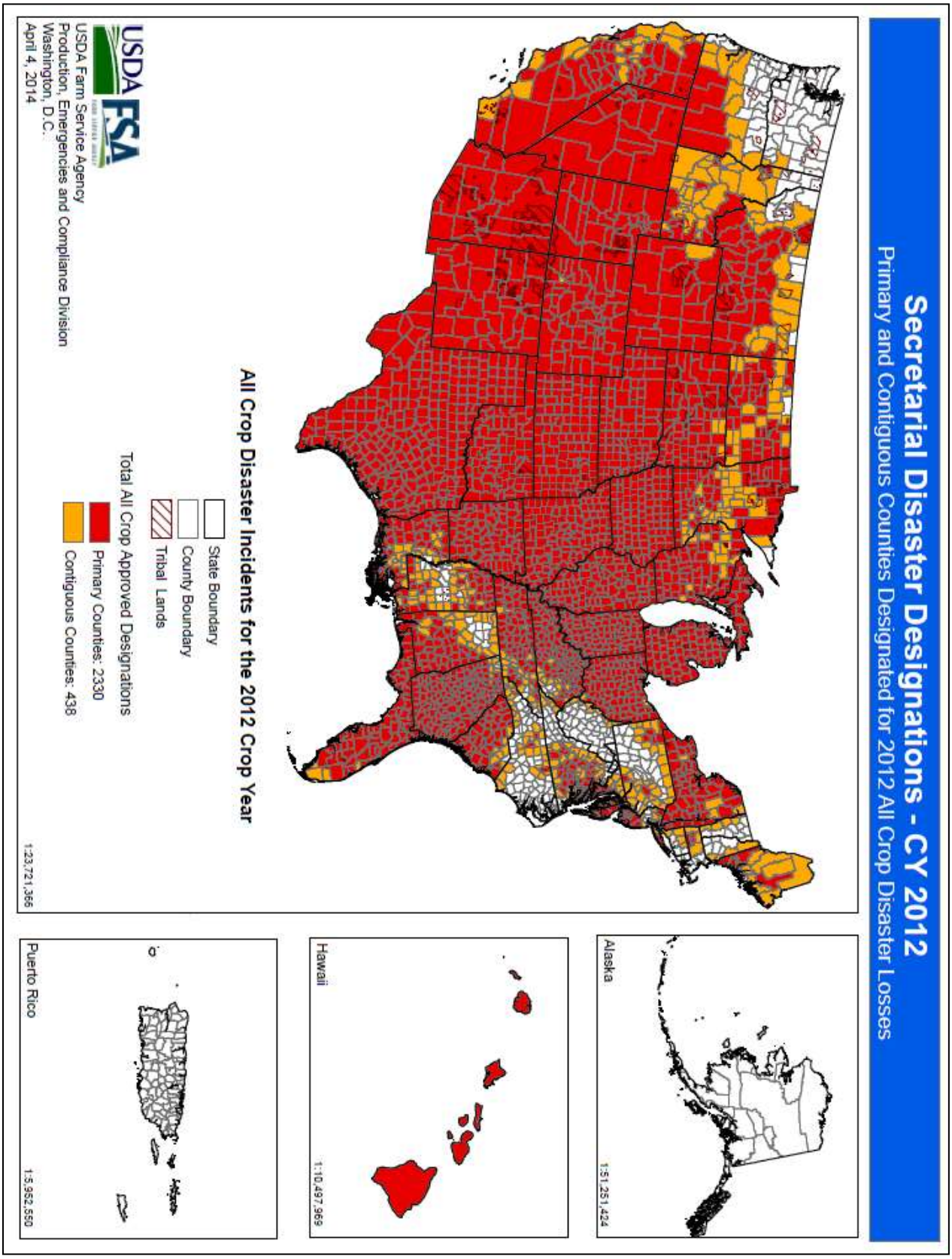

Relative Risk %
15.3
15.3
12.3
7.4
5.5
5.5
5.5
5.5
3.7
3.7
3.7
3.7
3.7
3.1
2.5
Flooding- Riverine
Flooding- Flash
Blizzard
High Winds
Thunderstorm/lightning
Extreme Cold
Heat Wave
Ice Storm
Hailstorm
Drought
Landslide

Appendix 12: Athens County Hazard Zones Map




Multi-Hazard Map
in Support of the Athens
County Hazard Mitigation Plan
Flood Hazard Areas
Subsidence Hazard
Abandoned Mine Type
Predominately Clay, Some Coal
Clay
Predominately Coal, Some Clay
Coal
Landslide Susceptability
Explanation
Expansive Soils
Municipalities
Dam Classifications
Roads
Metadata Information

Appendix 13: Secretarial Disaster Designations – CY 2012



Appendix 14: Problem Statements by Natural Hazard

Problem Statements by Natural Hazard								
Riverine Flooding	***Ice Storm***	***Flash Flooding***	***Blizzard***	***High Winds***	***Thunderstorm / Lightning***	***Wildfire***	***Extreme Cold***	***Heat Wave***
Better communication from the Army Corps of Engineers is needed for water releases from the Burr Oak Dam.	Predictability is difficult due to imprecision of weather forecasting techniques.	There is no formal program to monitor debris and trash that can float downstream and block culverts and bridges.	Motorists who do not routinely drive in winter conditions lack the experience to safely navigate the roads.	Some people are caught off guard because they do not regularly listen to local radio and TV stations.	Citizens do not know enough about the dangers of lightning and how to minimize their risk.	Residents are unaware or risk areas because of the infrequency of this hazard.	Many citizens are inadequately prepared to live for 3 or more days without electricity and isolated in their home because they have never had to and because they are inadequately informed about the need to be prepared and because some people lack financial resources to buy emergency supplies.	People are unaware of the symptoms of, and first aid for, heat exhaustion and heat stroke.
People who are exposed to a flood hazard are not aware due to the infrequency of massive floods.	A lot of personal property and utility damage can be caused by falling trees, some of which is caused by improper maintenance of trees or poor site and species selection.	A lack of funds and engineering expertise has prevented flash flood area maps from being produced.	Many citizens are inadequately prepared to live for 3 or more days without electricity and/or are isolated in their home because they are inadequately informed about the need to be prepared and because some people lack financial resources to buy emergency supplies.	Damage is caused to structures because they are built with inadequate regard for wind damage.	Not enough citizens possess weather radios.	Contractors burn scrap illegally and create a greater risk of wildfire.	The location of vulnerable populations (particularly elderly) is not entered into a comprehensive database.	Electric power demands are extremely high during a heat wave in part because people keep temperatures lower than is necessary and because structures are inadequately insulated.

Flood planning has improved but additional information concerning inundation areas, evacuation routes, building contents removal, shelter access, and emergency response need to be refined.	Utility line damage from ice storms could be minimized if all lines were buried, however, the utility companies want easier access to their lines for other maintenance and the initial cost of burying lines is too high.	There is no emergency preparedness plan for homes and businesses located in potential flash flood areas due to the expense involved with plan preparation.	The location of vulnerable populations is not entered into a comprehensive database.	Trees damage structures due to improper or inadequate pruning and the wrong tree species planted in the wrong location.	There are inadequate plans for large populations of people who may be assembled in public or other large, institutional buildings.	Lands assessment for the wildfire hazard is difficult due to the many variables involved.	There is no formal program for transportation of at-risk populations to shelters.	The location of vulnerable populations is not entered into a comprehensive database.
Flood-related drowning happen because motorists attempt to cross swollen streams and, in general, do not adequately stay out of harm's way.	Motorists who do not routinely drive in icy conditions lack the experience to safely navigate the roads.	There is no formal warning system in place due to the expense and infrequency of flash flood incidents.	Citizens do not dress adequately when they head out with a blizzard warning in the forecast because they don't think they will get stranded and because they are not aware of how severe conditions can be if they are stranded.	New homes are built with minimal regard for orientation to prevailing winds and with minimal regard for minimizing wind exposure.	More attention needs to be paid to monitoring and pruning large trees in potentially dangerous locations.	The extent of the City's responsibility regarding education, warning, and response is unclear.	Supply of salt and cinders for ice control sometime run low due to delivery problems.	There is a lack of awareness about programs that identify at-risk populations.
Evacuation routes are unclear. Evacuation route planning is not fully developed because the county has just begun to address this issue with its GIS program.	Many citizens are inadequately prepared to live for three or more days without electricity and isolated in their home because they have never had to and because they are inadequately informed about the need to be prepared.	Citizens are not familiar with how flash flooding differs from riverine flooding because no educational program has ever addressed this issue.	Supply of salt and cinders for ice control sometime run low due to delivery problems.	*(blank)*	(*blank*)	(*blank*)	Citizens do not dress adequately when they head out with a cold weather warning in the forecast because they don't think they will get stranded and because they are not aware of how severe conditions can be if	There is no formal program for transportation of at-risk populations to shelters.

							they are stranded.	
(*blank*)	The location of vulnerable homes is not entered into a comprehensive database.	(*blank*)	Citizens lack knowledge about the signs of frostbite and hypothermia because they have not experienced the symptoms.	(*blank*)	(*blank*)	(*blank*)	Citizens lack knowledge about the signs of frostbite and hypothermia because they have not experienced the symptoms.	People do not know how to control temperatures without electricity or air conditioning.
	Supply of salt and cinders for ice control sometime run low due to delivery problems.		Since 70% of winter deaths related to snow and ice occur in automobiles, citizens need to be more aware of winterizing a car, carrying a winter "car kit", and what to do if stranded.			(*blank*)	Waterlines freeze because citizens do not know how to properly insulate the lines.	(*blank*)
(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	Village residents are inadequately educated about frost wedging and rockfall.	(*blank*)
(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	Firefighting is hampered by freezing water.	(*blank*)
(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	(*blank*)	Ice jams can exacerbate the flooding problem.	(*blank*)

Appendix 15: Mitigation Plan and Status

Objective	Activity/Task	Time Frame	Time/Cost	Funding Source	Responsible Party	Priority	Notes
Goal 1: To eliminate the loss of life and reduce property damage that are caused by natural hazards.							Deferred Ongoing Unchanged Complete New 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	County EMA has already done several radio spots
	2. Prepare a county-scale GIS wildfire risk map. OU intern based on any existing maps from ODNR or WNF.	01/01/2015 - 06/30/2015	80 hrs.	In-kind	County EMA and County RPC	Medium	
	3. The NHMP 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	The packet will include risk maps, contact information, checklists, and information and expectations about implementation of this Plan.
	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	The floodplain and mines are already included.
	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	The County Planning Director and County GIS Coordinator will design a map using GIS.

2. Establish methods to coordinate information sharing with municipalities, townships, Ohio University, Hocking College, the business community, and other agencies or 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	Meetings are held quarterly. There is one countywide committee for all jurisdictions in order to increase efficiency.
	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	The initial equipment list is complete. It will be updated annually.
	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	Tom Jenkins office notifies County EMA when they do a release during a flood event.
	4. Investigate the impacts on Hocking River flooding should the dam at Lake Logan fail.	Complete	16 hours	In-kind	County RPC	Medium	
	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	Mayors, County EMA & 911	Medium	The initial four meetings will be utility-specific. Annual meetings will involve all utilities together. Have held one large meeting with utility representatives.
	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	
	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	High	This will require contacting entities such as Ohio University or the County Fair Board to see what systems are already in place. Continued with Plan Update.

	7. Improve communications with the business community by convening a meeting of business officials to discuss emergency preparedness.	07/01/2015 - 12/31/2015	20 hrs.	In-kind	RPC, Natural Hazard Mitigation Committee, EMA	Low	Have attended meetings with business community and updated business newsletter.
	8. Insure that an after-action report is presented to all interested parties whenever the EOC is activated.	07/01/2015 - 12/31/2015	16 hrs.	In-kind	Mitigation Committee	Low	Included minutes of the after-action meetings on the County website.
3. 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, Mayors, 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					Moved to Goal 1, High Road Map
	3. Implement a siren warning system to notify public of impending natural hazard events.	01/01/2014 - 12/31/2019	40 hrs.	In-kind	County EMA, Mayors, and County Mitigation Committee	High	There are 7 sirens in the county. 2 are locally controlled by fire departments, not by 9-1-1. 6 of the sirens reach a 1 mile radius, the other reaches a 3/4 mile radius. The total population reached (that can be counted) is 13,022.
	4. Use wide area rapid notification and an information hotline.	01/01/2014 - 12/31/2019	Continuous	In-kind	County 911	High	Alert Athens County is an ultrahigh-speed telephone communication service for emergency notifications.

	5. Utilize GIS to create a vulnerable population database.	01/01/2015 - 12/31/2019	40 hrs./yr. maintenance	In-kind	County EMA and 911	High	County EMA has access to the Area Agency on Aging's GIS database of their clients during events. Procedures reviewed annually.
	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	
	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	
	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	Ideally, every household and business in the county will have a weather radio.
	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	Have recognizable voices record PSAs such as mayors.
4. 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	Project will require a consultant to be paid from a mitigation grant. Have applied for a NHMG for the City of Nelsonville to remove structures in the Flood Hazard Area.

	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	Nelsonville has already been approved by FEMA for an acquisition and demolition project.
5. 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	Have completed several presentations. Will present more after Plan is approved.
	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	Have received input from an interested community organization on the effects of man-made natural hazards.
	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	There are other groups in the community already doing this.
	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	

6. 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	Mayors, Mitigation Committee, and Red Cross	Medium	
	2. Explore alternate ice/snow control systems.	01/01/2015 - 12/31/2017	16 hrs.	In-kind	Mayors, County Engineer and Mitigation Committee	Low	
	3. Analyze replacement costs for high priority, critical facilities in the floodplain	01/01/2015 - 12/31/2019	8 hrs.	FMA	Mayors and County RPC	Medium	
	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	
7. 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	Mayors and County RPC	Medium	Continuing
	2. Use GIS to map the historic resources.	01/01/2016 - 12/31/2016	8 hrs.	PDM	County RPC, possibly a consultant	Medium	
	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	
Goal 2: To provide for growth and development while reducing the impact of natural hazards. Encourage growth and development planning that considers natural hazards.							
1. 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	
	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	
	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	
2. 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	Mayors and County RPC	Low	The Village of Albany does not have any FEMA-mapped floodplain areas and does not have a floodplain ordinance.
	2. Review subdivision regulations to ensure compliance with natural hazard mitigation principles.	01/01/2015 - 12/31/2019	20 hrs.	In-kind	Mayors and County RPC	Low	Villages without subdivision regulations will be encouraged to adopt them.
	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	The Village of Albany does not have any FEMA-mapped floodplain areas and does not have a floodplain ordinance. Ohio University has received Storm Ready status.
	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	Reviewed for compliance by OEMA in 2013. As of September 2014, looking at a flow chart model to highlight the four core missions of emergency management.
	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	

	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	
	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	The County Planning Director and County GIS Coordinator will design a map using GIS.
	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	
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	Mayors, County RPC and County SWCD	Low	Worked with SWCD to review solutions. SWCD has contracted with City for urban stormwater technician.
	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	

Appendix 16: Resolution

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/city) of _____, 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 expired in 2011; 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 a member in good standing of the Athens County Regional Planning Commission;
NOW THEREFORE, BE IT RESOLVED by Council that the (village/city) of _____ formally adopts the Athens County Multi-Jurisdictional Natural Hazard Mitigation Plan 2014.

ADOPTED this _____ day of _____, 2014.

_____
Mayor

_____
Clerk of Council

Appendix 17: Earthquake HAZUS

HAZUS-MH Earthquake to SHARPP Conversion

1. Enter the Building Counts from Table 3:

	None	Slight	Moderate	Extensive	Complete	General Building Stock	Total Affected
Agriculture	85	24	20	7	1	137	**28**
Commercial	626	228	180	61	11	1,106	**252**
Education	37	13	11	4	1	66	**16**
Government	40	12	10	3	1	66	**14**
Industrial	197	61	49	16	2	325	**67**
Other Residential	5,619	2,104	1,455	284	39	9,501	**1,778**
Religion	85	31	23	8	2	149	**33**
Single Family	9,466	3,248	1,464	347	78	14,603	**1,889**
Totals by Damage:	16,155	5,721	3,212	730	135	25,953	**4,077**

2. Enter the Building Values, as is, from Appendix B:

		Value	Value per Structure
Enter the Residential Building Value	2,885	$ 2,885,000,000	$ 197,562.14
Enter Non-Residential Building Value	980	$ 980,000,000	$ 86,343.61

3. The computer calculates the "non-residential" structures and percentages as:

	# of Bldgs.	Percentage
Number of Non-Residential Buildings	11,069	97.52%
Number of Critical Facilities	281	2.48%
Total of Non-Residential Structures	11,350	

4. Here is the Vulnerability Analysis for SHARPP:

Building Type	Number of Buildings	Exposure in Study Region
Residential	1,889	$373,194,891.46
Non-Residential	2,125	$183,480,176.21
Critical Facilities	63	$5,439,647.58
Totals:	4,077	$562,114,715.25

Appendix 18: City and Village Contact Information

City of Athens: 740-592-3338
City of Nelsonville: 740-753-5323
Village of Albany: 740-698-6127
Village of Amesville: 740-448-2411
Village of Buchtel: 740-753-1314.
Village of Chauncey: 740-797-2303
Village of Coolville: 740-667-7349
Village of Glouster: 740-767-3497
Village of Jacksonville: 740-767-2448
Village of Trimble: 740-767-2341