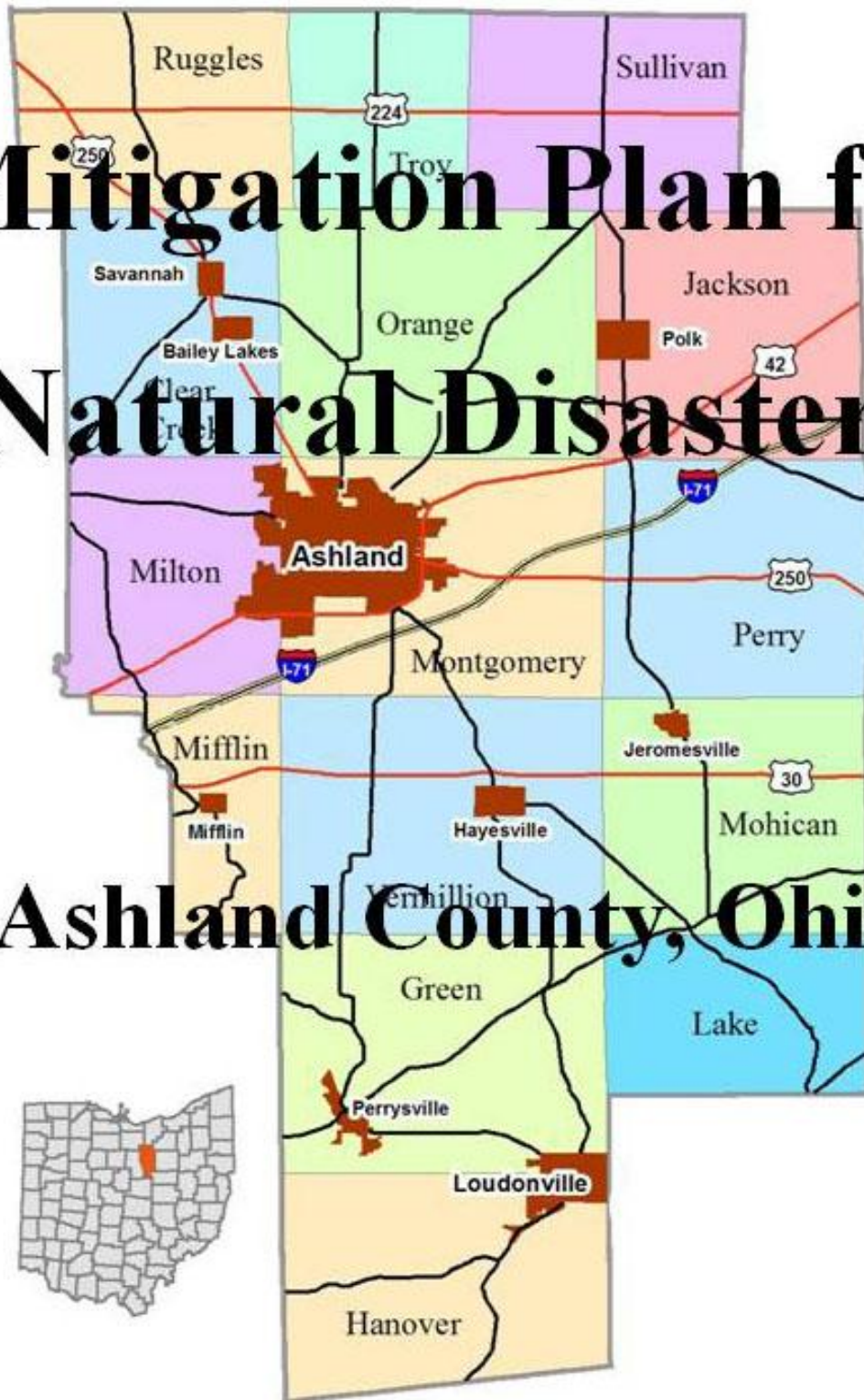


Mitigation Plan for Natural Disasters

Ashland County, Ohio



Ashland County Mitigation Plan for Natural Disasters

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Section One: Introduction

Overview – Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA2K) was enacted by the Federal government for the purpose of reducing or eliminating the long-term risk to human life and property from natural disasters. This legislation provides local communities with the guidance necessary to appropriately assess the natural disasters impacting these communities and to establish and implement mitigation activities that will result in reducing or eliminating these risks. The Act emphasizes cooperative efforts among all public sectors including local citizens; city, village, township, and county officials; and State and Federal governmental agencies. It is to this end that the Ashland County Mitigation Plan for Natural Disasters is established.

Planning Committee Mission

It is the mission of the Ashland County Mitigation Planning Committee to develop and implement a Mitigation Plan for Ashland County, Ohio that is directed specifically to natural disasters. The plan is designed to minimize the adverse effects of natural disasters on the lives and properties of citizens of Ashland County.

Plan Design

The Ashland County Mitigation Plan for Natural Disasters is designed, through its goals and action plans, for a five-year implementation period. It is considered a multi-jurisdictional plan. Multi-jurisdictional plans address issues specific to individual incorporated areas (the county, the City of Ashland, and the villages of Bailey Lakes, Hayesville, Jeromesville, Loudonville, Mifflin, Perrysville, Polk, and Savannah) and the 15 unincorporated areas (townships). The plan describes the methods and procedures utilized in its development; provides the results of community assessments; identifies the mitigation activities determined to be most important to the citizens of Ashland County; and sets timelines for the implementation of those activities. This plan will continue to be a working document. The Ashland County Mitigation Plan functions as a means to address community issues and concerns as they relate to the mitigation of natural disasters, for it is toward their protection and the protection of their properties that this Mitigation Plan is directed.

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Ashland County Hazard Identification and Risk Assessment Rankings

The results of the planning team's Hazard Identification and Risk Assessment are outlined in the chart below:

Rank	Type of Hazard	History	Probability	Magnitude	Duration	Speed of Onset	Severity	Total
1	Flood	3	4	3	3	2	3	18
1	Windstorm	3	4	4	1	3	3	18
1	Thunderstorm	3	4	4	1	3	3	18
4	Severe Winter Storm	3	4	4	2	1	3	17
5	Drought	2	3	4	4	1	2	16
6	Tornado	3	3	1	1	4	3	15
7	Hail	3	4	1	1	3	2	14
8	Dam Failure	0	1	3	2	4	3	13
9	Extreme Temperatures	1	3	4	2	1	1	12
10	Lightning	0	4	1	1	3	2	11
11	Earthquake	1	2	1	1	4	1	10

Based on the 2014 HIRA, Ashland County's top five hazards include: flood, windstorm, thunderstorm (all tied for first), severe winter weather, and drought.

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Section Two: Community Profile

Community Overview

Ashland County is located in the northeast region of Ohio and is bordered by seven counties: Richland County on the west; Huron County on the north and west; Lorain County on the north; Medina County on the north and east; Wayne County on the east; Holmes County on the south and east; and Knox on the south. Ashland County is comprised of 24 political subdivisions which include: the City of Ashland; the villages of Bailey Lakes, Hayesville, Jeromesville, Loudonville, Mifflin, Perrysville, Polk, and Savannah; and the townships of Clear Creek, Green, Hanover, Jackson, Lake, Mifflin, Milton, Mohican, Montgomery, Orange, Perry, Ruggles, Sullivan, Troy, and Vermillion.

Ashland County was established on February 24, 1846, and encompasses 424 square miles. Land use in the county is comprised of 48% cropland, 37% forest, 11% pasture, and 2% urban based on Ohio's Policy Research and Strategy Planning county profile.

Demographics

At the time of the 2010 census, the population of Ashland County was 53,139 and had a projected population of 53,980 for 2020 (see the table below for a breakdown of demographics by jurisdictions). Ashland County's population is primarily White at 97.2% with a 3.3 % minority population. The median age for Ashland County residents is 39.4 years. At present, approximately 6.0% of the population is less than 5 years of age (3,216) and 15.7% of the population are 65 years or more (8,352). These are the two age groups that often need special consideration during disaster events.

Largest Places	2010 Census	Largest Places	2010 Census	Largest Places	2010 Census
City of Ashland	20,362	Clear Creek Township	1,492	Village of Savannah	413
Jackson Township	3,551	Mohican Township	1,471	Village of Bailey Lakes	371
Montgomery Township	2,700	Troy Township	1,132	Village of Polk	336
Village of Loudonville	2,587	Mifflin Township	989	Village of Mifflin	137
Orange Township	2,523	Ruggles Township	905		
Sullivan Township	2,513	Hanover Township	871		
Milton Township	2,383	Village of Perrysville	735		
Vermillion Township	2,170	Lake Township	690		
Perry Township	1,990	Village of Jeromesville	562		
Green Township	1,808	Village of Hayesville	448		

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Economy

Crucial components to Ashland County's economy include agriculture, manufacturing, trade, transportation, utilities, education and health services, and local government. The county has 148,000 acres of farmland, with 1,050 farms that generate a total of \$92,056,000 annually. Ashland County has seen a severe 47% cut in State government jobs and a 27% loss in construction jobs since 2006 (see table below) but unemployment rates have declined from 11.3% in 2010 to 9.3 in 2011.

Table

Industrial Sector	Number of Establishments	Average Employment	Average Employment Changes Since 2006	Total Wages
Private Sector	970	14,636	-5.8	\$ 480,814,825
Goods-Producing	191	3,864	-22.0	\$ 163,663,002
Natural Resources and Mining	20	177	8.6	\$ 4,263,697
Construction	85	550	-27.2	\$ 23,301,772
Manufacturing	86	3,137	-22.3	\$ 136,097,533
Service-Providing	779	10,772	1.7	\$ 317,151,823
Trade, Transportation and Utilities	246	3,150	1.1	\$ 92,202,174
Information	13	244	-9.0	\$ 12,378,519
Financial Services	88	449	.7	\$ 14,388,623
Professional and Business Services	105	1,376	15.5	\$ 46,503,611
Education and Health Services	114	3,489	11.9	\$ 121,078,697
Leisure and Hospitality	113	1,474	-15.8	\$ 17,706,724
Other Services	101	591	-15.6	\$ 12,893,475
Federal Government	0	98	-12.5	\$ 4,959,982
State Government	0	256	-46.7	\$ 15,202,525
Local Government	0	2,264	-5.8	\$ 80,151,895

The median household income for an Ashland County resident is \$44,542, which is considerably lower than Ohio's average of \$45,886 and the national average of \$49,276. Ten percent of Ashland County families' income falls below the poverty level.

There are a total of 22,116 housing units in the county, with 78% occupied by the owner and 22% occupied by renters. Currently, 9% of Ashland County's housing units are currently vacant. In the past five (5)

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years, Ashland County has seen a total of 238 new residential structures built. The average build year for residential structures in Ashland County is 1968.

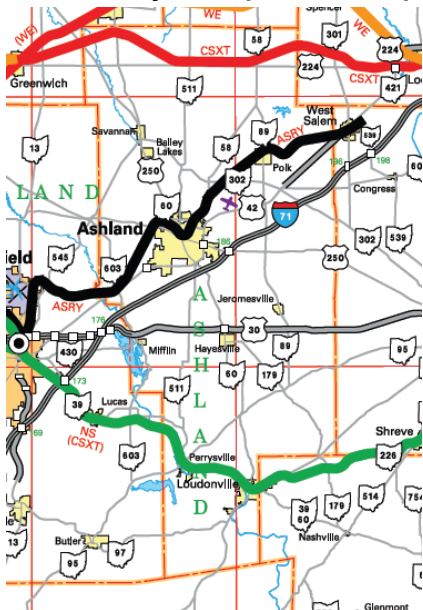
According to the county profile provided by the Office of Policy, Research and Strategic Planning, Ashland County has over 693 million dollars in residential inventory and over 99 million in agriculture (see table below). The median value of housing units is \$126,500.

Taxable value of real property	
Residential	\$ 693,814,570
Agriculture	\$ 99,517,490
Industrial	\$ 31,585,760
Commercial	\$ 113,355,720
Mineral	\$ 489,600
Total	\$ 938,763,140

Transportation

Ashland County's transportation infrastructure is comprised mostly of land and rail components. Ashland County has approximately 16 miles of interstate highways, 70 miles of U.S. highways, 172 miles of State highways, and 818 miles of county, township, and municipal roads, with over 430 bridges according to the Statewide Bridge Database. CSX Transportation Inc., Norfolk Southern Corp., and Ashland Railway are the three (3) railroads that provide freight service in Ashland County (see the railway map below).

Ohio Railway Transportation Map



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There is one (1) public airport located in Ashland County. According to the FAA's Airport Master Record, Ashland County Airport handles approximately 49,000 aircraft operations per year. Eighty-seven percent of operations are classified as general aviation.

Section Three: Planning Process

Overview

There are four core steps involved in the hazard mitigation planning process. Those steps include: organizing resources, assessing risks, developing a plan, implementing the plan and monitoring progress. This section describes the process that Ashland County used to update the mitigation plan.

Planning Process Objectives

For the plan update, objectives were established based upon FEMA's Local Mitigation Plan Review Tool and the Disaster Mitigation Act of 2000. The plan update followed the activities outlined below:

1. Reestablish the Mitigation Planning Team
2. Conduct the kickoff meeting
3. Review and update the planning area
4. Review and update the outreach strategy
5. Review and update plan maintenance components
6. Review and update the Hazard Identification and Risk Assessment
7. Conduct a capability assessment
8. Review and update the mitigation strategy
9. Conduct cost benefit analysis and determine priorities
10. Complete the plan draft
11. Conduct plan draft review
12. Submit final draft to the Ohio Emergency Management Agency for review/and the Federal Emergency Management Agency for approval
13. Upon FEMA approval, present the final plan to the jurisdictions for adoption

Planning Team Organization

One of the most important factors in the planning process is to acquire the services of qualified and committed individuals who will assist in the development of a formal planning document. The Ashland County Mitigation Planning Team is comprised of such valued individuals.

Initial selection of Committee members was determined by the Ashland County Emergency Management Agency Director. Consideration for participation on the planning team was centered upon those individuals who, because of their positions within the community, their involvement in public service activities, or because of other valued qualifications, would best provide expertise and direction to the development and implementation of the mitigation plan. The EMA Director also selected individuals with different

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backgrounds to allow for a well-balanced discussion with different perspectives of the important issues. Ashland County's Mitigation Planning Team members are listed in the below.

2014 Mitigation Planning Committee	
Name	Organization
Mark Rafeld	Ashland County Emergency Management Agency
Mike Welch	Ashland County Commissioner
Barb Queer	Ashland County Commissioner
Dennis Edwards	Troy Township Trustee
Rick Anderson	Ashland Fire Department
E. Wayne Risner	Ashland County Sheriff's Office
Randy Goon	Polk-Jackson-Perry Fire Department
Steve Carroll	Samaritan Hospital
Pat Donaldson	Ashland County-City Health Dept.
Shane Kremser	City of Ashland Engineer
Dan Scott	Ashland Solid Waste District
Larry Paxton	Ashland City Director of Finance
David Marcelli	Ashland City Police Department
Cathy Berg	Ashland County Soil & Water
Ed Meixner	Ashland County Engineer
Curt Young	Village of Loudonville

Plan Participation

The success of any mitigation planning effort is completely dependent upon the level of participation from local and regional jurisdictions, special interest groups, businesses, and non-governmental organizations. Following the establishment of the planning team, a concerted effort was made to elicit support, technical assistance, feedback, and input from the organizations outlined below.

Stakeholders	Name	Title
Ashland County	Mike Welch Barb Queer Denny Bittle	Commissioner
City of Ashland	Glen Stewart	Mayor
Village of Bailey Lakes	John Benschhoff	Mayor
Village of Hayesville	J. Emmett Justice	Mayor
Village of Jeromesville	Dale Harrison Ed Blough	Mayor Former Mayor
Village of Loudonville	Stewart Zody	Mayor

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Village of Mifflin	Freddie Craig	Mayor
Village of Perrysville	Kenneth Daubert	Mayor
Village of Polk	James Goon	Mayor
Village of Savannah	Thomas Kruse	Mayor
Clear Creek Township	Timothy Calame Standley Crist David Shoup	Trustee
Green Township	Marianne Cowell Dwain Stitzlein Richard Kline	Trustee
Hanover Township	John Burkhart Ronald Endslow Timothy Mowery	Trustee
Jackson Township	Cheryl Welch Kay Wright Allen Blogdett	Trustee
Lake Township	Mike Bender Tim Nickles Robert Esselburn	Trustee
Mifflin Township	Jeff Jacobs Eric Oswald Timothy Echelberger	Trustee
Milton Township	Rick Emmons Eric Fulk Donald Mutchler	Trustee
Mohican Township	Keith Raudebaugh Michael Weber Edward White	Trustee
Montgomery Township	Hugh Britton Troth Richard Wesner Roy Turk	Trustee
Orange Township	James Elson George Parks Brian Canfield	Trustee
Perry Township	Brian Funk Robert Jones Kent McGovern	Trustee
Ruggles Township	James Griffin Scott Stolcals Matthew Beattie	Trustee

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Sullivan Township	Douglas Campbell Janice Steele Suzanne Fayak	Trustee
Troy Township	Dennis Edwards Timothy Roth Dean White	Trustee
Vermillion Township	William Helbert Ralph Owens Samuel Yeater	Trustee
Neighboring County Emergency Management Agencies		
County	Name	Title
Richland	Michael Bailey	Director
Huron	Jason Roblin	Director
Lorain	Tom Kelley	Director
Medina	Christina Fozio	Director
Wayne	Joe Villegas	Director
Holmes	Gary Mellor	Director
Knox	Mark Maxwell	Director
Stakeholders/Businesses/Special Interest/Non-profit Organizations		
Ashland University		
WIL Research Laboratories		
Mansfield Plumbing		
Wal-Mart		
Pentair Pump Group		
Brethren Care Village		
Step 2 Corporation		
Snyder's-Lance		
Hedstrom Plastics/Ball Bounce & Sport		
American Augers		
BookMasters		
Kingston		
LiquiBox		
Black River Watershed Project		
Kokosing Scenic River Advisory Council		
Muskingum Watershed Conservancy District		
North Central Ohio Land Conservancy, Inc.		

All jurisdictions were contacted through verbal or written correspondence to request mitigation project proposals and capability information for their respective jurisdictions. Upon completion of the plan draft,

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stakeholders and the jurisdictions were given the opportunity to review the draft and submit comments or recommendations. For jurisdictions required to adopt the plan, they will need to approve the plan by resolution upon receipt of Federal approval. The level of participation by these entities varied slightly throughout the planning process.

Plan Development

Conducting a plan update required the planning team to hold meetings to acquire essential data to achieve project and plan objectives. Planning meetings were also utilized to systematically review the previous plan and all of its corresponding data against current planning standards. A brief description of the actions taken during planning meetings is listed below:

August 19, 2013 – Subsequent to the creation of the mitigation planning team, a meeting was held between the Ashland County EMA Director and the planner to discuss the process involved in updating the mitigation plan.

September 30, 2013 – A follow-up meeting was conducted between the EMA Director, the planner, and the County Commissioners to discuss the project and potential members to make up the planning team.

January 23, 2014 - The Ashland County EMA Director organized the initial plan kickoff meeting for January 23, 2014 at the Ashland County EOC. The purpose of the kickoff meeting was to introduce team members, provide an overview on mitigation, describe plan requirements, define plan components, define the roles and responsibilities of team members, and discuss planning project objectives.

February 14, 2014 – The second meeting of the mitigation planning team was conducted to identify/define the scope of the planning project, discuss timelines for the planning initiative, review the outreach and plan maintenance strategy in the previous plan, and determine the outreach and maintenance strategies for the plan update.

- February 19, 2014 – A factsheet was prepared to equip team members with consistent talking points while conducting outreach activities. The factsheet contained talking points about the planning process and plan requirements.

March 7, 2014 – The third meeting of the planning team was held to review natural disasters that have impacted the county and to conduct a Hazard Identification and Risk Assessment. Hazards were assessed by history, probability, vulnerability, speed of onset, duration, and severity.

March 28, 2014 – The fourth meeting of the planning team continued working on completing the Hazard Identification and Risk Assessment.

- Developed the capability survey and the mitigation project form for political jurisdictions.
- The survey and form was submitted to the EMA Director for review and comment.

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April 25, 2014 – The fifth meeting of the planning team was held to compile NFIP data, finalize the capability survey and the mitigation project proposal form, and conduct a review of the mitigation strategies outlined in the previous plan.

- The Ashland County EMA Director submitted the capability survey and the mitigation project form to all political jurisdictions.
- The EMA Director sent out a follow-up notice to representatives of the jurisdictions that did not submit capability surveys or mitigation projects by the deadline.

May 16, 2014 – The sixth meeting of the planning team gathered to review NFIP data and capabilities assessment results. At the conclusion of the meeting, members were provided a copy of the mitigation project form and mitigation strategy samples to review for next meeting.

June 12, 2014 – The seventh meeting of the planning team reviewed proposed mitigation projects. Discussions ensued regarding the best projects and determinations were made of which projects should be included into the plan.

August 7, 2014 – The eighth meeting of the planning team focused on developing action plans but upon further review, some projects were revised and new projects were developed.

October 31, 2014 – The ninth meeting was held to conduct a final review on the mitigation strategies/action plans and complete the prioritization of the mitigation strategies using the STAPLEE and Simple Score Method.

- Development of the plan draft begins
- The plan draft was compiled and submitted to the EMA Director upon completion.

January 22, 2015 – A formal Open House was held to provide a forum where the planning team, key stakeholders, and the general public could review the plan draft and provide comments or suggestions.

Plan Draft Review

The Ashland County planning team implemented two methods to garner feedback on the final plan draft. The first method involved posting the document to the Ashland County Emergency Management Agency's website, where the planning team, key stakeholders, and the general public could view the plan and submit comments/recommendations to the EMA Director. The EMA Director then shared with planning team members all comments/recommendations that came through the website for their consideration and incorporation into the plan.

The other method used to acquire input from the general public involved the planning team hosting an Open House. The Open House served as an opportunity for the public or other key stakeholders (as

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identified in the table on page 13) to review the draft document and provide comments and recommendations before the plan is to be submitted for approval. The Open House was held on January 22, 2015.

Plan Approval

Upon completion of the plan draft review process, the plan and the completed compliance crosswalk will be submitted to the Ohio Emergency Management Agency (OEMA)/ Federal Emergency Management Agency (FEMA) for their final review and approval.

Plan Adoption

Formal adoption of the Ashland County Mitigation Plan will occur following FEMA approval. The Ashland County EMA Director and/or members of the planning team will solicit the support and full adoption of the plan through direct contact with the Commissioners and the mayors/administrators of the City of Ashland and the villages. Formal adoption will come in the form of an approved resolution.

Once the adoptions have been completed, the jurisdictions are to forward a copy of their resolutions to the Director of the Ashland County Emergency Management Agency. The Director will include a copy of each resolution in Appendix E of this plan and then will forward a copy of the resolutions onto the Ohio Emergency Management Agency to maintain in their files.

Plan Distribution

The final version of the Ashland County Mitigation Plan for Natural Disasters will be disseminated following the formal approval of the Federal Emergency Management Agency. Plan distribution will be the responsibility of the Ashland County Emergency Management Agency.

Mitigation Plans will be submitted in CD format to the following entities:

- All Members – Ashland County Mitigation Planning Committee
- Ashland County Commissioners
- All Ashland County Political Subdivisions

Mitigation Plans will be submitted in hardcopy format to the Ashland Public Library and the Loudonville Library.

Section Four: Outreach Process

Federal regulation for mitigation plan approval requires that stakeholders and the general public are given the opportunity to be involved during the planning process and in the plan's maintenance and implementation. The following section defines the strategy that the Ashland County Mitigation Planning Team put in place for the plan update.

Stakeholder Outreach Methodology

For the purposes of the plan update, a stakeholder is defined as any person, group, or organization that can affect or be affected by a course of action. Involving stakeholders in the planning process helps to develop support for the plan and identify barriers to implementation. Stakeholders identified by the planning team included local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, neighboring communities, technical subject matter experts, as well as businesses, academia, and other private and nonprofit groups. The complete list of stakeholders identified for the plan update can be found in Section 3.

The planning team also identified key components which necessitated stakeholder involvement to complete the plan update. These components included providing data regarding hazard information, conducting a capability assessment of local assets, providing mitigation strategy proposals, reviewing the plan draft and providing feedback, adopting the plan, and implementing the plan upon approval.

Stakeholder Notification Process

Stakeholders were contacted on an as needed basis depending on project objectives. To obtain their assistance, the applicable stakeholder was contacted directly by either the Ashland County EMA Director or a member of the planning team through email correspondences, telephone calls, or in person. However, stakeholders also have access to the notification systems meant to alert the general public, which include news media releases, other formal or informal community meetings, the Ashland County Emergency Management Agency web site, and/or Facebook page postings. See outreach postings in Appendix A.

Public Outreach Strategy

The general public must be given the opportunity to be involved in the planning process because many mitigation actions impact private property and although they are not technical experts, the public can still assist with identifying community assets and problem areas, describe issues of concern, provide hazard history information, and review the plan draft and provide feedback. However, even after the plan is approved, it is still vital to ensure that the public be engaged in the implementation phase of the planning process.

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Public Notification

The Ashland County EMA Director utilized his bi-monthly radio address on WNCO to inform the public that the Ashland County Mitigation Plan for Natural Disasters was going through a plan update. Throughout the duration of the planning process, the EMA Director continued to utilize his radio address to update the public on the plans progress, the planning team's meeting schedule, and also informed them of how they could access the plan/plan draft and submit comments or suggestions to his office. The EMA Director also used the *Ashland Times-Gazette* to notify the public about upcoming planning meetings and the Ashland County EMA Facebook page to notify the public on how they could access the plan draft and submit comments (See Appendix A for outreach postings, articles, etc.).

Even though the planning team implemented a variety of notification methods to give the public the opportunity to attend meetings and provide comments and/or recommendations, the public failed to participate during the 2014-2015 Mitigation Plan update.

Continuous Outreach Strategy

A mechanism for providing the general public and key stakeholders with continuous access to mitigation information will be achieved through the use of the Ashland County Emergency Management Agency's website and Facebook page. It is the intention of the planning team to utilize the website so that the general public and key stakeholders have continual access to the plan and other mitigation documents as they become available. The website also provides the means for individuals to submit comments or recommendations directly to the Ashland County EMA Director at any time. See outreach postings in Appendix A.

Any and all feedback (comments and/or recommendations) that the EMA Director receives from the general public and key stakeholders will be shared with planning team members at the next scheduled meeting for consideration and incorporation into the plan.

Section Five: Capabilities Assessment

Overview

A Capabilities Assessment is an appraisal of authorities, policies, programs, and resources available to respond to and/or mitigate hazards and vulnerabilities. By reviewing the capabilities in each jurisdiction, the planning team inventoried existing capabilities, identified the capabilities that currently reduce disaster losses, and identified capabilities that could be implemented further to reduce disaster losses.

The types of capabilities for reducing long-term vulnerability through mitigation planning include:

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

Planning and Regulatory

Planning capabilities refer to specific actions or policies that support community goals and manage growth and development. Regulatory capabilities refer to how and where land is developed as well as how or where structures are built.

Administrative and Technical

Administrative capabilities refer to a community's staff, their skills, and the tools that can be used for mitigation planning and implementation. Technical capabilities refer to identifying resources that could provide technical assistance to communities that have limited resources.

Financial

Financial capabilities are the resources that a jurisdiction has access to or is eligible to use to fund mitigation actions.

Education and Outreach

Education and Outreach capabilities refer to education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

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Methodology and Capability Results

The Ashland County planning team developed and distributed a comprehensive capabilities worksheet for each local community to complete. The planning team collected and reviewed jurisdiction submissions. Capabilities in Ashland County varied widely and the results can be found in the tables below.

CAPABILITY ASSESSMENT RESULTS		
Type	Capability	Jurisdictions with Capability
Planning and Regulations	Capital Improvement Plan	City of Ashland and Village of Loudonville
	Economic Development Plan	Ashland County, City of Ashland, and Jackson Township
	Comprehensive Land Use Plan	Ashland County (includes all townships) and Village of Loudonville
	Transportation Plan	City of Ashland
	Stormwater Management Plan	City of Ashland and Village of Loudonville
	Emergency Operations Plan	Ashland County, City of Ashland, and Village of Loudonville
	Continuity of Operations Plan	City of Ashland
	Disaster Recovery Plan	City of Ashland
	Zoning Ordinance	All jurisdictions with the exception of Hanover and Mohican Township
	Floodplain Ordinance	All jurisdictions with the exception of villages of Hayesville, Mifflin, and Savannah
	Subdivision Regulations	Ashland County (includes all townships), Village of Loudonville, and Village of Savannah
	Stormwater Ordinance	City of Ashland and Village of Loudonville
	Building Codes	Village of Loudonville
	Commercial Codes	City of Ashland and the remaining jurisdictions utilize Richland County for Commercial Codes
Administrative and Technical	Planning Commission	Ashland County, City of Ashland, Village of Loudonville, and Village of Savannah
	Mitigation Planning Committee	Ashland County
	Mutual Aid Agreements	Ashland County, City of Ashland and

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CAPABILITY ASSESSMENT RESULTS		
		Village of Loudonville, and Troy Township
	Chief Building Official	City of Ashland
	Floodplain Administrator	All jurisdictions except the Village of Savannah
	Emergency Manager	Ashland County
	Community Planner	Ashland County
	Civil Engineer	Ashland County and City of Ashland
	GIS Coordinator	None
	Emergency Warning System	Ashland County, City of Ashland, and Green Township
	Grant Writer	Village of Loudonville
	Hazard Mapping	None
Financial	Capital Improvement Project Funding	City of Ashland, Village of Loudonville, and Jackson Township
	Authority to levy taxes for specific purposes	City of Ashland, Village of Loudonville, Green Township, and Jackson Township
	Fee for water, sewer, gas, or electric services	City of Ashland, Village of Loudonville, and Village of Savannah
	Impact fees for new development	Village of Loudonville
	Stormwater utility fee	City of Ashland and Village of Loudonville
	Incur debt through private activities	City of Ashland
	Community Development Block Grant	City of Ashland, Village of Loudonville, Village of Savannah, Green Township, Jackson Township, and Troy Township
	Other State or Federal funding programs	City of Ashland, Village of Loudonville, Village of Savannah, Green Township, Jackson Township, and Troy Township
Education/Outreach	Local citizen groups or non-profit organizations focused on emergency preparedness	Village of Savannah, Jackson Township, and Troy Township
	Ongoing public education or information programs	City of Ashland, Village of Loudonville, Village of Savannah,

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CAPABILITY ASSESSMENT RESULTS		
		Jackson Township, and Troy Township
	Hazard Awareness Campaigns (ex: Severe Weather Awareness Month)	Jackson Township
	Fire Safety Program	City of Ashland, Village of Loudonville, and Jackson Township
	Community Program (ex: StormReady, Firewise, etc.)	Jackson Township
	Public-private partnership initiatives addressing disaster related issues	Jackson Township

During the capability assessment phase of the planning process, planning team members were also tasked with reviewing existing community plans to determine if any of the documents contained data that could be incorporated into the Mitigation Plan update. Plans that were reviewed by the planning team included, but were not limited to:

- The Emergency Operations Plan
- The Comprehensive Land Use Plan
- Capital Improvement Plans
- Economic Development Plans
- Community ordinances, codes, and regulations

Upon completion of the capabilities review, team members identified that the hazards outlined in the Emergency Operations Plan would be utilized as the basis for conducting the hazard identification and risk assessment; that the growth trends, population demographics, residential and non-residential development activities, and economic, housing, and agricultural characteristics outlined in the Ashland County Comprehensive Land Use Plan would be updated and incorporated into the plan update; and even though ordinances, regulations, and building codes existed throughout the county, planning team members determined that these capabilities could be improved upon and would be the primary focus for the development of mitigation goals and strategies.

The planning team also determined that some information contained in local planning documents would be omitted from the mitigation plan update to avoid the duplication of goals, initiatives, projects, and policies already being addressed through other planning mechanisms (i.e. Capital Improvement Plans and Economic Development Plans).

Section Six: Hazard Analysis

Overview

This section of the Ashland County Mitigation Plan describes the process taken by planning team members to update the Hazard Identification and Risk Assessment (HIRA).

The purpose of the Hazard Identification and Risk Assessment is to identify the hazards that can affect the county and determine the properties and populations most at risk from the adverse impacts of natural hazards. The hazard identification and risk analysis also provides awareness for new hazards, provides information for developing disaster mitigation plans, and develops standards for response actions and recovery operations. A hazard identification and risk assessment is made up of two key components: 1) the identification of hazards and 2) the assessing of risks associated with the hazard.

Benefits for conducting the Hazard Identification and Risk Assessment (HIRA) include:

- Establishes priorities for planning, capability development, and hazard mitigation;
- Serves as a tool in the identification of hazard mitigation measures;
- Serves to educate the public and public officials about hazards and vulnerabilities; and
- Helps communities make objective judgments about acceptable risk.

Hazard Identification Process

The Hazard Identification component of the Hazard Identification and Risk Assessment is designed to recognize particular types of natural disasters that have the potential of occurring within the county. The planning team reviewed past disaster declarations and recorded incidences to determine the hazards which will be incorporated into the plan update. Sources used while conducting the HIRA update included data from local, State and Federal agencies, information from the National Weather Service and the National Oceanic and Atmospheric Administration's National Climatic Data Center, interviews, surveys, newspapers, and internet searches.

The hazards to be included in the plan update are listed below:

Hazards	
• Dam Failure	• Lightning
• Drought	• Severe Winter Storms
• Earthquake	• Thunderstorms
• Extreme Temperatures	• Tornado
• Hail	• Wind Storms

Ashland County Mitigation Plan for Natural Disasters

Since July of 1969, Ashland County has had eight major emergency events and has received a total of five Presidential Disaster Declarations. The table below shows the disaster declarations/emergencies for which Ashland County was included.

Disaster Declarations –			
Disaster Number	Declared	Disaster Type	Public Assistance
DR- 266	July 15, 1969	Heavy storms and floods	\$1,000,000
DR-3055-EM	January 26, 1978	Severe blizzard conditions	\$3,546,669
DR-1444	November 18, 2002	Tornados, Severe Storms	\$14,153,548
EM-3187*	August 23, 2003	Power Outage	\$ 2,067,222
DR-1580*	February 15, 2005	Severe winter storms, ice and mudslides	\$ 5,410,578
EM-3250	September 13, 2005	Hurricane Katrina Emergency Shelter Operations	\$2,423,981
DR-1805	October 24, 2008	Severe wind storms associated with Tropical Depression Ike	\$ 59,198,859
EM-3346	June 30, 2012	Ohio Severe Storms	
TOTAL			\$ 87,800,857

Risk Assessment Methodology

The next step for the Ashland County Mitigation Planning Team in regard to the HIRA is to determine the risk that each hazard poses on the county. The planning team assessed each hazard based on seven factors including: history, frequency/probability, magnitude/extent, severity, speed of onset, duration, and location/vulnerability.

HISTORY OF OCCURRENCE

Each hazard was rated based on the number of occurrences for the county. If a hazard/event had not occurred or occurred less than three times, the hazard was given a “Low” ranking. If the hazard occurred up to ten times, it was given “Medium” ranking. If the hazard had occurred more than ten times, it was given a “High” ranking. Rankings for history of occurrence were given a 1, 2, or 3.

History of Occurrence		
3	HIGH	10+ Occurrences
2	MEDIUM	4-10 Occurrences
1	LOW	0-3 Occurrences

Ashland County Mitigation Plan for Natural Disasters

FREQUENCY/PROBABILITY OF OCCURRENCE

Each hazard was then evaluated for the frequency in which it occurs. The frequency/probability that a hazard is likely to occur was determined by using available historical data. If a hazard had a less than 1% chance of occurring, it was given a “Negligible” ranking. If the hazard had a 1%-10% chance of occurring, it was given a “Low” ranking. If the hazard had between a 10%-90% chance of occurring, it was given a “Medium” ranking. If the hazard had between 90%-100% chance of occurring, it was given a “High” ranking. Rankings for frequency/probability were given 1, 2, 3, or 4.

Probability		
4	HIGH	90 – 100% chance of occurring
3	MEDIUM	Between 10-90% chance of occurring
2	LOW	Between 1-10% chance of occurring
1	NEGLIGIBLE	Less than 1% chance of occurring

POTENTIAL MAGNITUDE/EXTENT:

Each hazard was then evaluated for the geographical range that it could impact. Hazards were ranked catastrophic if more than 50% of the county could be impacted by the hazard, or a large area is involved; critical if 25 to 50% of the county could be impacted, or a small area is involved; limited if 10 to 25% of the county could be impacted, or multiple sites are involved; or negligible if less than 10% of the county could be impacted, or a single site is involved. Rankings for magnitude/extent were given a 1, 2, 3 or 4.

Magnitude		
4	CATASTROPHIC	Large Area
3	CRITICAL	Small Area
2	LIMITED	Multiple Sites
1	NEGLIGIBLE	Single Site

SEVERITY (Impact of Humans, Property and/or Businesses)

Each hazard was also evaluated to encompass how it can impact the population, property and businesses. A hazard was given a **Catastrophic** ranking if a hazard could cause 10 or more deaths, or more than 12 life threatening injuries, or resulted in more than \$100,000 in damages; a **Critical** ranking was given if a hazard could result in 6-10 deaths, or 7-11 treat and transport injuries, or resulted in \$50,000 to \$100,000 in damages; a **Limited** ranking was given if a hazard could cause 1-5 deaths, or deferred treatment injuries, or resulted in \$10,000 to \$50,000 in damages; or a **Negligible** ranking was if no fatalities or only minor injuries resulted, or resulted in less than \$10,000 in damages.

Severity		
4	CATASTROPHIC	<ul style="list-style-type: none"> • 10 or more deaths • More than 12 life threatening injuries • Resulted in more than \$100,000 in damages

Ashland County Mitigation Plan for Natural Disasters

3	CRITICAL	<ul style="list-style-type: none"> • 6-10 deaths, or • 7-11 treat and transport injuries • Resulted in \$50,000 to \$100,000 in damages
2	LIMITED	<ul style="list-style-type: none"> • 1-5 deaths, or deferred treatment injuries • Resulted in \$10,000 to \$50,000 in damages
1	NEGLIGIBLE	<ul style="list-style-type: none"> • if no fatalities or only minor injuries resulted • Resulted in less than \$10,000 in damages

SPEED OF ONSET

Hazards were then classified by the speed in which they can impact the community. Hazards were either given a minimal to no warning, 6 – 12 hour, 12 – 24 hour, or an over 24 hour ranking depending on how fast they could impact the community. A hazard’s speed of onset can affect all other factors because of the lack of time to prepare for its impact. Rankings for speed of onset were given values of 1, 2, 3, or 4.

Warning Time		
4	HIGH	Minimal to no warning
3	MEDIUM	6 to 12 hours
2	LOW	12 to 24 hours
1	NEGLIGIBLE	Over 24 hours

DURATION

Each hazard was then ranked to account for how long the event usually lasts or how long it takes to respond to the hazard. Hazards were classified if the event/response lasts less than a year, less than a month, less than a week, or less than a day. Rankings for duration were given values of 1, 2, 3, or 4

Duration		
4	HIGH	Less than 1 year
3	MEDIUM	Less than 1 month
2	LOW	Less than 1 week
1	NEGLIGIBLE	Less than 1 day

VULNERABILITY/LOCATION

A brief narrative was developed to clarify a hazards location and spatial tendencies. Some hazards are localized hazards, for that they commonly occur in the same localized area, whereas a non-localized hazard, like severe weather, can occur anywhere in the county.

Hazard Summary Chart

The results of the planning team’s Hazard Identification and Risk Assessment are outlined in the chart below.

Ashland County Mitigation Plan for Natural Disasters

Type of Hazard	History	Probability	Magnitude	Duration	Speed of Onset	Severity	Total
Dam Failure	0	1	3	2	4	3	13
Drought	2	3	4	4	1	2	16
Earthquake	1	2	1	1	4	1	10
Extreme Temperatures	1	3	4	2	1	1	12
Flood	3	4	3	3	2	3	18
Hail	3	4	1	1	3	2	14
Lightning	0	4	1	1	3	2	11
Severe Winter Storm	3	4	4	2	1	3	17
Thunderstorm	3	4	4	1	3	3	18
Tornado	3	3	1	1	4	3	15
Windstorm	3	4	4	1	3	3	18

Based on the 2014 HIRA, Ashland County's top five hazards include: flood, windstorm, thunderstorm (all tied for first), severe winter weather, and drought.

Hazard Profiles

On the following pages, the Ashland County Mitigation Planning Team provides detailed profiles on each hazard that can affect, or will continue to affect, Ashland County. The profiles include descriptions of the hazard, history of occurrence, past event narratives, probability of occurrence, extent, location, severity, speed of onset, and duration.

Ashland County Mitigation Plan for Natural Disasters

Class I & Class II Dams

A dam is an artificial barrier usually constructed across a stream to impound water. The benefits of dams are numerous and include: provide drinking water, create lakes for fishing and recreation, provide irrigation for agriculture, navigation, and save lives by preventing or reducing floods.

While it is true that dams provide many benefits, they can also pose a risk to neighboring communities if they are not designed, operated, or maintained properly. In the event of a dam failure, the water stored behind them is capable of causing loss of life and great property damage to those living downstream.

There are about 80,000 dams in the U.S. today, the majority of which are privately owned. According to the Ohio Department of Natural Resources, Class I dams are selected on the basis of three criteria: height (greater than 60 feet), storage volume (greater than 5,000 acre-feet, and potential downstream hazard (probable loss of life, serious hazard to health, and structural damage to high value property). The Ohio Department of Natural Resources has identified five (5) Class I dams for Ashland County and six (6) Class II dams. All of the Class I dams are earthfill with four being located in the geographical southern half of the county.

The largest Class I dam in Ashland County is located at Pleasant Hill Lake in Hanover Township. The dam contains a capacity of 128M gallons of water and it provides flood control for the Clear Fork Mohican River and an area of recreation for public use. The reservoir was constructed in 1936 with the nearest community to the dam being Greer at a distance of 14.4 miles.

The second largest Class I dam is found in Mifflin Township at Charles Mill Lake. It was constructed in 1936 for flood control of the Black Fork Mohican River and also as a public recreation area. The dam's nearest affected community is Perrysville at a distance of 9.8 miles.

Cinnamon Lake Dam is Ashland County's third largest Class I dam and is located in Jackson Township. Cinnamon Lake Dam's capacity is 47.8M gallons. Its drainage area is 3.41 square miles with the closest affected community being West Salem, 4.2 miles away. The dam contains waters from Muddy Fork for the purpose of private recreation.

Another Class I dam is the Mohicanville Dam which is located in Mohican Township. The dam was constructed in 1936 and the nearest affected community is Lakeville, 5.3 miles away. Mohicanville Dam is a dry dam with the sole purpose of providing flood control.

The smallest of the five Class I dams is located at Artesian Lake in Montgomery Township. The dam was constructed before 1968 for the purpose of private recreation. The drainage area of the dam is calculated at 0.49 square miles.

Ashland County Mitigation Plan for Natural Disasters

TABLE: Ashland County Dam Data Summaries

Dam Name	Swinger Pond Dam	Savannah WWTP Lagoons	Zupan Lake Dam	Bredenbeck Lake Dam	Cinnamon Lake Dam	Bash Lake Dam	Rohr's Lake Dam
NIDID	OH00998	OH02913	OH02982	OH01148	OH00095	OH01146	OH01001
Hazard Potential	Low	Significant	Low	Low	High	Low	Low
Inspection Date	12/9/2010	12/9/2010	11/18/2010	11/18/2010	11/30/2010	5/20/2011	10/20/2011
Owner Type	Private	Local Government	Private	Private	Private	Private	Private
Owner Name		Village of Savannah			Cinnamon Lake Association, Inc.		Rohr' Fishing and Campground
NID Height (Ft.)	27	44	31	17.5	45	23.69	22
NID Storage	45.89	41.6	474	62	3577	141	471
Primary Purpose	Recreation	Other	Recreation	Recreation	Recreation	Recreation	Recreation
Dam Type	Earth	Earth	Earth	Earth	Earth	Earth	Earth
River	Tributary to Orange Creek	Unnamed Trib to Vermilion River	Tributary to Orange Creek	Tributary to Orange Creek	Muddy Fork	Tributary to Honey Creek	Tributary to Buck Creek
Nearest City	Nankin	Fitchville	Nankin	Nankin	West Salem	Loudonville	Fitchville
Distance To City (Mi.)	1.3	17.8	5.7	6	4.2	5.3	11.4
Permitting Authority	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inspection Authority	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enforcement Authority	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Eap Last Rev Date	-	-	-	-	-	-	-
Condition Assessment	Not Rated	Satisfactory	Satisfactory	Not Rated	Satisfactory	Not Rated	Not Rated
Condition Assessment Date	-	-	-	-	-	-	-
Condition Assessment Detail	-	Meets applicable hydrologic and seismic regulatory criteria	Meets applicable hydrologic and seismic regulatory criteria	-	Meets applicable hydrologic and seismic regulatory criteria	-	-

Ashland County Mitigation Plan for Natural Disasters

TABLE: Ashland County Dam Data Summaries (cont.)

Dam Name	Artesian Lake Dam	Charles Mill Dam	Lake Silverstone Dam No.1	Thompson Lake Dam	Bailey Lake Dam	Big T Ranch Lake Dam	Jacobs Lake Dam
NIDID	OH01144	OH00020	OH01167	OH01170	OH01145	OH01147	OH00094
Hazard Potential	High	High	Low	Significant	Significant	Low	Significant
Inspection Date	3/31/2011	7/9/2007	4/15/2011	12/6/2010	10/20/2011	11/18/2010	4/12/2011
Owner Type	Private	Federal	Private	Private	Local Government	Private	Private
Owner Name	Artesian Lake Property Owners	Celrh	Ashland LLC		Village of Bailey Lakes	The Flying Pig Farm, LTD	
NID Height (Ft.)	17.5	52	18	16.19	15.1	25	25
NID Storage	86	88000	76	33.39	43.29	206	62.6
Primary Purpose	Recreation	Flood Control	Recreation	Recreation	Recreation	Recreation	Recreation
Dam Type	Earth	Earth	Earth	Earth	Earth	Earth	Earth
River	Tributary to Newell Run	Black Fork of Mohican River	Tributary to Lang Creek	Tributary to Black Fork Mohican River - Offstream	Tributary to Vermilion River	Tributary to Orange Creek	Tributary to Newell Run
Nearest City	England	Perryville	Ashland	Greer	Bailey Lake	Nankin	England
Distance To City (Mi.)	5.7	8	5.3	11	-	4.9	3.4
Permitting Authority	Yes	No	Yes	Yes	Yes	Yes	Yes
Inspection Authority	Yes	No	Yes	Yes	Yes	Yes	Yes
Enforcement Authority	Yes	No	Yes	Yes	Yes	Yes	Yes
Eap Last Rev Date	-	1/1/2011	-	-	-	-	-
Condition Assessment	Fair	Fair	Not Rated	Not Rated	Satisfactory	Not Rated	Not Rated
Condition Assessment Date	-	5/12/2009	-	-	-	-	-
Condition Assessment Detail	-	-	-	-	Meets applicable hydrologic and seismic regulatory criteria	-	-

Ashland County Mitigation Plan for Natural Disasters

TABLE: Ashland County Dam Data Summaries (cont.)

Dam Name	Sellers Lake Dam	Stell Lake Dam	Mohicanville Dam	Uke Ranch Lake Dam	Nova Pond Dam	Rhoads Lake Dam (upper)	Pleasant Hill Dam
NIDID	OH00093	OH00098	OH00019	OH00099	OH00097	OH00096	OH00001
Hazard Potential	Low	Low	High	Low	Significant	Significant	High
Inspection Date	3/15/2000	10/20/2011	7/9/2007	10/26/2011	10/20/2011	11/18/2010	9/1/2010
Owner Type	Private	Private	Federal	Private	Private	Private	Federal
Owner Name			Celrh	Uke Ranch, Inc.		Jeb Lakes, LLC	Celrh
NID Height (Ft.)	29.6	26.3	46	29.3	15.19	18.3	113
NID Storage	97	128.5	102000	69	169.19	88.4	87700
Primary Purpose	Recreation	Recreation	Flood Control	Recreation	Recreation	Recreation	Flood Control
Dam Type	Earth	Earth	Earth	Earth	Earth	Earth	Earth
River	Tributary to Jelloway Creek	Tributary to Vermilion River	Lake Fork of Mohican River	Tributary to Buck Creek	Tributary to Buck Creek	Tributary to Orange Creek	Clear Fork of Mohican River
Nearest City	Jelloway	Fitchville	Brinkhaven	Fitchville	Fitchville	Polk	Brinkhaven
Distance To City (Mi.)	2.5	9.5	20	6	13.6	4.2	20
Permitting Authority	Yes	Yes	No	Yes	Yes	Yes	No
Inspection Authority	Yes	Yes	No	Yes	Yes	Yes	No
Enforcement Authority	Yes	Yes	No	Yes	Yes	Yes	No
Eap Last Rev Date	-	-	1/1/2011	-	-	-	1/1/2011
Condition Assessment	Satisfactory	Satisfactory	Fair	Not Rated	Not Rated	Satisfactory	Fair
Condition Assessment Date	-	-	9/1/2009	-	-	-	5/12/2009
Condition Assessment Detail	Meets applicable hydrologic and seismic regulatory criteria	Meets applicable hydrologic and seismic regulatory criteria	-	-	-	Meets applicable hydrologic and seismic regulatory criteria	-

Ashland County Mitigation Plan for Natural Disasters

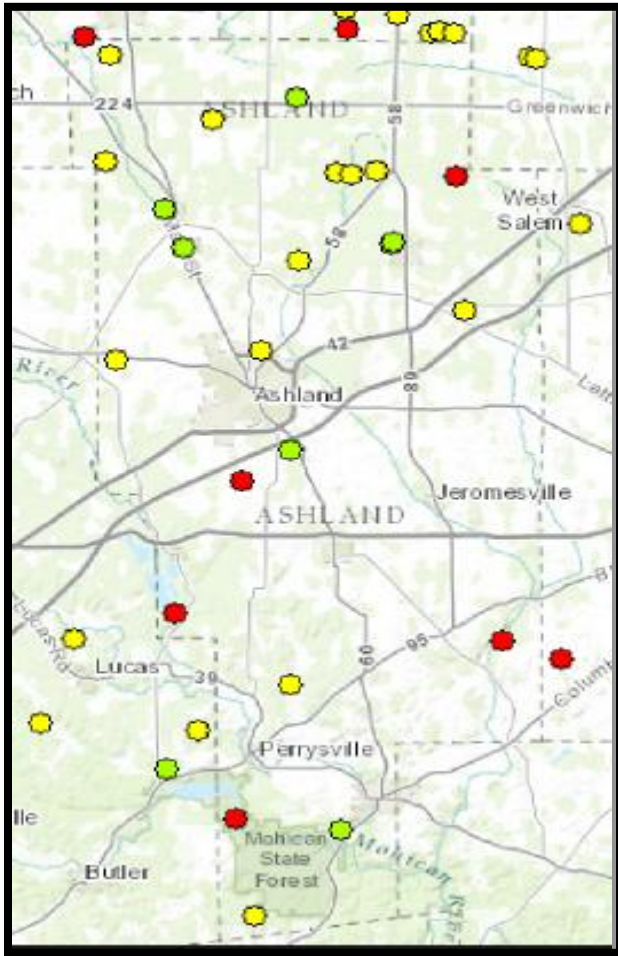
Past History of Hazard Occurrence

There have been no failures of any of the aforementioned Class I or Class II dams in Ashland County since they were constructed.

Probability of Hazard Occurrence

Ashland County has not experienced a dam breach in the past 78 years. It would be realistic to assume that based upon past history, Ashland County would have a less than 1% chance of experiencing a dam failure in the next 100 years. However, most dam failures occur as a result of prolonged rains, flooding, or debris jams; and based on historical data, Ashland County has a 61% chance that the county will experience a flood or flash flood event any given year.

Spatial Extent



Ashland County Mitigation Plan for Natural Disasters

Speed of Onset & Duration

Dam failures or levee breaches can occur quickly with little to no warning. The duration of a dam failure will vary depending on the breach. For minor failures in the dam, a breach could occur within hours while other failures or breaches can take days to weeks.

Vulnerability & Severity

Flooding of nearby homes and other occupied structures would be considered a likely outcome should a breach of a Class I dam occur. Based upon the number of structures located downstream of the dam, Ashland County could realistically see damage totals as outlined in the table below. Roadways and adjacent agricultural properties within close proximity of the dam could also be affected but were not included in the estimated totals below.

DAM FAILURE (CLASS I & II)		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	66	\$ 10,764,204.00
Non-Residential	20	\$ 3,275,060.00
Critical Facilities	6	\$ 990,000.00
Total	92	\$ 15,029,264.00

Ashland County Mitigation Plan for Natural Disasters

Drought

FEMA defines drought as: “a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). Droughts are slow-onset hazards, but, over time, they can severely affect crops, municipal water supplies, recreational resources, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impacts can be significant. High temperatures, high winds, and low humidity can worsen drought conditions and also make areas more susceptible to wildfire. In addition, human actions and demands for water resources can accelerate drought-related impacts.”

Droughts are measured using the Standardized Precipitation Index (SPI) and the Palmer Drought Severity Index. The SPI measures precipitation where the Palmer Drought Severity Index measures the duration and intensity of the drought. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns and the previous month’s weather patterns (see table below).

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44 +	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

*NDMC - National Drought Mitigation Center

Past History of Hazard Occurrence

Based on the previous plan’s hazard analysis and NOAA’s National Climatic Data Center, Ashland County has seen ten (10) droughts since 1930. For a detailed list, see the table below.

Ashland County Mitigation Plan for Natural Disasters

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	1930-1936		Drought					
ASHLAND (ZONE)	1939-1946		Drought					
ASHLAND (ZONE)	1952-1957		Drought					
ASHLAND (ZONE)	1959-1968		Drought					
ASHLAND (ZONE)	1988		Drought					
ASHLAND (ZONE)	08/01/1996	00:00	Drought		0	0	0.00K	0.00K
ASHLAND (ZONE)	06/01/1999	00:00	Drought		0	0	0.00K	0.00K
ASHLAND (ZONE)	07/01/1999	00:00	Drought		0	0	0.00K	0.00K
ASHLAND (ZONE)	08/01/1999	00:00	Drought		0	0	0.00K	0.00K
ASHLAND (ZONE)	09/01/1999	00:00	Drought		0	0	0.00K	9.000M
Totals:					0	0	0.00K	9.000M

Past Event Narratives

The North American Drought of 1988-1989: This drought spread from the Mid-Atlantic, Southeast, Midwest, Northern Great Plains, and Western United States. It was widespread, unusually intense, and accompanied by heat waves which killed 4,800 to 17,000 people across the country and also livestock. A couple of the reasons that the Drought of 1989 was damaging to farmers might have resulted due to farming on land that was marginally arable and the pumping of groundwater near the depletion mark. The Drought of 1989 destroyed crops almost nationwide, residents' lawns went brown, and water restrictions were declared in many cities. This drought was catastrophic for multiple reasons; it continued across the Midwest States and North Plains States during 1989, not officially ending until 1990.

Ashland County Drought: September 1999 - Drought conditions continued across most of northern Ohio during September. Widespread heavy rain occurred on the 29th but did little to help crop conditions. For the month, only 1.63 inches of rain fell in Mansfield making it the 9th driest September on record. Of the 1.63 inches, 1.14 inches fell on the 29th. Even with an inch of rain on the 29th, both Toledo and Cleveland finished with below two inches of rain for the month. Losses from reduced crop yields were estimated at \$200 million for northern Ohio alone.

The North American Drought of 2012: The 2012-2013 North American Drought included most of the U.S. and many counties in Ohio. The drought is an expansion of the 2010-2012 United States Drought which began in the spring of 2012, when the lack of snow in the U.S. caused very little melt water to absorb into the soil.

Ashland County Mitigation Plan for Natural Disasters

Ashland County was designated with moderate drought conditions by mid-June. The North American Drought has not been in place long, but has equaled the effects of droughts from the 1930s and 1950s. However, the North American Drought is expected to continue to have catastrophic economic ramifications. In most measures, the drought has exceeded the 1988-1989 North American Drought, which is the most recent comparable drought.

On July 30, 2012, the Governor sent a memorandum to the USDA 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, Ashland County was one of the designated counties.

Probability of Hazard Occurrence

Based on the county's historical data, there is a 12% chance of Ashland County experiencing a drought within a given year. The State of Ohio averages two drought events per decade.

Spatial Extent

Droughts are a non-spatial hazard and would impact the entire county.

Speed of Onset & Duration

Droughts are a slow onset hazard where only the effects are seen. Drought duration can last from a few weeks to a number of years.

Vulnerability & Severity

Droughts primarily affect crops and livestock and rarely pose a threat to buildings and infrastructure. If a drought occurs in Ashland County, there is 148,000 acres of farm land that could be severely impacted and the water supply could be depleted.

Drought		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	0	\$0
Non-Residential	0	\$0
Critical Facilities	0	\$0
Total	0	\$0

Ashland County Mitigation Plan for Natural Disasters

As mentioned, losses of agricultural productivity would indeed be an issue. Data for the crop yields were acquired from the Ohio Farm Bureau and the table below highlights the losses incurred in a drought year compared to a regular growing season.

Commodity	2011 Non-Drought Year	2012 Drought Year	+/-
Corn –Acres Planted	43,900	42,400	-1,500
Corn, Grain – Acres Harvested	34,500	36,200	+1,700
Corn, Grain – Production measured in BU	5,014,000	4,393,000	- 621,000
Corn, Grain – Yield, Measured in BU/Acre	145.3	121.4	-23.9
Hay, Alfalfa – Acres Harvested	8,800	-	
Hay, Alfalfa – Production measured in tons	40,800	-	
Hay, Alfalfa – Yield, measured in tons/acres	4.65	-	
Soybeans – Soybeans – Acres Harvested	40,500	42,000	+1,500
Soybeans – Soybeans – Acres Planted	40,600	42,100	+1,500
Soybeans – Production measured in BU	1,832,000	1,731,000	- 101,000
Soybeans – Yield, measured in BU/Acre	45.2	41.2	- 4.0
Wheat – Winter-Acres Harvested	9,100	-	
Wheat – Winter-Acres Planted	9,800	-	
Wheat – Wheat, Winter-Production, measured in BU	458,000	-	
Wheat – Wheat, Winter-Yield, measured in BU/Acre	50.3	-	

Ashland County Mitigation Plan for Natural Disasters

Earthquake

An earthquake is a sudden release of energy that creates a movement in the earth's crust. Most earthquake-related property damage and deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the extent and duration of the shaking. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock (in mountain regions and along hillsides), and liquefaction.

Earthquakes are measured using the Richter and Modified Mercalli Intensity Scale. The Richter Scale assigns a single number to quantify the amount of seismic energy released by an earthquake where the Modified Mercalli Intensity Scale measures the intensity of an earthquake's effects in a given locality (based on observations of earthquake effects at specific places). See the below table.

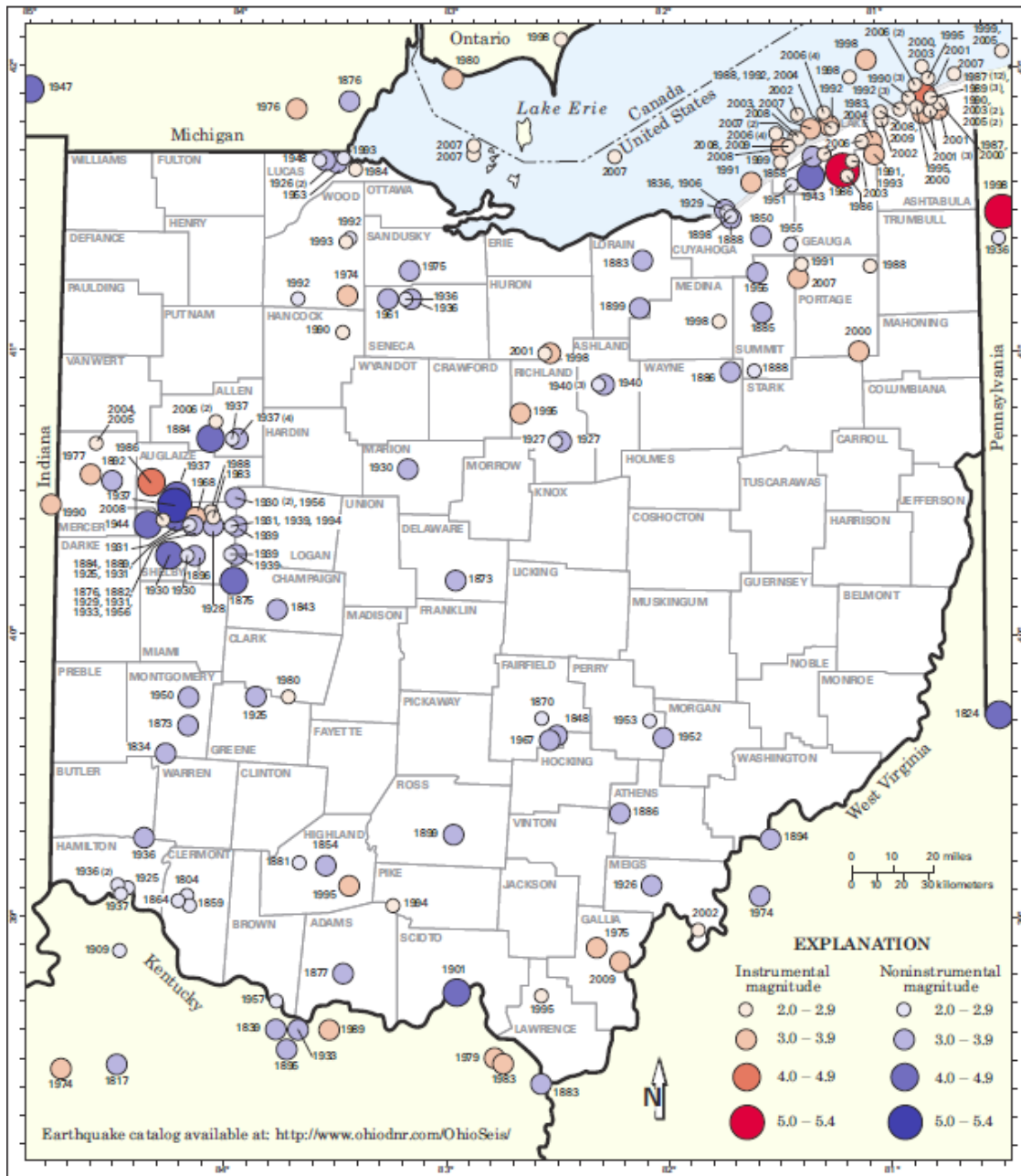
Richter Scale	Typical Maximum Modified Mercalli Intensity		
1.0 - 3.0	I	I – INSTRUMENTAL	Not felt
3.0 - 3.9	II - III	II – WEAK	Felt by only a few people, especially on the upper floors of tall buildings.
		III – SLIGHT	Felt quite noticeably by people indoors, especially on the upper floors of buildings. Standing motor cars may rock slightly. Vibration similar to the passing of a truck.
4.0 - 4.9	IV - V	IV - MODERATE	Felt indoors by many people, by few outdoors. Standing motor cars rock noticeably. Dishes and windows rattle alarmingly. Sensation like heavy truck striking building.
		V – RATHER STRONG	Generally felt by most. Dishes and windows may break and large bells will ring. Vibrations like large train passing close to house.
5.0 - 5.9	VI- VII	VI – STRONG	Felt by all; many frightened and run outdoors, walk unsteadily. Windows, dishes, glassware broken; books fall off shelves; some heavy furniture moved or overturned; a few instances of fallen plaster. Damage slight.
		VII – VERY STRONG	Slight to moderate damage in ordinary structures
6.0 - 6.9	VII - IX	VIII – DESTRUCTIVE	Considerable damage in ordinary structures; chimneys and monuments fall.
		IX – VIOLENT	Considerable damage in all structures; ground cracks; underground pipes break.
7.0+	VIII- XII	X – INTENSE	Most structures destroyed; rails bend; landslides occur.
		XI - EXTREME	Few structures left standing; bridges destroyed; broad fissures in the ground underground pipes break.
		XII - CATASTROPHIC	Total destruction; objects thrown into the air; ground moves in waves or ripples; river routes may change direction.

Ashland County Mitigation Plan for Natural Disasters

Past History of Hazard Occurrence

According to data from the Ohio Seismic Network, there were four earthquakes with an RMS greater than 2.0 recorded in Ashland County since 1776. All four occurred between June and August of 1940, three with an RMS of 2.9 and one with an RMS of 3.0.

EARTHQUAKE EPICENTERS IN OHIO AND ADJACENT AREAS



Recommended citation: Ohio Division of Geological Survey, 2007, Earthquake epicenters in Ohio and adjacent areas—color version: Ohio Department of Natural Resources, Division of Geological Survey Map EG-2, generalized page-size version, 1 p., scale 1:2,000,000.



Ashland County Mitigation Plan for Natural Disasters

Past Event Narratives

Event Details	Event Narrative
June – August 1940 Event Type: Earthquake Location: Ashland Magnitude: 2.0 – 3.0 Fatalities/Injuries: 0/0 Property Damage: \$0	According to data from the Ohio Seismic Network, Ashland County experienced four earthquakes with an RMS greater than 2.0 between June and August of 1940. Three of the earthquakes had a magnitude of 2.9 and one earthquake had a magnitude of 3.0. No damages or injuries were reported.

Probability of Hazard Occurrence

Based on historical data, Ashland County has experienced four (4) earthquakes in the last 75 years and has a 5% chance of experiencing an earthquake in any given year.

Spatial Extent

According to the US Geological Survey (USGS), the entirety of Ashland County falls within the New Madrid Seismic Zone. This seismic zone has been the source of numerous earthquakes that have resulted in earthquakes of magnitudes that span the Richter Scale.

Speed of Onset & Duration

Earthquakes are an immediate impact hazard that occur without warning. Earthquakes are relatively short in duration and only last for mere seconds.

Vulnerability & Severity

Effects to structures, as well as to infrastructure, may be possible from future incidences of an earthquake within the county. Past earthquake events have resulted in no structural damage. There have been no human losses (injuries or deaths). Based upon the historical data, the entirety of Ashland County would continue to have an earthquake potential. However, as previously stated, the losses that might be incurred in such events would be estimated as minimal.

Ashland County Mitigation Plan for Natural Disasters

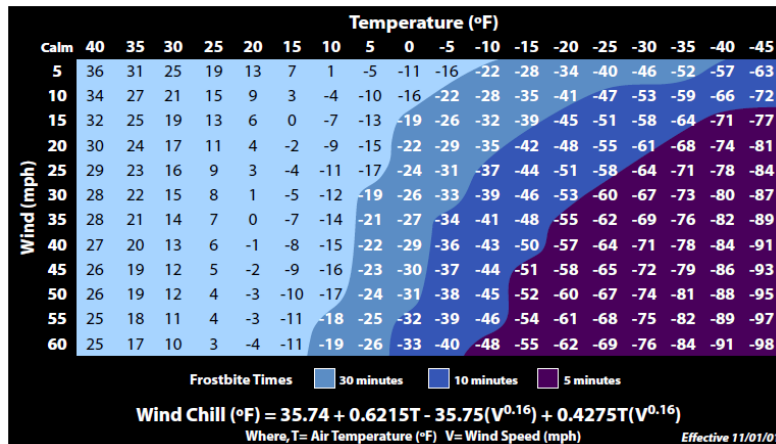
The State of Ohio EMA utilized HAZUS-MH to generate an earthquake event report that estimates the potential losses that Ashland County could expect to experience if a 5.4 magnitude earthquake impacted the City of Ashland. The estimated losses are documented in the table below.

HAZUS Earthquake Scenario – City of Ashland		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	2,203	\$372,768,192.28
Non-Residential	1,262	\$189,465,616.80
Critical Facilities	58	\$8,505,611.55
Total	3,523	\$570,941,420.62

Ashland County Mitigation Plan for Natural Disasters

Extreme Temperature

Extreme heat and extreme cold constitute different conditions in different parts of the country. Extreme cold can range from near freezing temperatures in the southern United States to temperatures well below zero in the northern states. Extremely cold temperatures often accompany a winter storm. Exposure to cold temperatures, whether indoors or outside, can cause other serious or life-threatening health problems and/or the loss of utilities, sometimes for days at a time. The Wind Chill Index (as seen below) is often used to describe the apparent severity of the cold.

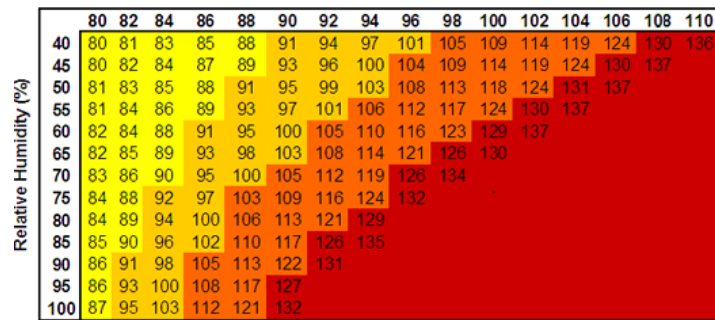


Similarly, extreme heat is typically recognized as the condition where temperatures consistently stay ten (10) degrees or more above the average high temperature for the region and are maintained for more than two days. In extreme heat conditions, high humidity stops the body from being able to maintain or cool itself through sweating or evaporation. Consequently, people living in urban areas are at a greater risk from the effects of a prolonged heat wave because asphalt and concrete store heat longer and gradually release it at night. The Heat Index (as seen below) can be used to determine the effects which temperature and humidity can have on the population.

NOAA's National Weather Service

Heat Index

Temperature (°F)



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- Extreme Danger

Ashland County Mitigation Plan for Natural Disasters

Category	Heat Index	Health Hazards
Extreme Danger	130°F – Higher	Heat Stroke/Sunstroke is likely with continued exposure.
Danger	105°F - 129°F	Sunstroke, muscle cramps and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Extreme Caution	90°F - 105°F	Sunstroke, muscle cramps and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity.

Past History of Hazard Occurrence

According to NOAA’s National Climatic Data Center, Ashland County has experienced two (2) heat events, five (5) extreme cold/wind chill, and three (3) cold/wind chill events between 1/01/1950 and 7/31/2014 (see the tables below).

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	06/06/1999	00:00	Heat		0	0	0.00K	0.00K
ASHLAND (ZONE)	07/01/1999	00:00	Heat		0	0	0.00K	0.00K
Totals:					0	0	0.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	01/15/2009	00:00	Extreme Cold/wind Chill		0	0	0.00K	0.00K
ASHLAND (ZONE)	04/29/2012	03:00	Extreme Cold/wind Chill		0	0	100.00K	0.00K
ASHLAND (ZONE)	04/29/2012	04:00	Extreme Cold/wind Chill		0	0	100.00K	0.00K
ASHLAND (ZONE)	01/06/2014	10:00	Extreme Cold/wind Chill		0	0	0.00K	0.00K
ASHLAND (ZONE)	01/28/2014	03:00	Extreme Cold/wind Chill		0	0	0.00K	0.00K
Totals:					0	0	200.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	02/02/1996	20:00	Cold/wind Chill		0	0	50.00K	0.00K
ASHLAND (ZONE)	01/10/1997	00:00	Cold/wind Chill		0	0	5.00K	0.00K
ASHLAND (ZONE)	03/27/2012	02:00	Cold/wind Chill		0	0	0.00K	0.00K
Totals:					0	0	55.00K	0.00K

Ashland County Mitigation Plan for Natural Disasters

Past Event Narratives

Event Details	Event Narrative
April 29, 2014 Event Type: Extreme Cold/Wind Chill Location: Countywide Duration: 3:00am – 4:00am Fatalities/Injuries: 0/0 Property Damage: \$ 100,000	An area of strong high pressure was centered over the upper Ohio Valley on the morning of April 29th. Clear skies and calm winds allowed for very cold low temperatures. Readings in some areas dipped into the lower 20s and temperatures were below freezing at most locations for several hours. As much as 80 percent of the grape crop was destroyed. Fruit trees in northern Ohio were also hit hard. Monetary losses from this freeze were significant. Temperatures dipped below freezing for several hours causing extensive damage to crops and produce. Damage to fruit trees was significant. Low temperatures were in the upper 20s many areas.

Event Details	Event Narrative
February 2, 1996 Event Type: Cold/Wind Chill Location: Countywide Duration 10:00pm Fatalities/Injuries: 0/0 Property Damage: \$ 50,000	Bitter cold arctic air was over the area with overnight low temperatures averaging between zero and 10 below and daytime high temperatures in the single digits. Wind gusts of 25 mph on the 2nd dropped wind chills as low as 40 below zero and the wind picked back up on the 5th again bringing similarly low wind chills. Record lows were set at most stations across northern Ohio for the 3rd and 4th. A number of pipes and water mains froze and/or broke.

Event Details	Event Narrative
January 10, 1997 – January 19, 1997 Event Type: Cold/Wind Chill Location: Countywide Duration 12:00am – 11:59pm Fatalities/Injuries: 0/0 Property Damage: \$ 5,000	Low temperatures were in the single digits or below zero across all of Northern Ohio, causing frozen and ruptured water pipes. With wind chills of 40 to 50 below zero, many schools were forced to close.

Probability of Hazard Occurrence

Based on Ashland County's historical data, there have been ten (10) extreme temperature events in the past 64 years, and have a 16% chance of experiencing an extreme temperature event any given year.

Ashland County Mitigation Plan for Natural Disasters

Location

Extreme temperature events are non-spatial hazards which occur county-wide.

Speed of Onset & Duration

The National Weather Service will issue an extreme temperature warning (wind chill or excessive heat) when there is the potential for temperatures to approach hazardous levels. Warnings are usually issued 6 to 18 hours prior to the event. Extreme temperature events normally last for several days.

Vulnerability & Severity

Extreme temperature events generally impact residents, crops, and animals but not the build environment. Fatalities can result from extreme temperatures, as they can push the human body beyond its limits (hyperthermia and hypothermia). The most severe extreme temperature event in Ashland County resulted in property damages totaling \$100,000.

Extreme Temperatures		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	0	\$0
Non-Residential	0	\$0
Critical Facilities	0	\$0
Total	0	\$0

Ashland County Mitigation Plan for Natural Disasters

Flood

FEMA defines flood as a partial or complete inundation of normally dry land. Flooding could result from torrential rains occurring for a short period of time (flash floods), moderate to heavy rains lasting an extended period of time, normal level rains on saturated land areas, melting snow and ice, or from ice jams in waterways that release during increased water flow in winter. The various types of flooding include riverine flooding, coastal flooding, and shallow flooding. Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities.

Past History of Hazard Occurrence

The table below provides data on past flooding events. This data was obtained from the National Climate Data Center. According to NOAA's National Climatic Data Center, Ashland County has experienced nine (9) floods and thirty (30) flash floods since 1950. The table below provides data on all past flooding events.

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	06/01/1997	13:00	Flood		0	0	0.00K	0.00K
ASHLAND (ZONE)	08/23/2000	19:30	Flood		0	0	0.00K	0.00K
ASHLAND (ZONE)	07/27/2003	18:10	Flood		0	0	100.00K	0.00K
ASHLAND (ZONE)	06/14/2004	16:30	Flood		0	0	0.00K	0.00K
ASHLAND (ZONE)	06/17/2004	18:00	Flood		0	0	0.00K	0.00K
ASHLAND (ZONE)	01/01/2005	18:00	Flood		0	0	1.200M	0.00K
JEROMESVILLE	05/31/2006	20:45	Flood		0	0	0.00K	0.00K
SAVANNAH	08/21/2007	09:00	Flood		0	0	0.00K	0.00K
NOVA	02/28/2011	03:00	Flood		0	0	500.00K	0.00K
Totals:					0	0	1.800M	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
COUNTYWIDE	04/23/1996	08:30	Flash Flood		0	0	0.00K	0.00K
LOUDONVILLE	05/11/1996	06:40	Flash Flood		0	0	4.00K	0.00K
SULLIVAN	09/07/1996	08:30	Flash Flood		0	0	10.00K	20.00K
COUNTYWIDE	12/11/1996	16:00	Flash Flood		0	0	0.00K	0.00K
ASHLAND	12/12/1996	12:45	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	05/25/1997	14:50	Flash Flood		0	0	0.00K	0.00K

Ashland County Mitigation Plan for Natural Disasters

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
COUNTYWIDE	06/01/1997	08:58	Flash Flood		0	0	80.00K	20.00K
COUNTYWIDE	08/16/1997	18:31	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	01/09/1998	00:55	Flash Flood		0	0	0.00K	0.00K
LOUDONVILLE	05/03/1998	19:50	Flash Flood		0	0	0.00K	0.00K
HAYESVILLE	05/03/1998	19:50	Flash Flood		0	0	30.00K	0.00K
LOUDONVILLE	06/10/1998	09:30	Flash Flood		0	0	5.00K	0.00K
HAYESVILLE	06/29/1998	18:23	Flash Flood		0	0	40.00K	0.00K
COUNTYWIDE	08/25/1998	15:05	Flash Flood		0	0	200.00K	0.00K
COUNTYWIDE	11/10/1998	16:30	Flash Flood		0	0	50.00K	0.00K
COUNTYWIDE	01/22/1999	18:00	Flash Flood		0	0	50.00K	0.00K
LOUDONVILLE	06/16/2000	17:30	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	07/08/2003	17:00	Flash Flood		0	0	100.00K	250.00K
ASHLAND	07/31/2003	21:00	Flash Flood		0	0	250.00K	0.00K
NORTH PORTION	08/05/2003	15:06	Flash Flood		0	0	100.00K	0.00K
NORTH PORTION	06/13/2004	21:14	Flash Flood		0	0	75.00K	0.00K
NORTH PORTION	06/22/2006	01:45	Flash Flood		0	0	250.00K	1.000M
SOUTH PORTION	07/10/2006	16:00	Flash Flood		0	0	5.200M	750.00K
SOUTH PORTION	07/12/2006	17:15	Flash Flood		0	0	150.00K	0.00K
ASHLAND	05/01/2007	19:30	Flash Flood		0	0	30.00K	0.00K
SAVANNAH	08/21/2007	05:30	Flash Flood		0	0	3.000M	750.00K
BAILEY LAKE	05/13/2011	23:00	Flash Flood		0	0	10.00K	0.00K
ASHLAND	05/14/2011	18:00	Flash Flood		0	0	15.00K	0.00K
ENGLAND	05/25/2011	21:00	Flash Flood		0	0	0.00K	0.00K
POLK	06/27/2013	21:00	Flash Flood		0	0	65.00K	0.00K
Totals:					0	0	9.714M	2.790M

Past Event Narratives

Event Details	Event Narrative
July 10, 2006 Event Type: Flash flood	Heavy thunderstorm rains fell on the southern portion of Ashland County during the afternoon and early evening hours

Ashland County Mitigation Plan for Natural Disasters

<p>Location: South Portion of the count Time/Duration: 4:00pm Fatalities/Injuries: 0/0 Property Damage: \$ 5,200,000 Crop Damage: \$ 750,000</p>	<p>of July 10th. Rainfall rates approached 3 inches per hour at times and a spotter near the intersection of State Route 3 and College Hill Road, just south of the Ashland County line, measured a storm total of 7.5 inches. Cooperative observers at the Mohicanville Dam measured 2.8 inches of rain between 3 and 4 p.m. and a storm total of 3.41 inches. Other reports from the county included: 3.26 inches in Loudonville, 2.89 inches at Pleasant Hill Dam, and 2.10 inches in the City of Ashland. Runoff from the heavy rains caused the Mohican River to rise quickly. A four foot wall of water reportedly moved down the river forcing several people in canoes to climb into trees. Firefighters later rescued eight people from the river or trees. The river continued to rise more than a foot per hour through the evening hours. Up to 700 campers had to be evacuated from Mohican State Park, many by boat. Several campgrounds on Wally Road south of Loudonville also had to be evacuated because of flooding. These evacuations continued through 10 p.m. and were hampered by several mudslides along Wally Road. A woman had to be rescued from her home on Pleasant Hill Road. Dozens of campers and mobile homes were damaged in the State Park and campgrounds. Extensive flooding also occurred along Pine Run south and west of Loudonville. Four barns along the run were washed away and a bridge on State Route 3 was heavily damaged. An historic mill along Pine Run sustained over \$100,000 in damage. County Roads 3275, 1027 and 3175 (Wally Road) were washed out in several locations. At least seven Hanover Township roads were also washed out. Total damage to roads and bridges in the county approached \$1 million. Flooding was reported as far north as the City of Ashland where several streets were flooded. Over two dozen roads in the county had to be closed because of flooding including State Route 60 south of Hayesville, and State Routes 3, 39 and 97 near Loudonville. Hundreds of homes and mobile homes sustained damage, mainly from basement flooding. Crop losses in the county are also expected to be substantial as standing water delayed the wheat crop harvest.</p>
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Ashland County Mitigation Plan for Natural Disasters

Event Details	Event Narrative
<p>August 21, 2007 Event Type: Flash Flood Location: Savannah Time/Duration: 5:30am Fatalities/Injuries: 0/0 Property Damage: \$ 3,000,000 Crop Damage: \$750,000</p>	<p>Moisture from the remnants of Tropical Storm Erin interacted with a stationary front to cause heavy rain producing thunderstorms over portions of northern Ohio. The thunderstorms trained across Wyandot, Hancock, Crawford and Richland Counties during the early morning hours of August 21st. Catastrophic flooding occurred in all of these counties. Heavy rain producing thunderstorms affected Ashland County during the late evening hours of August 20th and early morning hours of August 21st. Rainfall totals from across the county included: 3.32 inches at Ashland; 3.46 inches at Jeromesville; 5.18 inches at Mifflin; and 4.02 inches at Loudonville. Runoff from this rain combined with ground already saturated from earlier rains led to significant flooding across portions of Ashland County. Widespread lowland flooding occurred across the county and many roads had to be closed because of flooding. Some of the worst flooding occurred near Loudonville after the Black Fork of the Mohican River quickly rose and left its banks. Many homes and businesses along and near the river sustained flood damage. Hundreds of other homes in the county suffered damage, mainly from basement flooding. Finally, standing water and erosion from the runoff caused damage to agricultural interests in the county.</p>

Event Details	Event Narrative
<p>January 1, 2005 – January 20, 2005 Event Type: Flood Location: Countywide Duration 6:00pm – 6:00pm Fatalities/Injuries: 0/0 Property Damage: \$ 1,200,000</p>	<p>Heavy rain and runoff from snowmelt caused widespread lowland flooding in Ashland, Knox, Morrow, Richland Counties during the first two-thirds of January. January 2005 was the wettest January ever at Mansfield Lahm Airport with 6.08 inches of precipitation during the month. Rainfall totals from Knox County included: 7.51 inches at Greer; 7.97 inches at Fredericktown; 8.28 inches at Danville; and 9.99 inches at Centerburg all in Knox County. In addition to this rain, extensive snowpack existed over northern Ohio at the beginning of the month. Temperatures in the 50s the first three days of the month caused a rapid snowmelt and brought area streams and creeks to bankfull just in time for a significant winter storm on the 5th and 6th. Then, just as things began to</p>

Ashland County Mitigation Plan for Natural Disasters

	<p>return to normal, heavy rains fell on the area on the 11th, 12th and 13th causing conditions to once again worsen. Many streams and rivers in these counties left their banks and forced the closure of dozens of roads. Reservoirs in Ashland and Richland Counties established record high levels. The pool behind Charles Mills Dam reached its highest level ever at 1,017 feet on January 16th. Swampy areas behind the dam flooded forcing the closure of U.S. Highway 42 between Ashland and Mansfield for 10 days. Water levels behind the Mohicanville Dam in eastern Ashland County came to within a couple feet of the alltime record. 8,800 acres behind the dam were flooded. Extensive flooding occurred along the Mohican River in Loudonville where four blocks were flooded. Mohawk Lake in eastern Knox County reached its highest level ever and was up to 79 feet above normal. Homes in the Brinkhaven were affected by the Mohawk Lake flooding. Dozens of evacuations occurred during the middle of the month with most of them being in areas near the Charles Mills and Mohicanville Dams. In addition to the river and lowland flooding, sump pump failures caused by power outages from the ice storm of January 5th and 6th led to hundreds of homes sustaining major damage from basement flooding.</p>
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Probability of Hazard Occurrence

Based on historical data, there have been thirty-nine (39) flood/flash flood events in Ashland County over the past 64 years and there is a 61% chance that the county will experience another flood or flash flood event within the next year.

Location

Ashland County is a part of the Muskingum River Basin that includes a number of watersheds. Rivers and streams in the northwestern section of the county are a part of the Huron and Vermillion River Basins. The Lower Mohican River Basin, the Black Fork Basin, and the Kokosing River Basin serve as the watersheds in the southern area of the county. The county contains a number of rivers, streams, and ditches that could potentially flood (see Appendix B). Severe flooding would affect most Ashland County waterways and, in turn, would impact properties that represent a variety of use groups. Areas of potential flooding during a 100-year flood are presented in Appendix B.

Ashland County Mitigation Plan for Natural Disasters

Speed of Onset & Duration

The National Weather Service issues a flood watch when flooding is possible or expected to occur within 12–48 hours. A flood warning can be issued when flooding is imminent or occurring. When rapid flooding from heavy rain is expected, flash flood watches and warnings will be issued. The duration for a flood or a flash flood is dependent on the amount of snowmelt, precipitation, and saturation levels of the area. Floods can last anywhere from a few hours to a several days.

Vulnerability & Severity

Flooding of county rivers and streams may result in damage to structures, personal property, roadways, and other infrastructure. There are several critical facilities located within the 100-year floodplain, primarily water and wastewater treatment facilities. Based on past events, Ashland County has suffered no loss of life or injury as a result of a flood or flash flood event. Ashland County averages approximately \$366,769 in damages per event. The costliest flash flood event resulted in 5.2 million dollars in property damages and \$750,000 in crop damages.

The State of Ohio EMA generated a HAZUS-MH: Flood Event Report to estimate the potential losses that Ashland County could experience as a result of a 100-year flood. The estimated losses are documented in the table below.

Flood/Flash Flood		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	1,857	\$ 298,934,000
Non-Residential	653	\$ 106,990,000
Critical Facilities	158	\$ 26,003,000
Total	2,667	\$ 431,927,000

NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

Ashland County and four (4) of its jurisdictions participate in the NFIP. As of the plan update, there are 242 NFIP insurance policies (See Table: NFIP Policies), and all jurisdictions were in compliance with NFIP requirements (refer to NFIP Compliance Table).

Table: NFIP Policies

Community Name	Policies In-force	Insurance In-force (whole \$)	Written Premium In-force
Ashland County	43	\$ 5,520,300	\$ 32,314
City of Ashland	85	\$ 9,895,200	\$ 74,249
Village of Jeromesville	1	\$ 93, 000	\$ 1,037

Ashland County Mitigation Plan for Natural Disasters

Community Name	Policies In-force	Insurance In-force (whole \$)	Written Premium In-force
Village of Loudonville	10	\$ 1,259,700	\$ 13,345
Village of Perrysville	4	\$ 397,500	\$ 4,004

Table: NFIP Compliance

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Reg-Emer Date
390759	Ashland County	2/10/1978	1/1/1988	8/18/2009	1/1/1988
390007	City of Ashland	4/12/1974	1/2/1980	8/18/2009	1/2/1980
390008	Village of Jeromesville	5/3/1974	9/1/1986	8/18/2009 (M)	9/1/1986
390009	Village of Loudonville	5/31/1974	8/1/1987	8/18/2009 (M)	8/1/1987
390730	Village of Perrysville	3/28/1975	8/1/1987	8/18/2009 (M)	8/1/1987
390861	Village of Savannah*	--	--	8/18/2009	--
390799	Village of Mifflin*	07/08/77	08/18/09	08/18/09	07/08/78

* Does not participate

According to repetitive loss data, Ashland County currently has four (4) repetitive loss structures within the county but no severe repetitive loss properties. Total NFIP insurance losses are listed in the table below.

Table: Repetitive Loss Properties

Community	Number	Type	Number of Losses	Building Payments	Contents Payments	Total Payments
Ashland County	2	Residential	4	\$ 53,788.67	\$ 17,000.00	\$70,788.67
	0	Non-residential	0	-	-	-
City of Ashland	1	Residential	2	\$ 16,043.21	-	\$ 16,043.21
	0	Non-residential	0	-	-	-
Village of Loudonville	1	Residential	2	\$ 150,056.23	\$ 13,954.00	\$ 164,010.23
	0	Non-residential	0	-	-	-
County and jurisdiction totals:	4	Residential	8	\$ 219,888.11	\$ 30,954.00	\$ 250,842.11
	0	Non-residential	0	\$ 0.00	\$ 0.00	\$ 0.00

Ashland County Mitigation Plan for Natural Disasters

Table: NFIP Losses

Community Name	Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
City of Ashland	19	15	0	4	\$ 356,810.52
Village of Jeromesville	26	16	0	10	\$ 84,962.26
Village of Loudonville	7	7	0	0	\$ 211,280.20
Village of Perrysville	2	2	0	0	\$ 11,155.60
TOTAL	117	40	0	14	\$ 664,208.58

Ashland County began their floodplain map modernization with ODNR in Fiscal Year 2006. This process began with a scoping meeting held on August 14, 2006 and culminated with revised maps becoming effective on August 18, 2009 when they were formally adopted by the County. Under the county Planning Commission, a Floodplain Ordinance is currently in effect. Section 3.0 designates a Floodplain Administrator and duties of that Office, to include updating regulations and enforcement of such regulations under Section 6.0. Additionally, the Floodplain Administrator routinely monitors flood hazard areas to enforce regulations and provide community assistance such as encouraging owners to maintain flood insurance policies.

Ashland County Mitigation Plan for Natural Disasters

Hail

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

Past History of Hazard Occurrence

According the National Climatic Data Center, Ashland County has experienced 110 hail events from 1950 to the present (see the table below).

Location or County	Date	Time	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
ASHLAND CO.	07/24/1965	17:00	Hail	1.50 in.	0	0	0.00K	0.00K
ASHLAND CO.	04/01/1974	20:50	Hail	0.75 in.	0	0	0.00K	0.00K
ASHLAND CO.	07/29/1974	10:15	Hail	1.50 in.	0	0	0.00K	0.00K
ASHLAND CO.	08/13/1975	15:00	Hail	1.75 in.	0	0	0.00K	0.00K
ASHLAND CO.	05/31/1977	16:35	Hail	1.00 in.	0	0	0.00K	0.00K
ASHLAND CO.	07/21/1983	17:30	Hail	1.75 in.	0	0	0.00K	0.00K
ASHLAND CO.	06/29/1987	13:05	Hail	1.00 in.	0	0	0.00K	0.00K
ASHLAND CO.	08/02/1988	15:00	Hail	1.75 in.	0	0	0.00K	0.00K
ASHLAND CO.	07/13/1992	18:15	Hail	1.00 in.	0	0	0.00K	0.00K
ASHLAND CO.	07/30/1992	14:40	Hail	1.00 in.	0	0	0.00K	0.00K
Milford	06/19/1994	16:02	Hail	1.00 in.	0	0	0.00K	0.00K
S Portion	07/02/1994	13:20	Hail	1.00 in.	0	0	0.00K	0.00K
Ashland	06/21/1995	14:45	Hail	0.75 in.	0	0	0.00K	0.00K
Savanah	06/21/1995	18:50	Hail	1.50 in.	0	0	30.00K	0.00K
Ashland	05/18/1997	16:28	Hail	1.00 in.	0	0	0.00K	0.00K
Mohicanville	07/26/1997	20:44	Hail	0.75 in.	0	0	0.00K	0.00K
Sullivan	08/16/1997	17:47	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	04/08/1998	15:00	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	06/27/1998	16:09	Hail	1.75 in.	0	0	0.00K	0.00K
Ashland	06/27/1998	18:00	Hail	1.00 in.	0	0	0.00K	0.00K
Loudonville	06/27/1998	20:40	Hail	1.75 in.	0	0	0.00K	0.00K
Paradise Hill	06/28/1998	17:36	Hail	0.75 in.	0	0	0.00K	0.00K
McKay	06/29/1998	03:30	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	08/25/1998	14:10	Hail	2.00 in.	0	0	0.00K	5.00K

Ashland County Mitigation Plan for Natural Disasters

Location or County	Date	Time	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Polk	07/24/1999	20:20	Hail	1.00 in.	0	0	0.00K	20.00K
Polk	07/28/1999	10:30	Hail	0.75 in.	0	0	0.00K	0.00K
Countywide	10/13/1999	15:45	Hail	0.75 in.	0	0	0.00K	0.00K
Loudonville	06/02/2000	12:40	Hail	1.00 in.	0	0	0.00K	0.00K
Polk	07/28/2000	15:30	Hail	0.75 in.	0	0	0.00K	0.00K
Sullivan	07/28/2000	15:47	Hail	1.00 in.	0	0	0.00K	0.00K
Mifflin	08/23/2000	17:48	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	04/09/2001	15:10	Hail	0.88 in.	0	0	0.00K	0.00K
Ashland	04/19/2002	19:18	Hail	1.00 in.	0	0	15.00K	0.00K
Nankin	04/19/2002	19:31	Hail	0.75 in.	0	0	0.00K	0.00K
Polk	04/28/2002	11:57	Hail	1.00 in.	0	0	5.00K	0.00K
Jeromesville	06/04/2002	18:45	Hail	1.00 in.	0	0	10.00K	0.00K
Savannah	11/10/2002	17:40	Hail	0.75 in.	0	0	0.00K	0.00K
Nankin	11/10/2002	17:45	Hail	1.00 in.	0	0	5.00K	0.00K
Loudonville	04/04/2003	22:00	Hail	0.75 in.	0	0	2.00K	0.00K
Savannah	05/01/2003	15:45	Hail	0.75 in.	0	0	0.00K	0.00K
Polk	07/08/2003	16:31	Hail	0.88 in.	0	0	2.00K	0.00K
Polk	04/17/2004	18:35	Hail	1.00 in.	0	0	2.00K	0.00K
Savannah	04/17/2004	18:37	Hail	1.00 in.	0	0	2.00K	0.00K
Ashland	04/17/2004	18:55	Hail	1.00 in.	0	0	2.00K	0.00K
Hayesville	04/17/2004	19:35	Hail	0.75 in.	0	0	0.00K	0.00K
Perrysville	04/17/2004	19:38	Hail	1.00 in.	0	0	3.00K	0.00K
Loudonville	04/17/2004	20:00	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	05/17/2004	16:49	Hail	0.75 in.	0	0	0.00K	0.00K
Savannah	06/02/2004	16:35	Hail	0.75 in.	0	0	0.00K	0.00K
Perrysville	06/09/2004	17:45	Hail	0.88 in.	0	0	0.00K	0.00K
Ashland	06/24/2004	18:01	Hail	1.00 in.	0	0	0.00K	0.00K
Perrysville	08/18/2004	15:55	Hail	0.75 in.	0	0	0.00K	0.00K
Jeromesville	05/13/2005	18:40	Hail	0.75 in.	0	0	0.00K	0.00K
Nova	06/14/2005	14:51	Hail	0.75 in.	0	0	0.00K	0.00K
Mifflin	06/25/2005	16:20	Hail	1.00 in.	0	0	0.00K	0.00K
Ashland	08/13/2005	17:10	Hail	0.88 in.	0	0	0.00K	0.00K
Sullivan	08/20/2005	14:35	Hail	0.75 in.	0	0	0.00K	0.00K
Loudonville	05/25/2006	18:58	Hail	0.88 in.	0	0	0.00K	0.00K
Ashland	05/25/2006	19:19	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	06/21/2006	22:45	Hail	0.88 in.	0	0	0.00K	0.00K
Ashland	06/22/2006	12:40	Hail	0.75 in.	0	0	0.00K	0.00K

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Location or County	Date	Time	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Sullivan	07/10/2006	12:46	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	07/10/2006	13:40	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	07/10/2006	14:10	Hail	1.00 in.	0	0	10.00K	0.00K
Nova	05/01/2007	16:30	Hail	0.75 in.	0	0	0.00K	0.00K
Polk	05/01/2007	16:47	Hail	1.25 in.	0	0	10.00K	0.00K
Polk	05/01/2007	18:45	Hail	0.88 in.	0	0	0.00K	0.00K
Polk	05/01/2007	19:00	Hail	1.00 in.	0	0	0.00K	0.00K
Jeromesville	06/08/2007	14:40	Hail	0.75 in.	0	0	0.00K	0.00K
Mifflin	06/17/2007	15:55	Hail	0.88 in.	0	0	0.00K	0.00K
Ashland	07/27/2007	19:05	Hail	0.88 in.	0	0	0.00K	0.00K
Sullivan	04/11/2008	20:25	Hail	0.75 in.	0	0	0.00K	0.00K
Nova	06/13/2008	17:15	Hail	1.75 in.	0	0	25.00K	0.00K
Savannah	06/15/2008	21:42	Hail	0.88 in.	0	0	0.00K	0.00K
Perrysville	05/07/2009	18:08	Hail	0.75 in.	0	0	0.00K	0.00K
Savannah	06/01/2009	21:00	Hail	0.88 in.	0	0	0.00K	0.00K
Hayesville	06/01/2009	21:00	Hail	0.88 in.	0	0	0.00K	0.00K
Perrysville	06/04/2010	12:30	Hail	1.75 in.	0	0	5.00K	0.00K
Loudonville	06/04/2010	12:37	Hail	1.75 in.	0	0	35.00K	0.00K
Nova	09/07/2010	15:50	Hail	0.88 in.	0	0	0.00K	0.00K
Loudonville	03/23/2011	14:02	Hail	0.25 in.	0	0	1.00K	0.00K
Loudonville	03/23/2011	14:20	Hail	1.00 in.	0	0	2.00K	0.00K
Ashland	05/12/2011	04:15	Hail	1.25 in.	0	0	20.00K	0.00K
Jeromesville	05/12/2011	05:15	Hail	1.00 in.	0	0	10.00K	0.00K
Ashland	05/12/2011	14:50	Hail	1.00 in.	0	0	15.00K	0.00K
Ashland	05/12/2011	14:57	Hail	1.00 in.	0	0	10.00K	0.00K
Nova	05/25/2011	18:05	Hail	1.00 in.	0	0	0.00K	0.00K
Polk	05/26/2011	02:00	Hail	0.88 in.	0	0	0.00K	0.00K
Ashland	06/05/2011	02:05	Hail	0.88 in.	0	0	0.00K	0.00K
Sullivan	06/05/2011	02:10	Hail	1.00 in.	0	0	0.00K	0.00K
Nova	06/07/2011	10:05	Hail	0.88 in.	0	0	0.00K	0.00K
Loudonville	06/09/2011	05:49	Hail	1.75 in.	0	0	50.00K	0.00K
Savannah	08/09/2011	19:27	Hail	1.75 in.	0	0	10.00K	0.00K
Rowsburg	03/19/2012	17:15	Hail	1.00 in.	0	0	0.00K	0.00K
Perrysville	05/28/2012	15:45	Hail	1.50 in.	0	0	10.00K	0.00K
Hayesville	05/28/2012	15:48	Hail	0.88 in.	0	0	0.00K	0.00K
Hayesville	05/28/2012	15:50	Hail	1.75 in.	0	0	25.00K	0.00K
Ashland	05/28/2012	16:08	Hail	1.00 in.	0	0	0.00K	0.00K

Ashland County Mitigation Plan for Natural Disasters

Location or County	Date	Time	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Nankin	07/04/2012	20:10	Hail	1.00 in.	0	0	0.00K	0.00K
Savannah	07/04/2012	20:15	Hail	0.75 in.	0	0	0.00K	0.00K
Ashland	07/04/2012	20:22	Hail	0.88 in.	0	0	0.00K	0.00K
Loudonville	07/18/2012	12:50	Hail	0.75 in.	0	0	0.00K	0.00K
PERRYSVILLE	04/29/2014	20:22	Hail	1.00 in.	0	0	2.00K	0.00K
ASHLAND	05/07/2014	04:05	Hail	0.88 in.	0	0	0.00K	0.00K
BAILEY LAKE	05/07/2014	04:07	Hail	0.75 in.	0	0	0.00K	0.00K
JEROMESVILLE	05/07/2014	04:15	Hail	0.75 in.	0	0	0.00K	0.00K
ASHLAND	05/12/2014	15:05	Hail	1.00 in.	0	0	0.00K	0.00K
LOUDONVILLE	05/14/2014	13:35	Hail	1.00 in.	0	0	0.00K	0.00K
MIFFLIN	05/21/2014	22:00	Hail	0.88 in.	0	0	0.00K	0.00K
HAYESVILLE	05/21/2014	22:01	Hail	1.00 in.	0	0	2.00K	0.00K
Totals:					0	0	320.00K	25.00K

Past Event Narratives

Event Details	Event Narrative
June 9, 2011 Event Type: Hail Location: Ashland Time: 5:49 am Fatalities/Injuries: 0/0 Property Damage: \$ 50,000	A supercell thunderstorm produced golf ball size hail. Numerous vehicles and homes sustained damage as a result of the large hail.

Event Details	Event Narrative
June 4, 2010 Event Type: Hail Location: Loudonville Time: 12:40 am Fatalities/Injuries: 0/0 Property Damage: \$ 35,000	Golf ball sized hail was reported in the Loudonville area. A few vehicles were damaged by the hail.

Event Details	Event Narrative
June 21, 1995 Event Type: Hail Location: Savannah Time: 6:50 pm Fatalities/Injuries: 0/0	Large hail fell. Lightning struck an oil tank facility and three 300 gallon oil tanks caught fire and burned for an hour and a half.

Ashland County Mitigation Plan for Natural Disasters

Property Damage: \$ 30,000

Probability of Hazard Occurrence

Based on past data for hail events, Ashland County has had 110 hailstorms in the last 64 years and could realistically expect to see 1 to 2 hail events per year.

Location

Hailstorms are non-spatial in nature and could potentially impact any location in Ashland County. However, since hail only occurs during the mature stage of a thunderstorms life cycle, the geographical impact area is fairly small.

Speed of Onset & Duration

The onset of a severe thunderstorm is typically gradual and usually allows for sufficient warning time. The National Weather Service (NWS) will issue a severe thunderstorm warning when hail 1 inch or larger is occurring or is imminent. The mature stage of a thunderstorm usually lasts for 10 – 20 minutes.

Vulnerability & Severity

Hailstorms create considerable property and crop damages and are dangerous to people caught outdoors. Ashland County averages \$3,136 in damages per hail event based on past damage totals.

Hail		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	3	\$ 29,348.68
Non-Residential	1	\$ 9,782.90
Critical Facilities	1	\$ 9,782.90
Total	5	\$ 48,914.48

Ashland County Mitigation Plan for Natural Disasters

Lightning

Lightning is a discharge of electrical energy that results from the buildup of positive and negative charges in a thunderstorm. On average, 53 people are killed and hundreds are injured yearly from lightning strikes in the United States. Lightning can also strike communications equipment and cause significant damage to buildings, critical facilities, and infrastructure by catching fire.

Past History of Hazard Occurrence

According to the National Climatic Data Center, Ashland County has experienced three (3) lightning strikes from 1950-2014 (see the table below).

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND	06/24/1996	11:30	Lightning		0	0	1.00K	0.00K
ASHLAND	05/03/1998	19:50	Lightning		0	0	20.00K	0.00K
LOUDONVILLE	04/07/2000	15:45	Lightning		0	0	50.00K	0.00K
Totals:					0	0	71.00K	0.00K

Past Event Narratives

Event Details	Event Narrative
Date: 4/7/2000 Event Type: Lightning Location: Loudonville Time: 3:45 pm Fatalities/Injuries: 0/0 Property Damage: \$ 50,000	Lightning struck a public school knocking out all of the transformers in the building.

Event Details	Event Narrative
Date: 5/3/1998 Event Type: Lightning Location: Ashland Time: 7:50pm Fatalities/Injuries: 0/0 Property Damage: \$ 20,000	Lightning struck and touched off a blaze at a house.

Event Details	Event Narrative
Date: 6/24/1996 Event Type: Lightning	Lightning struck a power/transmitter, setting off multiple alarms and disrupting power to businesses.

Ashland County Mitigation Plan for Natural Disasters

Location: Ashland Duration 11:30 am Fatalities/Injuries: 0/0 Property Damage: \$ 1,000	
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Probability of Hazard Occurrence

Ashland County has experienced three (3) lightning strikes in the past 18 years and has a 17% chance of experiencing another lightning strike in any given year. Most locations in Northeast Ohio average between 2 and 4 lightning strikes per year.

Location

Lightning is a non-spatial hazard and could potentially impact any location in Ashland County. Due to the fact that lightning occurs in all three stages of a thunderstorm's life cycle, the amount of lightning strikes could increase to multiple locations.

Speed of Onset & Duration

The onset of a severe thunderstorm is typically gradual and usually allows for sufficient warning time. The National Weather Service (NWS) will issue a severe thunderstorm warning when either a severe thunderstorm is indicated by radar or a spotter reports a thunderstorm producing hail ¾ inch or larger. The typical thunderstorm lasts an average of 30 minutes.

Vulnerability & Severity

Lightning can be extremely dangerous because it occurs in all thunderstorms. Lightning strikes in Ashland County have been limited to property damages. However, lightning causes an average of 55-60 fatalities and 400 injuries per year and costs more than \$1 billion in insured losses. The county's costliest lightning incident resulted in \$ 50,000 in damages.

Lightning loss estimates were determined based upon previous damages and documented in the table below.

Lightning		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	3	\$ 29,348.68
Non-Residential	1	\$ 9,782.90
Critical Facilities	1	\$ 9,782.90
Total	5	\$ 48,914.48

Ashland County Mitigation Plan for Natural Disasters

Severe Winter Storm

Severe winter storms can produce a variety of adverse weather conditions. Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Severe winter weather can down trees, cause widespread power outages, damage property, and cause fatalities and injuries. Severe winter storms can contribute to other losses including vehicular accidents, personal injuries, and losses of life.

Past History of Hazard Occurrence

According to NOAA's National Climatic Data Center, Ashland County has experienced 31 winter storm events, eight (8) heavy snow events, and three (3) ice storm events from 1950 to 2014 (see tables below).

Location	Date	Time	Type	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	01/02/1999	08:00	Winter Storm	0	2	15.00K	0.00K
ASHLAND (ZONE)	01/08/1999	04:00	Winter Storm	0	0	2.00K	0.00K
ASHLAND (ZONE)	01/13/1999	01:30	Winter Storm	0	0	2.00K	0.00K
ASHLAND (ZONE)	02/18/2000	03:00	Winter Storm	0	0	35.00K	0.00K
ASHLAND (ZONE)	03/16/2000	06:00	Winter Storm	0	0	15.00K	0.00K
ASHLAND (ZONE)	12/13/2000	14:00	Winter Storm	0	0	125.00K	0.00K
ASHLAND (ZONE)	03/24/2002	20:00	Winter Storm	0	0	50.00K	0.00K
ASHLAND (ZONE)	03/26/2002	01:00	Winter Storm	0	0	150.00K	0.00K
ASHLAND (ZONE)	12/05/2003	04:00	Winter Storm	0	0	200.00K	0.00K
ASHLAND (ZONE)	01/25/2004	18:00	Winter Storm	0	0	300.00K	0.00K
ASHLAND (ZONE)	02/05/2004	15:00	Winter Storm	0	0	75.00K	0.00K
ASHLAND (ZONE)	12/22/2004	07:00	Winter Storm	0	0	5.200M	0.00K
ASHLAND (ZONE)	04/02/2005	04:00	Winter Storm	0	0	250.00K	0.00K
ASHLAND (ZONE)	04/23/2005	12:00	Winter Storm	0	0	250.00K	0.00K
ASHLAND (ZONE)	02/04/2006	11:00	Winter Storm	0	0	60.00K	0.00K
ASHLAND (ZONE)	02/13/2007	04:00	Winter Storm	0	0	30.00K	0.00K
ASHLAND (ZONE)	12/15/2007	12:00	Winter Storm	0	0	150.00K	0.00K
ASHLAND (ZONE)	02/11/2008	20:00	Winter Storm	0	0	50.00K	0.00K
ASHLAND (ZONE)	02/25/2008	22:00	Winter Storm	0	0	120.00K	0.00K
ASHLAND (ZONE)	03/04/2008	05:00	Winter Storm	0	0	500.00K	0.00K

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Location	Date	Time	Type	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	03/07/2008	09:30	Winter Storm	0	0	800.00K	0.00K
ASHLAND (ZONE)	12/19/2008	01:45	Winter Storm	0	0	25.00K	0.00K
ASHLAND (ZONE)	01/09/2009	12:00	Winter Storm	0	0	125.00K	0.00K
ASHLAND (ZONE)	01/27/2009	16:00	Winter Storm	0	0	80.00K	0.00K
ASHLAND (ZONE)	02/05/2010	12:00	Winter Storm	0	0	350.00K	0.00K
ASHLAND (ZONE)	02/09/2010	05:00	Winter Storm	0	0	200.00K	0.00K
ASHLAND (ZONE)	02/15/2010	14:00	Winter Storm	0	0	200.00K	0.00K
ASHLAND (ZONE)	02/01/2011	00:00	Winter Storm	0	0	250.00K	0.00K
ASHLAND (ZONE)	02/21/2011	13:00	Winter Storm	0	0	250.00K	0.00K
ASHLAND (ZONE)	12/26/2012	08:30	Winter Storm	0	0	50.00K	0.00K
ASHLAND (ZONE)	02/04/2014	17:00	Winter Storm	0	0	100.00K	0.00K
Totals:				0	2	10.009M	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	01/05/2005	02:00	Ice Storm		0	0	8.800M	0.00K
ASHLAND (ZONE)	02/25/2007	00:00	Ice Storm		0	0	25.00K	0.00K
ASHLAND (ZONE)	03/15/2007	03:00	Ice Storm		0	0	100.00K	0.00K
Totals:					0	0	8.925M	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD	
ASHLAND (ZONE)	01/07/1996	06:00	Heavy Snow		0	0	80.00K	0.00K	
ASHLAND (ZONE)	03/19/1996	23:00	Heavy Snow		0	0	12.00K	0.00K	
ASHLAND (ZONE)	03/09/1999	00:15	Heavy Snow		0	0	0.00K	0.00K	
ASHLAND (ZONE)	03/05/2001	19:00	Heavy Snow		0	0	30.00K	0.00K	
ASHLAND (ZONE)	12/24/2002	21:00	Heavy Snow		0	0	75.00K	0.00K	
ASHLAND (ZONE)	01/10/2003	13:00	Heavy Snow		0	0	25.00K	0.00K	
ASHLAND (ZONE)	03/16/2004	01:30	Heavy Snow		0	0	150.00K	0.00K	
Totals:						0	0	472.00K	0.00K

Ashland County Mitigation Plan for Natural Disasters

Past Event Narratives

Event Details	Event Narrative
January 5, 2005 Event Type: Ice Storm Location: Ashland Time: 2:00 am Fatalities/Injuries: 0/0 Property Damage: \$ 8,800,000	<p>For the second time in just over two weeks, a devastating and historic winter storm affected Northern Ohio. Significant ice accumulations occurred over most of the area downing thousands of trees, causing widespread power outages, and making travel nearly impossible. Low pressure over Missouri moved rapidly northeast on January 5th. This low moved across eastern Ohio early on January 6th and was responsible for producing a prolonged period of freezing rain. A mixture of rain and snow changed to freezing rain from west to east during the early morning hours of the 5th. Periods of freezing rain then continued for the remainder of the 5th and through the early morning hours of the 6th. Temperatures eventually warmed enough during the late morning hours of the 6th to change the freezing rain back to rain. The hardest hit locations were west of Interstate 71 along the U.S. Route 30 corridor. Ice accumulations of greater than three quarters of an inch were reported from Hancock County eastward across Wyandot, Crawford, Richland and Ashland Counties. Northern sections of Wyandot and Marion Counties along with the southern halves of Seneca and Huron County were also hard hit. Up to 80 percent of electric customers in these nine counties lost service during the storm, some for as much as ten days. In cities like Mansfield, Bucyrus and Findlay, nearly every property in some neighborhoods sustained tree damage. To the north and south of these areas, ice accumulations ranged from one quarter to three quarters of an inch. Counties closer to Lake Erie saw snow mix with the freezing rain at times, which kept ice accumulations down to around one quarter inch and resulted in only scattered power outages. A total of 3 to 5 inches of snow was also reported in these counties. Ice build up at the Davis-Besse Nuclear Power Plant (Ottawa County) damaged the facility enough to force it to be temporarily shut down. Hundreds of crews were brought in from around the county to help restore the power outages. In addition to damage caused by fallen trees and limbs, basement flooding occurred as power outages prevented sump pumps from working. Clean up and repair costs for this storm were among the highest ever recorded for a natural disaster in Ohio. Damage in many counties topped \$1 million with a couple counties exceeding \$10 million in losses. In Richland County alone, clean up cost accrued by local governments totaled nearly \$6 million. Estimates indicate that as many as one million people lost power during this storm. Several power companies reported</p>

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	the largest number of outages in their histories. Hundreds if not thousands of homes and businesses were damaged by fallen trees, limbs, and utility poles.
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Event Details	Event Narrative
December 22-23, 2004 Event Type: Winter Storm Location: County Time: 7:00 am Fatalities/Injuries: 0/0 Property Damage: \$ 5,200,000	A record setting winter storm affected northern Ohio on December 22nd and 23rd. The impact and damage caused by this storm has been compared to the Blizzard of January 1978. Low pressure developed over eastern Texas early on the 22nd and then moved quickly northeast. The low eventually tracked across eastern Ohio during the morning hours of the 23rd after dumping nearly two feet of snow on portions of Ohio. The snow began around daybreak on the 22nd and then intensified around midday. Heavy snow with visibilities of a quarter mile or less then persisted into the early morning hours of the 23rd. Snowfall rate during much of this time ranged from one to two inches per hour. Winds increased significantly during the evening hours of the 22nd as northerly winds developed on the backside of the low. Gusts to 30 mph caused significant blowing and drifting and near blizzard conditions from Marion County northeastward into Erie and Huron Counties. Drifts several feet deep were reported. Temperatures warmed slightly during the early morning hours of the 23rd as the low moved into southeast Ohio. This caused the snow to first mix with, and then change completely to, freezing rain. This change occurred at Mansfield just before 3 a.m. and at Cleveland around 4 a.m. The heaviest freezing rain fell along and west of Interstate 71 between these two cities with over one half inch of ice accumulation over much of this corridor. Snowfall totals ranged from 12 to 18 inches from Marion and Morrow Counties northeast to Erie, Lorain and Cuyahoga Counties. Within that area, there was a narrow band of even heavier snow with greater than 18 inches of accumulation from northern Morrow County across Richland County and into Ashland County. Officially, 23.0 inches of snow was measured at Mansfield Lahm Airport (Richland County) establishing a new all-time record snowfall. In addition, 0.57 inches of freezing rain was measured at that location. At Cleveland Hopkins International Airport (Cuyahoga County), a total of 15.5 inches of snow fell along 0.58 inches of freezing rain. The freezing rain significantly compacted the snow and official measurements made by cooperative observers around daybreak likely underestimated the actual snowfall. Had measurements been taken around midnight, reported accumulations would have likely been several inches higher at most locations. The wet and very heavy snow made travel nearly

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	impossible across northern Ohio. Hundreds of accidents were reported and holiday travel for many was not possible. Numerous power outages as a result of the freezing rain were reported. The outages were most widespread in southern portions of Ashland and Richland Counties where some areas were without power for several days. The weight of the heavy snow damaged the roofs of dozens of homes and buildings, several of which had complete roof failures. It took several days for road crews to completely clean up after this event. Damage and clean up costs for this storm were historic with only the Blizzard of 1978 having more financial impact.
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Event Details	Event Narrative
March 7-8, 2008 Event Type: Winter Storm Location: Ashland County Time: 9:30 am – 7:00 pm Fatalities/Injuries: 0/0 Property Damage: \$ 800,000	Snow began across the area during the morning hours of the 7th and continued through the late afternoon hours of the 8th. During the daytime on the 7th, visibilities were reduced to a half mile or less at times, but then during the evening hours, the snow lightened up considerably. The snow intensified through the overnight hours into the 8th, and moderate to heavy snow continued through the daytime hours before tapering to flurries in the late afternoon and evening. At the end of this event, snowfall amounts ranged between 9.0 and 15.0 inches. A trained spotter in Ashland measured 13.0 inches for a storm total. Winds on the 7th and 8th were gusty causing considerable blowing and drifting of snow. Many accidents were reported during this storm.

Probability of Hazard Occurrence

The probability that Ashland County will have another severe winter storm is extremely high since they have experienced 42 events in the last 15 years. Based on that history, it is realistic to assume that Ashland County will experience 2 to 3 severe winter storm events per year.

Location

Severe Winter Storms are a not-spatial hazard that could potentially impact any or all of Ashland County's build environment.

Speed of Onset & Duration

The National Weather Service will issue a Winter Storm Warning when heavy snow (approximately 6 inches of snow is expected in 12 hours or less) or a combination of heavy snow, heavy freezing rain, heavy sleet, or blowing and drifting snow is expected to occur. The heavy snow criterion for a warning follows

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below. Warnings are usually issued 6-18 hours prior to the weather event. Winter storms can persist for several days.

Vulnerability & Severity

Winter storms usually impact residents and animals, and can make travel throughout the county extremely difficult. Most deaths from winter storms occur as the result of traffic accidents or because of prolonged exposure to the elements. The average annual snowfall for Ashland County is 49 inches. Based on previous storms, Ashland County could see snow totals from a trace up to 18 inches; ice accumulations from ½ inch to 1 inch; winds in excess of 30 mph, or limited (1/4 mile) to no visibility. The county's costliest severe winter storm resulted in \$8.8 million in damages.

Winter storm loss estimates were determined based upon the county's past damage history and is documented in the table below.

Winter Storm		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	38	\$ 6,197,572
Non-Residential	12	\$ 1,965,036
Critical Facilities	3	\$ 495,000
Total	54	\$8,657,608

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Thunderstorm

A thunderstorm is a violent, short-lived atmospheric disturbance, almost always associated with cumulonimbus clouds and accompanied by thunder and lightning. Such storms usually generate strong, gusty winds and heavy rain, and occasionally hail or tornadoes. Thunderstorms have been known to occur in almost every part of the world.

Past History of Hazard Occurrence

According to NOAA's National Climate Data Center, Ashland County has had 137 thunderstorm wind events in the county between 1950 and 2014. The following table details the thunderstorm events that have been reported over the last 60 years.

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND CO.	06/12/1959	16:15	Thunderstorm Wind	53 kts.	0	0	0.00K	0.00K
ASHLAND CO.	09/13/1962	19:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	01/26/1965	13:00	Thunderstorm Wind	53 kts.	0	0	0.00K	0.00K
ASHLAND CO.	11/16/1965	17:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/24/1967	11:00	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
ASHLAND CO.	05/13/1970	10:45	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	09/03/1975	14:50	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	04/21/1976	16:05	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	05/22/1977	20:20	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	06/26/1978	11:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/05/1980	07:50	Thunderstorm Wind	69 kts.	0	0	0.00K	0.00K
ASHLAND CO.	08/02/1980	14:45	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
ASHLAND CO.	08/21/1980	15:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	01/04/1982	08:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	03/31/1982	12:15	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	06/15/1982	17:55	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/17/1982	14:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	04/28/1983	11:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/04/1983	15:45	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

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Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND CO.	07/17/1983	14:15	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/10/1985	00:50	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	06/27/1986	13:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/08/1986	23:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	09/30/1986	13:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	06/29/1987	19:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	08/02/1987	20:15	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	05/09/1988	15:20	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	08/02/1988	15:45	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	03/18/1989	03:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	06/27/1989	14:15	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	06/27/1989	14:15	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	08/04/1989	14:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/09/1990	11:05	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	08/19/1990	02:25	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	09/06/1990	13:20	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	03/27/1991	22:50	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	05/30/1991	21:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	05/31/1991	21:45	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ASHLAND CO.	07/10/1992	17:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Countywide	04/27/1994	04:54	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Loudenville	06/12/1994	15:20	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Loudenville	06/19/1994	16:10	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Polk	06/20/1994	16:50	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Countywide	06/20/1994	17:05	Thunderstorm Wind	0 kts.	0	0	50.00K	0.00K
Ashland and	06/29/1994	00:54	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Sullivan	08/04/1994	12:41	Thunderstorm Wind	0 kts.	0	0	50.00K	0.00K
Charles Mills State P	04/21/1995	08:10	Thunderstorm Wind	0 kts.	0	0	10.00K	0.00K
Countywide	07/13/1995	19:45	Thunderstorm Wind	0 kts.	1	0	150.00K	30.00K

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Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Loudonville	07/15/1995	17:45	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
Countywide	07/16/1995	16:50	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
Loudenville	09/13/1995	20:10	Thunderstorm Wind	0 kts.	0	0	3.00K	0.00K
COUNTYWIDE	06/22/1996	09:34	Thunderstorm Wind	50 kts.	0	0	2.00K	0.00K
ASHLAND	06/24/1996	11:30	Thunderstorm Wind	50 kts.	0	0	1.00K	0.00K
SOUTHERN PORTION	07/07/1996	22:30	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
NORTHERN HALF	12/01/1996	12:00	Thunderstorm Wind	50 kts.	0	0	2.00K	0.00K
COUNTYWIDE	06/28/1998	18:00	Thunderstorm Wind	69 kts.	0	0	75.00K	0.00K
SULLIVAN	07/21/1998	22:16	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
ASHLAND	07/04/2003	14:30	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
COUNTYWIDE	07/04/2003	14:30	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
COUNTYWIDE	07/07/2003	14:40	Thunderstorm Wind	50 kts. EG	0	0	20.00K	0.00K
COUNTYWIDE	07/08/2003	03:45	Thunderstorm Wind	50 kts. EG	0	0	50.00K	0.00K
COUNTYWIDE	07/08/2003	16:30	Thunderstorm Wind	50 kts. EG	0	0	125.00K	0.00K
ASHLAND	07/21/2003	09:05	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MIFFLIN	08/02/2003	15:30	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
JEROMESVILLE	08/16/2003	14:45	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
COUNTYWIDE	08/26/2003	19:00	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
ASHLAND	08/27/2003	03:35	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
LOUDONVILLE	11/12/2003	18:30	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
COUNTYWIDE	05/21/2004	15:15	Thunderstorm Wind	50 kts. EG	0	0	125.00K	0.00K
HAYESVILLE	06/13/2004	19:50	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
ASHLAND	06/14/2004	16:20	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
PERRYSVILLE	06/24/2004	18:00	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
ASHLAND	04/20/2005	17:35	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
HAYESVILLE	06/05/2005	20:53	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
HAYESVILLE	06/28/2005	15:15	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
PERRYSVILLE	06/30/2005	13:30	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K

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Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
RUGGLES	07/21/2005	03:00	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ASHLAND	07/25/2005	13:30	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
POLK	07/25/2005	13:30	Thunderstorm Wind	50 kts. EG	0	1	30.00K	0.00K
JEROMESVILLE	07/26/2005	18:40	Thunderstorm Wind	50 kts. EG	0	0	75.00K	0.00K
LOUDONVILLE	07/26/2005	20:05	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ASHLAND	08/13/2005	16:58	Thunderstorm Wind	50 kts. EG	0	0	25.00K	0.00K
SULLIVAN	08/20/2005	14:35	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
POLK	11/06/2005	10:20	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
ASHLAND	05/25/2006	17:10	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
LOUDONVILLE	05/25/2006	17:50	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
HAYESVILLE	05/25/2006	19:28	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
LOUDONVILLE	05/31/2006	19:30	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
HAYESVILLE	06/21/2006	22:35	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
SULLIVAN	06/22/2006	00:50	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
COUNTYWIDE	06/22/2006	16:00	Thunderstorm Wind	70 kts. EG	0	0	450.00K	0.00K
MC ZENA	06/22/2006	16:15	Thunderstorm Wind	61 kts. EG	0	0	25.00K	0.00K
ASHLAND	07/02/2006	18:55	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
PERRYSVILLE	07/10/2006	15:10	Thunderstorm Wind	50 kts. EG	0	0	20.00K	0.00K
POLK	05/02/2007	19:00	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
JEROMESVILLE	05/26/2007	13:18	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ASHLAND	06/08/2007	13:40	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ASHLAND	08/16/2007	00:00	Thunderstorm Wind	60 kts. EG	0	0	300.00K	0.00K
ASHLAND	09/25/2007	20:30	Thunderstorm Wind	50 kts. EG	0	0	100.00K	0.00K
NOVA	06/13/2008	17:15	Thunderstorm Wind	50 kts. EG	0	0	50.00K	0.00K
SAVANNAH	07/08/2008	15:30	Thunderstorm Wind	50 kts. EG	0	0	20.00K	0.00K
ASHLAND	07/08/2008	15:36	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
POLK	06/01/2009	20:50	Thunderstorm Wind	50 kts. EG	0	0	12.00K	0.00K
JEROMESVILLE	06/19/2009	17:00	Thunderstorm Wind	55 kts. EG	0	0	30.00K	0.00K
PARADISE HILL	06/25/2009	18:10	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K

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Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
POLK	08/20/2009	16:15	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
MIFFLIN	05/07/2010	22:05	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
LOUDONVILLE	06/27/2010	15:28	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
LOUDONVILLE	06/27/2010	15:43	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
HAYESVILLE	06/27/2010	16:15	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
LOUDONVILLE	09/07/2010	16:44	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
ASHLAND	04/27/2011	11:35	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
ASHLAND	05/26/2011	16:40	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ASHLAND CO.	06/10/2011	18:30	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
HAYESVILLE	07/11/2011	12:45	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
HAYESVILLE	09/01/2011	11:30	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
JEROMESVILLE	04/30/2012	20:35	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ASHLAND	06/18/2012	15:05	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
ASHLAND CO ARPT	06/18/2012	15:05	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
PERRYSVILLE	06/29/2012	16:30	Thunderstorm Wind	56 kts. EG	0	0	750.00K	0.00K
HAYESVILLE	07/04/2012	20:35	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
WIDOWVILLE	07/05/2012	06:30	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ASHLAND	08/04/2012	22:30	Thunderstorm Wind	50 kts. EG	0	0	15.00K	0.00K
ASHLAND	04/10/2013	15:33	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
RUGGLES	06/12/2013	20:22	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
ASHLAND	06/13/2013	00:39	Thunderstorm Wind	50 kts. EG	0	0	50.00K	0.00K
LOUDONVILLE	06/13/2013	01:00	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
REDHAW	07/10/2013	13:50	Thunderstorm Wind	50 kts. EG	0	0	50.00K	0.00K
BAILEY LAKE	07/10/2013	14:45	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SULLIVAN	07/10/2013	14:45	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ASHLAND	07/10/2013	15:05	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
ASHLAND	11/01/2013	00:10	Thunderstorm Wind	50 kts. EG	0	0	50.00K	0.00K
PARADISE HILL	11/17/2013	19:30	Thunderstorm Wind	50 kts. EG	0	0	25.00K	0.00K
PERRYSVILLE	11/17/2013	19:50	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K

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Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
SULLIVAN	12/22/2013	00:00	Thunderstorm Wind	50 kts. EG	0	0	25.00K	0.00K
ASHLAND	05/07/2014	04:05	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
LOUDONVILLE	05/14/2014	00:45	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
Totals:					1	1	3.094M	30.00K

Past Event Narratives

Event Details	Event Narrative
<p>June 29, 2012 Event Type: Thunderstorm Wind Magnitude: 56kts. Location: Perrysville Duration: 4:30pm Fatalities/Injuries: 0/0 Property Damage: \$ 750,000</p>	<p>An intense line of thunderstorms, or Derecho, moved across southern Ashland County during the afternoon of June 29th causing extensive damage. Winds were estimated to be as much as 65 mph. Over 50 percent of residents in the southern third of the county lost power during this event. Power was not completely restored for several days. Hundreds of trees were downed across the county along with many utility poles, forcing the closure of some of roads and streets. Damage to homes and buildings was also extensive. Dozens of homes and buildings lost roofing or siding with many other homes damaged by fallen trees. Clean up costs were extensive. The clean up was hampered by an ongoing heat wave with afternoon temperatures in the upper 90s. Significant crop losses are also expected. Damage from this storm in southern Ashland County was comparable to the remnants of Hurricane Ike in September 2008.</p>

Event Details	Event Narrative
<p>June 22, 2006 Event Type: Thunderstorm Wind Magnitude: 70kts Location: Countywide Duration 4:00pm – 4:10pm Fatalities/Injuries: 0/0 Property Damage: \$ 450,000</p>	<p>During the late afternoon hours of June 22nd, severe thunderstorms moved across Ashland County and caused extensive damage. The worst damage resulted from straight line winds caused by a downburst that started east of Charles Mills Lake and continued through the Mifflin area to near Hayesville. Winds were estimated to be greater than 80 mph. Up to a thousand trees were downed along this path. Near Mifflin, a 120 foot tall radio tower was knocked down. Several homes in Mifflin lost sections of roof and three garages were also destroyed. One of the homes was damaged enough to be declared uninhabitable. In Hayesville, over half the trees in the town were blown down and many homes were damaged. Numerous roads had to be closed because of downed trees, limbs, and power lines. Across the remainder of the county, trees and power lines were reported down from as far north as</p>

Ashland County Mitigation Plan for Natural Disasters

	Polk to Loudonville in the southeast corner of the county. At least two homes were damaged by fallen trees in Loudonville. Thousands of people lost power during this event.
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Event Details	Event Narrative
August 16, 2007 Event Type: Thunderstorm Wind Magnitude: 60kts Location: Ashland Duration 12:00 am – 12:15 am Fatalities/Injuries: 0/0 Property Damage: \$ 300,000	A portion of a roof on a grocery store was blown off. The grocery store was located on the north side of Ashland. Trees were also reported down in the area. A survey team followed up on the report and found a significant portion of the grocery store's roof was blown off. Also noted was a barn southwest of the store that had a portion of its roof blown off. Numerous trees were down mainly between State Routes 511 and 58. Two semi trailers and a construction trailer were blown onto their sides near State Route 511 and U.S. 250.

Probability of Hazard Occurrence

The probability that Ashland County will have another thunderstorm event is extremely high since they have experienced 137 events in the last 55 years. Based on that history, it is realistic to assume that Ashland County will experience 2 to 3 thunderstorm events per year.

Location

Thunderstorms, since they are non-spatial in nature, could potentially impact any or all of Ashland County's build environment.

Speed of Onset & Duration

The National Weather Service issues a Severe Thunderstorm Warning when either a severe thunderstorm is indicated by radar or a spotter reports hail 3/4 inch or larger in diameter and/or winds equal or exceed 58 miles an hour.

The duration of severe thunderstorms is dependent on the storm type. Single cell thunderstorm usually last between 20-30 minutes, whereas a multicell cluster thunderstorm can persist for several hours.

Vulnerability & Severity

Thunderstorms can be an extremely dangerous hazard because they are often strong and fast in their approach and can be accompanied by flash flooding, lightning, hail, tornadoes, and high winds. Ashland County has experienced many severe thunderstorms that produced winds in excess of 50 knots. The county's costliest severe thunderstorm event resulted in \$750,000 in damages.

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Thunderstorm loss estimates were determined based upon previous damages and documented in the table below.

Thunderstorm		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	14	\$ 2,283,316
Non-Residential	4	\$ 655,012
Critical Facilities	1	\$ 165,000
Total	19	\$ 3,103,328

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Tornado

Tornadoes are violent storms with rotating winds of high velocity. Tornadoes appear as funnel-shaped clouds extending toward the ground from the base of a thunderstorm cloud (wall cloud). Tornadoes are discerned by the velocity of their rotating winds. The Fujita Scale below identifies the different types of tornadoes.

The Fujita Scale

Fujita Scale			Operational EF-Scale	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85
1	73-112	79-117	1	86-110
2	113-157	118-161	2	111-135
3	158-207	162-209	3	136-165
4	208-260	210-261	4	166-200
5	261-318	262-317	5	Over 200

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

Past History of Hazard Occurrence

According to the National Climate Data Center, there have been 16 tornadoes recorded for Ashland County between 1950 and 2014. The Fujita Scale ratings of these storms have ranged in strength from F-0 to F-2. The following table describes some of the tornadoes that have occurred within Ashland County over the past 100 years.

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND CO.	06/12/1970	13:15	Tornado	F0	0	0	2.50K	0.00K

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Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND CO.	08/17/1972	10:30	Tornado	F1	0	0	25.00K	0.00K
ASHLAND CO.	05/10/1973	16:15	Tornado	F2	0	6	250.00K	0.00K
ASHLAND CO.	04/02/1977	20:28	Tornado	F1	0	6	2.500M	0.00K
ASHLAND CO.	06/30/1977	18:15	Tornado	F0	0	0	250.00K	0.00K
ASHLAND CO.	06/08/1981	15:00	Tornado	F1	0	0	250.00K	0.00K
ASHLAND CO.	03/28/1985	22:06	Tornado	F0	0	0	250.00K	0.00K
ASHLAND CO.	10/10/1989	14:35	Tornado	F1	0	0	25.00K	0.00K
ASHLAND CO.	07/13/1992	17:20	Tornado	F0	0	0	0.00K	0.00K
ASHLAND CO.	07/13/1992	18:11	Tornado	F0	0	0	25.00K	0.00K
ASHLAND CO.	08/27/1992	14:19	Tornado	F0	0	0	25.00K	0.00K
ASHLAND	08/06/2000	21:45	Tornado	F1	0	4	2.000M	0.00K
POLK	11/10/2002	17:48	Tornado	F2	0	0	1.600M	0.00K
PERRYSVILLE	07/10/2006	14:45	Tornado	F1	0	0	150.00K	0.00K
SULLIVAN	08/09/2007	15:28	Tornado	EF1	0	0	1.400M	0.00K
ROWSBURG	07/10/2013	14:56	Tornado	EF0	0	0	75.00K	0.00K
Totals:					0	16	8.828M	0.00K

Past Event Narratives

Event Details	Event Narrative
April 2, 1977 Event Type: F1 Tornado Location: Ashland Time: 9:25 pm Fatalities/Injuries: 0/6 Property Damage: \$ 2,500,000	A tornado touched down at Bailey Lakes in Ashland County at 9:28 p.m. EST. The tornado destroyed two homes and damaged 14 others. Additionally, numerous farm buildings and out buildings were destroyed. Six members of a family in one of the destroyed homes were injured.

Event Details	Event Narrative
August 6, 2000 Event Type: F1 Tornado Location: Ashland Time: 9:45 pm Fatalities/Injuries: 0/4 Property Damage: \$ 2,000,000	A tornado touched down on the west side of Ashland near Lindale Avenue then moved east along West Main Street causing significant damage and four minor injuries. The damage path was 50 to 100 yards wide, intermittent, and nearly three miles in length. The most severe damage occurred a few blocks west of downtown. Major structural damage occurred to several homes in the area including one that had an

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	entire side blown apart. Damage to the downtown business district was much less severe with most of the damage being in the form of broken windows and torn off siding. However, three buildings lost large sections of roof and a fourth had a brick wall collapse. The roof of one of the buildings was found six blocks east of downtown. East of the business district, the damage path was intermittent with only a dozen or so homes sustaining minor damage. In total, 112 homes and 20 businesses were damaged. Of those totals, 23 homes and four businesses suffered major damage. Several cars were destroyed and hundreds of trees were toppled. Six power poles were also snapped near ground level.
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Event Details	Event Narrative
November 10, 2002 Event Type: F2 Tornado Location: Polk Time: 5:58 pm Fatalities/Injuries: 0/0 Property Damage: \$ 1,600,000	A tornado touched down two miles southwest of Polk near the intersection of County Road 601 and Township Road 902. A new home at this location was destroyed. The tornado then traveled northeast across the western and northern portions of Polk. Two homes on the west side of Polk were heavily damaged and a small barn was leveled just north of town. Another 10 to 12 buildings, including two public buildings sustained minor damage in Polk. From Polk, the tornado traveled northeast across rural areas and passed just to the west of Albion. Two homes along County Road 620 just west of Township Road 521 lost entire roofs and had exterior walls partially or entirely knocked down. A nearby barn was leveled with debris thrown as much as one half mile. A small boat tethered in a pond near the barn was found a quarter mile away and the pond itself was filled with debris. A church in the area had its steeple toppled. The tornado continued northeast and damaged several more homes and buildings. The tornado moved into Medina County just east of County Road 175. In the county, a total of five homes were either completely destroyed or declared unlivable with another 11 homes sustaining enough damage to require significant repairs. Approximately 30 additional homes and buildings suffered minor damage. A few dozen cars sustained varying amounts of damage. The tornado was on the ground in Ashland County for approximately five and a half miles with the damage path no more than 50 yards in width.

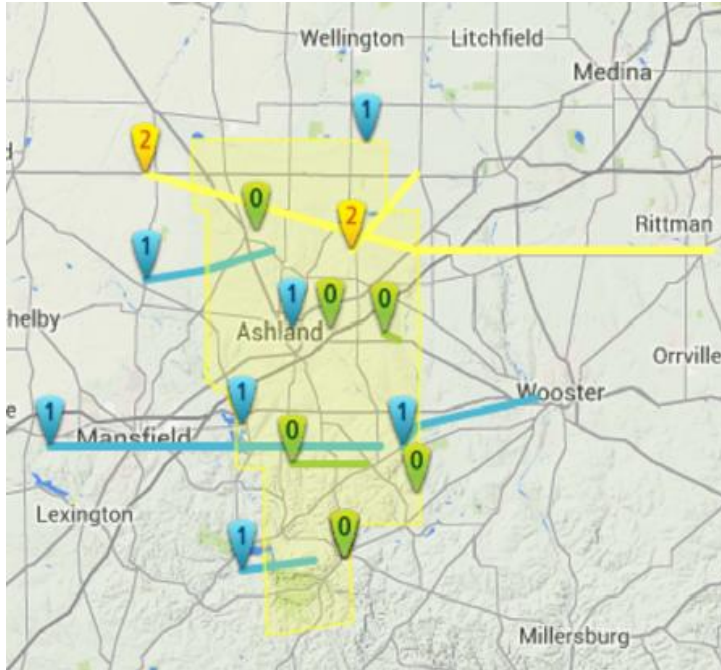
Probability of Hazard Occurrence

Ashland County has experienced 16 tornado events in last 64 years and has a 25% chance of experiencing a tornado in any given year.

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Location

Tornadoes are a non-spatial hazard and could potentially hit any location in Ashland County. See the below map for the locations and trajectories of tornadoes that occurred in Ashland County.



Speed of Onset & Duration

The National Weather Service will issue a Tornado Warning when a tornado has been indicated by radar or been sighted by trained spotters. The current lead time for a tornado warning is 13 minutes.

On average, most tornadoes last less than 10 minutes. However, strong and violent tornadoes with wind speeds from 110 to 200 mph can last anywhere from 20 minutes to more than an hour.

Vulnerability & Severity

Tornadoes can occur at any time when climatic conditions are favorable. Tornadoes cause damages to structures, personal property, infrastructure, critical facilities, and can cause severe injuries or even death. Ashland County has experienced tornadoes with wind speeds between 40 and 157 mph, the longest tornado was over 40 miles long, and their widest tornado was 847 yards wide. Damages will not be countywide, but will occur in the tornado's path. Ashland County's costliest tornado resulted in \$2.5 million in damages.

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Tornado loss estimates were determined based upon previous event damages and documented in the table below.

Tornado		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	38	\$ 6,197,572
Non-Residential	12	\$ 1,983,323
Critical Facilities	3	\$ 579,902
Total	53	\$ 8,760,797

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Windstorm

Windstorms could be characterized as periods where either of the following occurs: 1) sustained non-rotating surface winds (1-minute average) of 40 mph (35 knots) or greater lasting for 1 hour or longer; or 2) sustained non-rotating winds or gusts of 58 mph (50 knots) or greater for any duration. Severe wind can occur alone, such as during straight-line wind events and derechos, or it can accompany other natural hazards, including hurricanes and severe thunderstorms. Severe wind poses a threat to lives, property, and vital utilities primarily due to the effects of flying debris or downed trees and power lines. Severe wind will typically cause the greatest damage to structures of light construction, particularly manufactured homes.

Past History of Hazard Occurrence

Incidents of windstorms and their resulting damages have occurred frequently in Ashland County over the last 64 years. According to NOAA's National Climate Data Center, Ashland County has experienced 23 high or strong wind events from 1950 to 2014. The following table details the high/strong wind events that have occurred in the county.

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ASHLAND (ZONE)	03/25/1996	11:00	High Wind	50 kts.	0	0	25.00K	0.00K
ASHLAND (ZONE)	04/25/1996	14:00	High Wind	50 kts.	0	0	0.00K	0.00K
ASHLAND (ZONE)	09/07/1996	04:00	High Wind	50 kts.	0	0	10.00K	10.00K
ASHLAND (ZONE)	10/30/1996	00:10	High Wind	50 kts.	0	0	75.00K	100.00K
ASHLAND (ZONE)	02/21/1997	10:30	High Wind	57 kts.	0	0	0.00K	0.00K
ASHLAND (ZONE)	02/27/1997	00:15	High Wind	50 kts.	0	0	10.00K	0.00K
ASHLAND (ZONE)	03/08/2003	18:30	Strong Wind	29 kts. MG	0	0	15.00K	0.00K
ASHLAND (ZONE)	05/11/2003	10:00	Strong Wind	35 kts. EG	0	0	25.00K	0.00K
ASHLAND (ZONE)	11/12/2003	21:00	High Wind	50 kts. EG	0	0	50.00K	0.00K
ASHLAND (ZONE)	03/05/2004	12:30	High Wind	50 kts. EG	0	0	75.00K	0.00K
ASHLAND (ZONE)	11/27/2004	18:00	Strong Wind	35 kts. EG	0	0	5.00K	0.00K
ASHLAND (ZONE)	12/07/2004	12:15	High Wind	50 kts. EG	0	0	15.00K	0.00K
ASHLAND (ZONE)	02/17/2006	00:00	High Wind	50 kts. EG	0	0	25.00K	0.00K
ASHLAND (ZONE)	03/10/2006	00:30	Strong Wind	40 kts. EG	0	0	10.00K	0.00K
ASHLAND (ZONE)	12/01/2006	15:00	High Wind	50 kts. EG	0	0	30.00K	0.00K

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ASHLAND (ZONE)	12/23/2007	10:15	High Wind	50 kts. EG	0	0	50.00K	0.00K
ASHLAND (ZONE)	01/30/2008	03:00	High Wind	55 kts. EG	0	0	30.00K	0.00K
ASHLAND (ZONE)	09/14/2008	14:30	High Wind	63 kts. MG	0	0	3.500M	750.00K
ASHLAND (ZONE)	02/11/2009	22:00	High Wind	52 kts. EG	0	0	500.00K	0.00K
ASHLAND (ZONE)	12/09/2009	15:00	High Wind	52 kts. EG	0	0	300.00K	0.00K
ASHLAND (ZONE)	04/28/2011	05:00	High Wind	50 kts. EG	0	0	75.00K	0.00K
ASHLAND (ZONE)	02/24/2012	12:00	High Wind	50 kts. EG	0	0	5.00K	0.00K
ASHLAND (ZONE)	10/30/2012	00:00	High Wind	50 kts. EG	0	0	50.00K	0.00K
Totals:					0	0	4.880M	860.00K

Past Event Narratives

Event Details	Event Narrative
September 14, 2008 Event Type: High Wind Magnitude: 63 kts. Location: Ashland Time: 2:30 pm – 9:30 pm Fatalities/Injuries: 0/0 Property Damage: \$ 3,500,000 Crop Damage: \$750,000	High winds associated with the remnants of Hurricane Ike began late in the afternoon of September 14th and then continued through much of the evening. A peak gust of 73 mph was measured in the county. A tent at the Ashland County Fair was blown down by the winds. The fair had to be shut down early because of the high winds. Hundreds of fairgoers had to be herded inside to safety at the onset of the high winds. Amusement rides at the fair had to be taken down to prevent them from being damaged or overturned. Damage in the county was extensive with thousands of trees and many utility poles downed. Widespread power outages occurred as well. Some locations in southern Ashland County were without power for as much as a week. Home and building damage across the county was also extensive. The damage ranged from a few shingles torn off to significant structural damage caused by fallen trees landing on roofs. Windows were blown out of several homes and many awnings and gutters were torn off. There were also a few reports of signs blown down. Numerous vehicles were damaged by fallen trees and limbs and also by flying debris. This storm hampered travel as downed trees and power lines forced the closure of many roads. Substantial clean up costs were incurred by local governments. Most of the schools in the county were forced to close on Monday the 15th because of the power outages. Significant crop losses occurred as well. Corn yields were reduced between 3 and 5 percent in many areas with lesser losses to the

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	soybean crop.
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Event Details	Event Narrative
February 11-12, 2009 Event Type: High Wind Magnitude: 52 kts. Location: Ashland Time: 10:00 pm – 5:00 am Fatalities/Injuries: 0/0 Property Damage: \$ 500,000	A strong cold front moved across Ashland County during the evening of February 11th. West to southwest winds gusted to more than 60 mph behind the front. Winds finally diminished a couple hours before daybreak on the 12th. Hundreds of trees and utility poles were downed in the county causing scattered power outages. At one time, more than 25,000 customers were without power in Richland and Ashland Counties. Many buildings in the county sustained damage. Most of this was from lost shingles, but a few buildings lost gutters or sections of siding. A large tree fell on a home northeast of Nankin and caused significant damage. At least one school district in the county canceled classes because of lack of power.

Event Details	Event Narrative
December 9, 2009 Event Type: High Wind Magnitude: 52 kts. Location: Ashland Time: 3:00 pm – 10:00 pm Fatalities/Injuries: 0/0 Property Damage: \$ 300,000	A strong cold front moved across Ashland County around midday on December 9th. Southwest winds behind the front rapidly increased with gusts in excess of 45 mph by early afternoon. Gusts continued to increase the remainder of the afternoon with peak gusts of around 60 mph reported during the late afternoon hours. Winds continued to gust to as much as 50 mph through 10 pm. The high winds downed a few trees and utility poles in Ashland County. Scattered power outages were reported. Some homes and buildings in the county sustained minor damage. Most of this was from lost siding or roofing.

Probability of Hazard Occurrence

Based on past history, Ashland County has experienced twenty-three (23) high wind or strong wind events in the last 64 years and has a 36% chance of having another high wind/strong wind event any given year.

Location

Windstorms, because they are non-spatial in nature, could potentially impact any or all of Ashland County.

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Speed of Onset & Duration

The National Weather Service will issue a wind advisory when sustained winds are expected to be between 31 and 39 mph for at least an hour, or any wind gust between 46 and 57 mph. Advisories are usually issued 6-18 hours prior to the weather event. A High Wind Watch will be when there is the potential for dangerous winds. A Watch is usually issued between 12 and 48 hours before a weather event. A High Wind Warning will be issued when sustained winds will be 40 mph or greater for at least one hour, or any gust of wind expected to be 58 mph or greater. Warnings are usually issued 6-18 hours prior to the weather event.

Windstorm events are a fast moving hazard. Based on past history in Ashland County, the longest lasting windstorm event on record lasted for approximately 13 hours.

Vulnerability & Severity

Windstorms are particularly dangerous because they bring down tree limbs, power lines, and cause damages to structures or other personal property. Out of Ashland's 23 windstorm events, 19 of them reached wind speeds in excess of 50 kts. Ashland County's costliest windstorm event resulted in \$3,500,000 in property damage and \$750,000 in crop damages. Windstorm loss estimates were determined based upon previous event damages and documented in the table below.

Windstorm		
Structure Type	Structures at Risk	Potential Damage/Exposure
Residential	18	\$ 3,074,615
Non-Residential	6	\$ 982,518
Critical Facilities	2	\$ 330,00
Total	26	\$ 4,387,133

Section Seven: Mitigation Strategy

This section of the plan describes the strategy that Ashland County intends to implement to minimize loss of life and property damages from natural hazards. The goals and actions were determined by the planning team based upon the results from the Hazard Identification and Risk Assessment and feedback from key stakeholders.

Mitigation Strategy

The goal of a mitigation strategy is reduce loss of life and property damage from the effects of natural disasters. A mitigation strategy is made up of three components that include goals, actions, and an action plan for implementation. Together, these three components provided the mitigation planning team with a framework to identify, prioritize, and develop implementation actions to reduce the risk of hazards.

Mitigation goals are general guidelines that explain what the community wants to achieve with the plan.

Mitigation actions are specific projects and activities that help to achieve the goals.

The action plan will describe how the mitigation actions will be implemented; including how those actions will be prioritized, administered, and incorporated.

To update mitigation goals and objectives for the plan, the Ashland County Mitigation Planning Team and key stakeholders investigated and analyzed a wide variety of mitigation actions from five different categories to determine the best strategy to combat the effects of hazards for Ashland County (see the types of mitigation actions below).

Types of Mitigation Actions

Local Plans and Regulations - These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.

- Planning and zoning
- Building codes
- Subdivision regulations
- Floodplain regulations
- Drainage system maintenance
- Capital improvement programs
- Open space preservation
- Stormwater management regulations

Structural and Infrastructure Projects - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.

- Acquisitions
- Elevations

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- Utility undergrounding
- Floodwalls and retaining walls
- Culverts
- Safe rooms

Natural System Protection - These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.

- Sediment and erosion control
- Stream corridor restoration
- Forest management
- Conservation easements
- Wetland restoration and preservation

Education and Awareness Programs - These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities.

- Radio or television spots
- Websites with maps and information
- Real estate disclosure
- Presentations to school groups or neighborhood organizations
- Mailings to residents in hazard-prone areas.
- StormReady or Firewise Communities

Preparedness Actions – Those actions taken to prepare for a hazard. These actions can be included in the mitigation strategy; however, they will not meet the Federal mitigation planning requirements.

- Warning Sirens

Evaluation of the Previous Plans Mitigation Goals and Actions

The Ashland County Mitigation Planning Team, upon completion of the mitigation action type review, proceeded to review the hazard mitigation actions that were developed in the previous plan to determine whether or not they had been completed over the past five years. Upon completion of the evaluation, planning team members determined that many of the original goals and objectives were ongoing actions that would be continued well into the future; that a few had administrative differences which would have to be addressed to reach full implementation; and others were unobtainable due to a lack of funding.

Goal	Actions	Status	Reason
Implement a Countywide GIS (Geographical Information System) that can be used for the identification of property areas potentially at risk of being impacted by	Task 1: Identify available GIS resources that will provide the necessary data to assist in natural disaster mitigation	Not Completed	Administrative differences/conflicting priorities.
	Task 2: Identify any necessary sources of funding for GIS programming and utilization		
	Task 3: Develop appropriate		

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Goal	Actions	Status	Reason
natural disasters. GIS data associated with these properties provide an improved mechanism for mitigating natural disasters	documentation for acquiring GIS programming		
	Task 4: Incorporate property data within the GIS utilizing internal and external resources		
	Task 5: Determine projected property losses from natural disasters (primarily flooding) and incorporate within the County's Mitigation Plan		
Enhance public information and educational programs for pre-disaster and post-disaster situations	Task 1: Identify the existing types and distribution methods of natural disaster information	Not Completed	Ongoing/continuous strategy facilitated by the Ashland County EMA Director
	Task 2: Assess the current composition of educational information, updating as necessary, including the implementation of the Ashland County Mitigation Plan		
	Task 3: Assess the strategies for dissemination of public information and modify, as necessary		
	Task 4: Identify any necessary sources of funding		
	Task 5: Implement enhanced public informational releases		
Strengthen existing partnerships among all public and private sectors within and beyond Ashland County	Task 1: Identify all existing and potential partnerships with Federal, State, local agencies, organizations, and political subdivisions that have some involvement with the issue of natural disaster mitigation	Not Completed	Ongoing/continuous strategy.
	Task 2: Develop strategies to expand those partnerships		
	Task 3: Initiate and maintain formed partnerships		
Integrate, as necessary, mitigation components within existing Ashland County plans whose provisions are influenced by the mitigation of natural disasters	Task 1: Identify all pertinent plans for Ashland County political subdivisions (both incorporated and unincorporated) where mitigation for natural disasters is, or could potentially be, a component	Not Completed	Ongoing/continuous strategy. Modified to include local jurisdictions and not just the county.
	Task 2: Identify and contact primary planning constituents of selected Ashland County planning efforts		
	Task 3: Cooperatively develop		

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Goal	Actions	Status	Reason
	<p>constructive mitigation language for proposed inclusion within applicable plans</p> <p>Task 4: Submit formal proposals for additions of mitigation language within appropriate Ashland County plans</p> <p>Task 5: Establish and maintain cooperative relationships with relevant Ashland County planning constituents per Goal 2</p>		
Solidify mitigation initiatives for critical facilities (e.g. schools, healthcare facilities, nursing homes, fire departments, and law enforcement agencies) within Ashland County	Task 1: Identify all existing critical facilities within Ashland County	Not Completed	Deemed vague and difficult to implement.
	Task 2: Determine existing mitigation initiatives within these facilities		
	Task 3: Identify potential mitigation initiatives within these facilities		
	Task 4: Initiate cooperative assessments of potential initiatives with applicable representatives of relevant critical facilities		
	Task 5: Assist pertinent critical facilities in the development and submission of formal mitigation projects		
Enhance the sheltering of citizens during a tornado or severe winter storm	Task 1: Conduct site assessments	Not Completed	Lack of funding available
	Task 2: Arrange for and assist in plan development		
	Task 3: Obtain cost estimates through bid process		
	Task 4: Identify potential sources of funding		
	Task 5: Assist in the development and submission of funding requests, as needed		
	Task 6: Construct facilities within construction and funding parameters		
Enhance early warning systems to maximize public notification	Task 1: Identify most relevant location for siren installations	Not Completed	Geographical challenges involving coverage area and lack of funding.
	Task 2: Identify sources of potential funding		
	Task 3: Assist political		

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Goal	Actions	Status	Reason
	subdivisions, as necessary, in the development and submission of funding requests		
	Task 4: Install warning sirens contingent upon available funding		
Minimize flood losses to structures and properties within Ashland County	Task 1: Identify all flood prone areas within Ashland County	Not Completed	Lack of funding
	Task 2: Determine specific cause of flooding for each respective area (watercourse flow, inadequate sewer capacity, etc.)		
	Task 3: Assess potential strategies for corrective action (watercourse cleaning, infrastructure improvements, property buy out/demolition of affected structures, relocation, etc.)		
	Task 4: Determine most appropriate corrective action for each repetitive loss structure		
	Task 5: Obtain applicable costs estimates for identified corrective actions		
	Task 6: Identify potential sources of funding		
	Task 7: Assist relevant political subdivisions in the acquisition of available funding, as needed		
	Task 8: Implement corrective measures contingent upon available funding		

During that evaluation, the planning team had also determined that two (2) of the mitigation goals and corresponding actions had been completed and were to be removed (see the table below).

Goal	Status
Provide weather radios for governmental office buildings within Ashland County to enhance warning and monitoring of natural disasters	Completed
Ensure adequate electrical power is available to operate communications systems during response to natural disasters	Completed

Updating Mitigation Goals and Actions

To update the mitigation goals and actions, the planning team developed a mitigation proposal request form to be distributed and completed by each political subdivision to determine new goals and actions to be

Ashland County Mitigation Plan for Natural Disasters

incorporated into the overall mitigation strategy. The Ashland County Mitigation Planning Team, based on the Hazard Identification and Risk Assessment and feedback from the local jurisdictions, determined the following goals to be included in the plan update to reduce or avoid long-term vulnerability to flooding, severe weather events, or other hazards.

Mitigation Strategy Goals
To understand the level of risk and community vulnerability to all hazards.
To minimize loss of life due to severe weather events.
To minimize disruption of services during severe weather events.
To minimize the loss of life and damage to properties during flood/flash flood events.
To educate the public on the risks associated with hazards.
To minimize losses of life and property damages through planning initiatives.
To preserve economic stability during a flood by encouraging applicable residents to obtain flood insurance to cover potential losses due to flooding.
To minimize loss of life and damage to properties through structural and infrastructure projects.
To minimize building and infrastructure damages through regulation development.

Mitigation Action Plans

The development of action plans was the final step to setting the direction for implementing mitigation actions and achieving established goals. The Action Plans listed below were developed by the planning team and clarify the mitigation actions to be implemented, identify the responsible entities to complete the actions, define the potential funding sources available, estimate project costs and project timelines, and identify the specific tasks that will be conducted to fulfill the objective.

Goal #1: To understand the level of risk and community vulnerability to all hazards.

Objective #1: Develop countywide GIS capability for Ashland County.

OBJECTIVE 1		
Mitigation Action (objective)	Develop countywide GIS capability	
Priority	6	
Status	New (Updated)	
Estimated Cost	\$240,000	
Lead Organization	Ashland County Auditor Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah	Hanover Township Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 1	
	Clear Creek Township Green Township
	Troy Township Vermillion Township
Start Date	January 1, 2015
End Date	December 31, 2019
Details	Develop a county wide GIS Program Identify GIS needs and potential uses Identify necessary system layers Conduct risk exposure mapping Enhance community mapping Maintain system
Funding Sources	Local funding

Goal #2: To minimize loss of life due to severe weather events.

Objective #1: Enhance early warning systems to maximize public notification of severe weather

OBJECTIVE 2	
Mitigation Action (objective)	Enhance early warning systems to maximize public notification of severe weather
Priority	7
Status	New
Estimated Cost	\$250,000
Lead Organization	Ashland County Emergency Management Agency City of Ashland Village of Loudonville Orange Township Ruggles Township Troy Township Mohican Township
Start Date	January 1, 2015
End Date	December 31, 2019
Details	Identify most relevant locations for siren installations Secure locations Install sirens Test sirens
Funding Sources	Pre-Disaster Mitigation (PDM), Local Funding

Ashland County Mitigation Plan for Natural Disasters

Goal #3: To minimize disruption of services during severe weather events

Objective #1: Ensure adequate back-up power is available to critical facilities during severe weather events

OBJECTIVE 3		
Mitigation Action (objective)	Ensure adequate back-up power is available to critical facilities during severe weather events	
Priority	12	
Status	New	
Estimated Cost	\$127,500	
Lead Organization	Ashland County Emergency Management Agency City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township Hanover Township	Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Identify all critical facilities within Ashland County Determine existing capabilities at each facility Identify locations for generator installation Obtain cost estimates Identify funding sources Assist in the development and submission of funding requests Install generator Test generator	
Funding Sources	Pre-Disaster Mitigation (PDM) Local funding	

Goal #4: To minimize the loss of life and damage to properties during flood/flash flood events.

Objective #1: Remove existing structures from flood hazard areas and/or elevate or retrofit structures, infrastructure, and utilities.

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 4		
Mitigation Action (objective)	Remove existing structures from flood hazard areas and/or elevate or retrofit structures, infrastructure, and utilities.	
Priority	13	
Status	New	
Estimated Cost	\$ 750,000	
Lead Organization	City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township Hanover Township	Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Identify all properties prone to flooding in Ashland County, including repetitive loss properties and severe loss properties Determine the cause of the flooding for each location Assess potential strategies for corrective action Determine the most appropriate corrective action Obtain applicable cost estimates Identify potential funding Secure funding Implement corrective measure (acquisition, retrofit, or relocation)	
Funding Sources	Flood Mitigation Assistance (FMA) Community Development Block Grant Rural Development Funding	

Goal #5: To minimize loss of life due to severe weather events.

Objective #1: Enhance the construction of safe rooms/shelters.

OBJECTIVE 5		
Mitigation Action (objective)	Enhance the construction of safe rooms/shelters	
Priority	9	
Status	New	
Estimated Cost	\$225,000	
Lead Organization	Ashland County City of Ashland	Jackson Township Lake Township

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 5		
	Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township Hanover Township	Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Conduct site assessments Arrange for and assist in plan development Obtain cost estimates Identify funding sources Assist in the development and submission of funding requests Implement Encourage construction of safe rooms in new structures	
Funding Sources	Pre-Disaster Mitigation Funding	

Goal #6: To educate the public on the risks associated with hazards.

Objective #1: Implement hazard awareness activities for all-hazards.

OBJECTIVE 6		
Mitigation Action (objective)	Implement hazard awareness activities for all-hazards	
Priority	3	
Status	New	
Estimated Cost	Staffing	
Lead Organization	Ashland County EMA Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah	Hanover Township Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 6	
	Clear Creek Township Green Township
	Troy Township Vermillion Township
Start Date	January 1, 2015
End Date	December 31, 2019
Details	Develop and implement a multi-hazard public awareness program Provide information on all types of hazards, preparedness, and mitigation measures. Disseminate information through media outlets Post signage (if applicable) at outdoor venues/large assembly locations Educate school children about hazard dangers and how to take safety precautions Support severe weather awareness week Promote the use of NOAA weather radios Utilize website and social media to educate the public on hazards, preparedness, and mitigation measures.
Funding Sources	Local funding

Goal #7: To minimize losses of life and property damages through planning initiatives.

Objective #1: Strengthen existing partnerships among all public and private sectors to support mitigation actions.

OBJECTIVE 7	
Mitigation Action (objective)	Strengthen existing partnerships among all public and private sectors to support mitigation actions
Priority	2
Status	New (Ongoing)
Estimated Cost	Staffing
Lead Organization	Ashland County EMA
Start Date	October 1, 2014
End Date	November 30, 2019
Details	Identify all existing and potential partnerships with Federal, State, and local agencies, organizations and political subdivisions involved in disaster mitigation. Develop committees to meet regularly to discuss issues and recommendations. Develop strategies Implement strategies Maintain partnerships
Funding Sources	Local funding

Ashland County Mitigation Plan for Natural Disasters

Goal #8: To minimize losses of life and property damages through planning initiatives.

Objective #1: Integrate hazard mitigation into local planning efforts.

OBJECTIVE 8		
Mitigation Action (objective)	Integrate hazard mitigation into local planning efforts	
Priority	1	
Status	New	
Estimated Cost	Staffing	
Lead Organization	Ashland County EMA Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township	Hanover Township Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Incorporate risk assessment data and hazard mitigation into comprehensive plans, land use plans, stormwater plans, recovery plans, emergency operation plans, zoning ordinances, floodplain ordinances, stormwater ordinances, subdivision regulations, and building codes.	
Funding Sources	Local funding	

Goal #9: To preserve economic stability during a flood by encouraging applicable residents to obtain flood insurance to cover potential losses due to flooding.

Objective #1: Provide National Flood Insurance Program education.

OBJECTIVE 9		
Mitigation Action (objective)	Provide National Flood Insurance Program education	
Priority	4	
Status	New	
Estimated Cost	Staffing	
Lead Organization	Ashland County Soil & Water Ashland County City of Ashland Village of Bailey Lakes	Hanover Township Jackson Township Lake Township Mifflin Township

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 9		
	Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township	Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Develop educational materials (brochures, mail inserts, etc.) Conduct community workshops to provide information for property owners and local government	
Funding Sources	Local funding	

Goal #10: To minimize loss of life and damage to properties through structural and infrastructure projects.

Objective #1: Improve stormwater drainage system capacity

OBJECTIVE 10		
Mitigation Action (objective)	Improve stormwater drainage system capacity	
Priority	11	
Status	New	
Estimated Cost	TBD	
Lead Organization	Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township Hanover Township	Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Evaluate existing capabilities Assess potential strategies	

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 10	
	Determine the most appropriate corrective action Obtain cost estimates Identify potential funding source Secure funding Implement
Funding Sources	Pre-Disaster Mitigation Funding Local Funding

Goal #11: To minimize loss of life and damage to properties through structural and infrastructure projects.

Objective #1: Conduct maintenance for drainage systems

OBJECTIVE 11																											
Mitigation Action (objective)	Conduct maintenance for drainage systems																										
Priority	8																										
Status	New																										
Estimated Cost	Staffing																										
Lead Organization	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Ashland County</td> <td style="width: 50%;">Jackson Township</td> </tr> <tr> <td>City of Ashland</td> <td>Lake Township</td> </tr> <tr> <td>Village of Bailey Lakes</td> <td>Mifflin Township</td> </tr> <tr> <td>Village of Hayesville</td> <td>Milton Township</td> </tr> <tr> <td>Village of Jeromesville</td> <td>Mohican Township</td> </tr> <tr> <td>Village of Loudonville</td> <td>Montgomery Township</td> </tr> <tr> <td>Village of Mifflin</td> <td>Orange Township</td> </tr> <tr> <td>Village of Perrysville</td> <td>Perry Township</td> </tr> <tr> <td>Village of Polk</td> <td>Ruggles Township</td> </tr> <tr> <td>Village of Savannah</td> <td>Sullivan Township</td> </tr> <tr> <td>Clear Creek Township</td> <td>Troy Township</td> </tr> <tr> <td>Green Township</td> <td>Vermillion Township</td> </tr> <tr> <td>Hanover Township</td> <td></td> </tr> </table>	Ashland County	Jackson Township	City of Ashland	Lake Township	Village of Bailey Lakes	Mifflin Township	Village of Hayesville	Milton Township	Village of Jeromesville	Mohican Township	Village of Loudonville	Montgomery Township	Village of Mifflin	Orange Township	Village of Perrysville	Perry Township	Village of Polk	Ruggles Township	Village of Savannah	Sullivan Township	Clear Creek Township	Troy Township	Green Township	Vermillion Township	Hanover Township	
Ashland County	Jackson Township																										
City of Ashland	Lake Township																										
Village of Bailey Lakes	Mifflin Township																										
Village of Hayesville	Milton Township																										
Village of Jeromesville	Mohican Township																										
Village of Loudonville	Montgomery Township																										
Village of Mifflin	Orange Township																										
Village of Perrysville	Perry Township																										
Village of Polk	Ruggles Township																										
Village of Savannah	Sullivan Township																										
Clear Creek Township	Troy Township																										
Green Township	Vermillion Township																										
Hanover Township																											
Start Date	January 1, 2015																										
End Date	December 31, 2019																										
Details	Identify locations prone to flooding Determine strategies to mitigate the effects Implement the determined strategy																										
Funding Sources	Local Funding																										

Goal #12: To minimize building and infrastructure damages through regulation development.

Objective #1: Adopt policies to reduce stormwater runoff.

OBJECTIVE 12	
Mitigation Action	Adopt policies to reduce stormwater runoff

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 12		
(objective)		
Priority	5	
Status	New	
Estimated Cost	Staffing	
Lead Organization	Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township Hanover Township	Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	January 1, 2015	
End Date	December 31, 2019	
Details	Evaluate existing policies Develop strategies to improve stormwater capabilities	
Funding Sources	Local Funding	

Goal #13: To minimize losses of life and property damages through planning initiatives.

Objective #1: Improve stormwater management planning.

OBJECTIVE 13		
Mitigation Action (objective)	Improve stormwater management planning	
Priority	10	
Status	New	
Estimated Cost	Staffing	
Lead Organization	Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township	Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township

Ashland County Mitigation Plan for Natural Disasters

OBJECTIVE 13		
	Green Township Hanover Township	Vermillion Township
Start Date	October 1, 2014	
End Date	November 30, 2019	
Details	Update existing plans and integrate mitigation considerations	
Funding Sources	Local Funding	

Goal #14: To minimize building and infrastructure damages through regulation development.

Objective #1: Adopt and enforce residential building codes

OBJECTIVE 14		
Mitigation Action (objective)	Adopt and enforce residential building codes	
Priority	14	
Status	New	
Estimated Cost	Staffing	
Lead Organization	Ashland County City of Ashland Village of Bailey Lakes Village of Hayesville Village of Jeromesville Village of Loudonville Village of Mifflin Village of Perrysville Village of Polk Village of Savannah Clear Creek Township Green Township Hanover Township	Jackson Township Lake Township Mifflin Township Milton Township Mohican Township Montgomery Township Orange Township Perry Township Ruggles Township Sullivan Township Troy Township Vermillion Township
Start Date	October 1, 2014	
End Date	November 30, 2019	
Details	Review building codes and structural policies Encourage wind engineering measures and construction techniques Discourage flat roofs in areas that experience heavy snow Adopt and enforce residential building codes	
Funding Sources	Local funding	

Prioritization of Mitigation Goals and Actions

The goal of each proposed mitigation action is to reduce or prevent damage from a hazard event. In order to determine the effectiveness in accomplishing this goal, Ashland County planning team members were asked to prioritize each mitigation action in accordance with FEMA Publication 386-5, Benefit-Cost Review. The costs and benefits of each action were determined using Review Tool 2 and 3, then placed on a matrix and evaluated using the STAPLEE criteria in a modified Simple Score method (Method C). The Benefit-Cost Review was emphasized in the prioritization process to maximize the benefits over the costs. This approach demonstrates the actions' evaluation in terms of their pros and cons, which are represented as costs and benefits.

Section Eight: Plan Maintenance

Overview

Without periodic plan reviews, the planning effort can lose its effectiveness and jeopardize the overall purpose of the plan. The Ashland County Mitigation Plan is, and will continue to be, a working plan. In order for this plan to be successful, systematic maintenance is necessary.

The following section presents the methods by which the Ashland County Mitigation Plan will be monitored, evaluated, and updated. This section also describes how key stakeholders and the general public will be included in the planning process beyond the plan adoption phase.

Plan Monitoring

The Ashland County Mitigation Plan for Natural Disasters will be implemented according to the mitigation strategies outlined in Section Seven. It is the responsibility of the Ashland County EMA Director to oversee the execution of the mitigation strategies and all of their corresponding actions. It is the responsibility of the agencies defined within each mitigation strategy to track and report strategy progress to the EMA Director on a quarterly basis. The Ashland County EMA Director will document all progress with strategies and update the planning team at the annual meeting or earlier as the situation requires.

Plan Evaluation

The planning team established that they will reconvene on an annual basis to evaluate the plan's effectiveness. Each strategy will be assessed on whether the actions were implemented and evaluated to see if it generated the intended results. On the other hand, if a strategy was not implemented, the planning team will strive to determine the barriers that prohibited its implementation and determine alternative actions to combat the barriers.

It is the responsibility of the EMA Director to schedule the annual meeting and to notify planning team members, key stakeholders, and the general public. The Ashland County EMA Director is also responsible for recording the results obtained during the evaluations and compile the findings into a brief report to be shared with political subdivisions as a mean to update them on the progress of the mitigation strategies.

Updating the Plan

The Ashland County Emergency Management Agency, in coordination with the planning team, will review and revise the plan at a minimum of once every 5 years to reflect changes in development, progress in local mitigation efforts, and changes in priorities. Proposed changes to the plan can be initiated by any member of the planning team. All proposed changes are to be reviewed and approved by the planning

Ashland County Mitigation Plan for Natural Disasters

team prior to any alterations being made to the planning document. The EMA Director is responsible for maintaining and updating the plan.

The final plan and any future plan updates will be distributed by the Ashland County Emergency Management Agency Director to each member of the planning team, the Ashland County Commissioners, all Ashland County political subdivisions, the Ohio Emergency Management Agency, the Ashland County Library, and others as requested.

Continued Public Involvement

Continued public involvement efforts will come in several forms. The public was initially contacted via news releases to request their input on the plan draft. However, after the plan is approved, it is still vital that the public be engaged in the implementation phase of the planning process. The Ashland County planning team will utilize various news media sources to alert the public of any future meetings involving the planning team. This will afford the public with the opportunity to attend these meetings and provide comments or recommendations.

Another mechanism in providing the public with continuous access to mitigation information will be achieved through the Ashland County Emergency Management Agency's Website and Facebook page. It is the intention of the planning team to utilize the website so that the public will continually have access to the plan and other mitigation documents as they become available. The website will also provide the means for residents to submit comments or recommendations to the Ashland County EMA Director at any time. As necessary, the EMA Director will share any relevant comments/suggestions that he receives with the planning team at the next annual meeting. It is the responsibility of the Ashland County EMA Director to maintain and update the information available on the website and Facebook page.

Hardcopy versions of the plan will also be maintained at the Ashland County Emergency Management Agency, Ashland County Library, and the Loudonville Library so that the plan is continuously made available for public viewing.

Plan Incorporation

Ashland County's process to integrate the data, information, and hazard mitigation goals and actions into other planning projects will be initiated by members of the planning team. These members include, but are not limited to: the County Commissioners, Township Trustees, the EMA Director, public safety representatives, floodplain administrators, and local and county engineers.

Members of the Mitigation Planning Team will take the information generated during the planning process back to their organizational leadership so that they can update or incorporate the information into plans, regulations, codes, ordinances, policies, procedures, or other administrative instruments. This process will also allow for oversight, commitment of time, energy, and resources to change actions into projects.

Ashland County Mitigation Plan for Natural Disasters

Although the villages and townships did not have as many representatives serving on the planning team, their representatives are to follow the same processes as those at the county level.

Ashland County Mitigation Plan for Natural Disasters

Section Nine: Plan Adoption

PLAN ADOPTION

Upon receiving FEMA's designation of "Approved Pending Formal Adoption," the Director of the Ashland County Emergency Management Agency will re-distribute the plan to all political subdivisions in Ashland County for adoption. The Ashland County Board of Commissioners, the city, and the villages are to put forth resolutions formally adopting the Ashland County Mitigation Plan for Natural Disasters within one year of receiving FEMA's designation.

Once the individual adoptions have been completed, the jurisdictions are to forward a copy of their resolutions to the Director of the Ashland County Emergency Management Agency. The Director will include a copy of each resolution in Appendix E of the plan and will then forward a copy of all resolutions to the Ohio Emergency Management Agency to maintain in their files.

Jurisdiction	Date Adopted	Resolution on file
Ashland County Commissioners		
City of Ashland		
Village of Bailey Lakes		
Village of Hayesville		
Village of Jeromesville		
Village of Loudonville		
Village of Mifflin		
Village of Perrysville		
Village of Polk		
Village of Savannah		

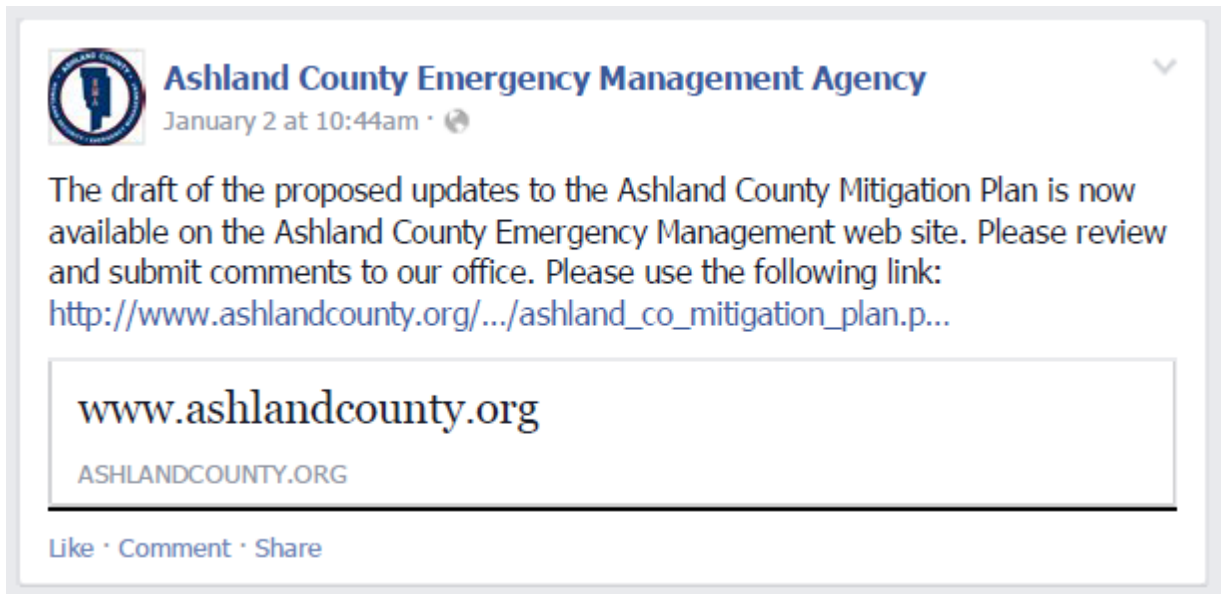
Ashland County Mitigation Plan for Natural Disasters

APPENDIX A: Outreach Postings

Copy of the Facebook posting regarding plan draft review:



The image shows the top portion of a Facebook page. At the top is the Facebook logo and a login bar with fields for "Email or Phone" and "Password", a "Log In" button, and links for "Keep me logged in" and "Forgot your password?". Below the login bar is the profile header for the "Ashland County Emergency Management Agency", which is identified as a "Government Organization". The header includes the agency's logo, a "Sign Up" button, a "Log In" button, and navigation tabs for "Timeline", "About", "Photos", "Likes", and "Videos".



The image shows a Facebook post from the Ashland County Emergency Management Agency. The post is dated "January 2 at 10:44am" and is public. The text of the post reads: "The draft of the proposed updates to the Ashland County Mitigation Plan is now available on the Ashland County Emergency Management web site. Please review and submit comments to our office. Please use the following link: http://www.ashlandcounty.org/.../ashland_co_mitigation_plan.p...". Below the text is a link preview for "www.ashlandcounty.org" with the URL "ASHLANDCOUNTY.ORG" displayed underneath. At the bottom of the post are the interaction options "Like · Comment · Share".

APPENDIX A: Outreach Postings (cont.)

Copy of the Ashland Times-Gazette Article:

**County mitigation plan
for Jan. 22 meeting**

January 9, 2015 By Chelsea Shar

The Ashland County Mitigation Plan development team will meet Jan. 22, 2015, at 2 p.m. in the Ashland County Emergency Operations Center, located in the lower level of the Ashland County Service Center.


The purpose of the meeting is to discuss the final draft of the county mitigation plan. The meeting is open to the public, and time will be allotted at the end for comments.

The county mitigation plan is required to be updated

Ashland County Mitigation Plan for Natural Disasters

APPENDIX A: Outreach Postings (cont.)


Copy of the Ashland County Office of Homeland Security and Emergency Management Agency website page posting:



ASHLAND COUNTY OFFICE OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT AGENCY

Our Office Generously Supported and Funded by the Ashland County Commissioners. Kim Edwards, Barb Queer, and Michael Welch

- HOME PAGE
- ABOUT OHS / EMA
- DEFINITIONS AND TERMINOLOGY
- EMERGENCY PREPAREDNESS
- WEATHER SAFETY GUIDES
- SAFETY CHECKLIST
- EVACUATION INFORMATION
- LOCAL EMERGENCY PLANNING
- HOMELAND SECURITY
- NOAA WEATHER RADIO
- RELATED LINKS
- LOCAL WEATHER CONDITIONS
- REVERSE 911
- ASHLAND COUNTY HOME PAGE



Welcome!


by **Mark W. Rafeld, Director**

Welcome to the **Office of Homeland Security and Emergency Management Agency** web site. Our mission is "to provide a safer future for Ashland County by promoting, coordinating and providing mitigation, preparedness, response and recovery services before, during, and following any disaster." We are dedicated to protect lives, property and the environment within Ashland County.

We sincerely hope that you will take the time to browse through the information on our site. **Being prepared for emergencies or disasters** is your responsibility and should not be taken lightly. Tips on how you can prepare yourself are offered throughout our site.

We at the Ashland County EMA hope that this information will be used to protect you, your family and your property from any disaster, whether it be natural or man-made. Feel free to contact us at any time.

Please note that throughout our web site, we will use **EMA** to indicate the **Ashland County Office of Homeland Security and Emergency Management Agency**.

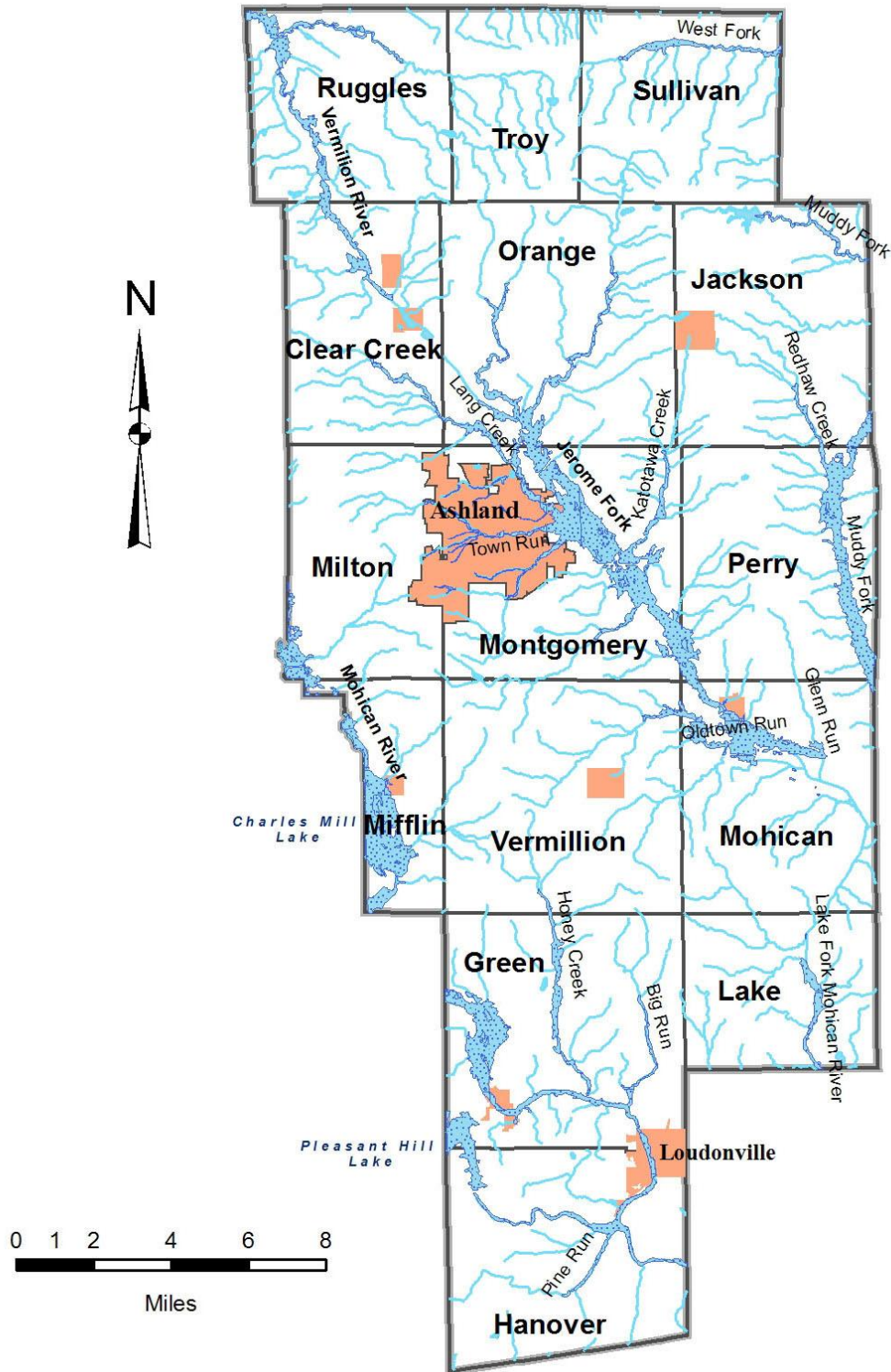
Ashland County EMA has incorporated a comprehensive emergency notification system called **REVERSE 911**. This **REVERSE 911** system is an  Interactive Community Notification System that is used effectively in thousands of U.S. communities to improve the lines of communication to the general population and targeted groups of citizens. The system provides timely and immediate notification of critical information in times of crisis and emergencies, such as natural disasters, missing children and crime alerts. ([read more](#))

[Ashland County Mitigation Plan for Natural Disasters \(DRAFT/PDF\)](#)

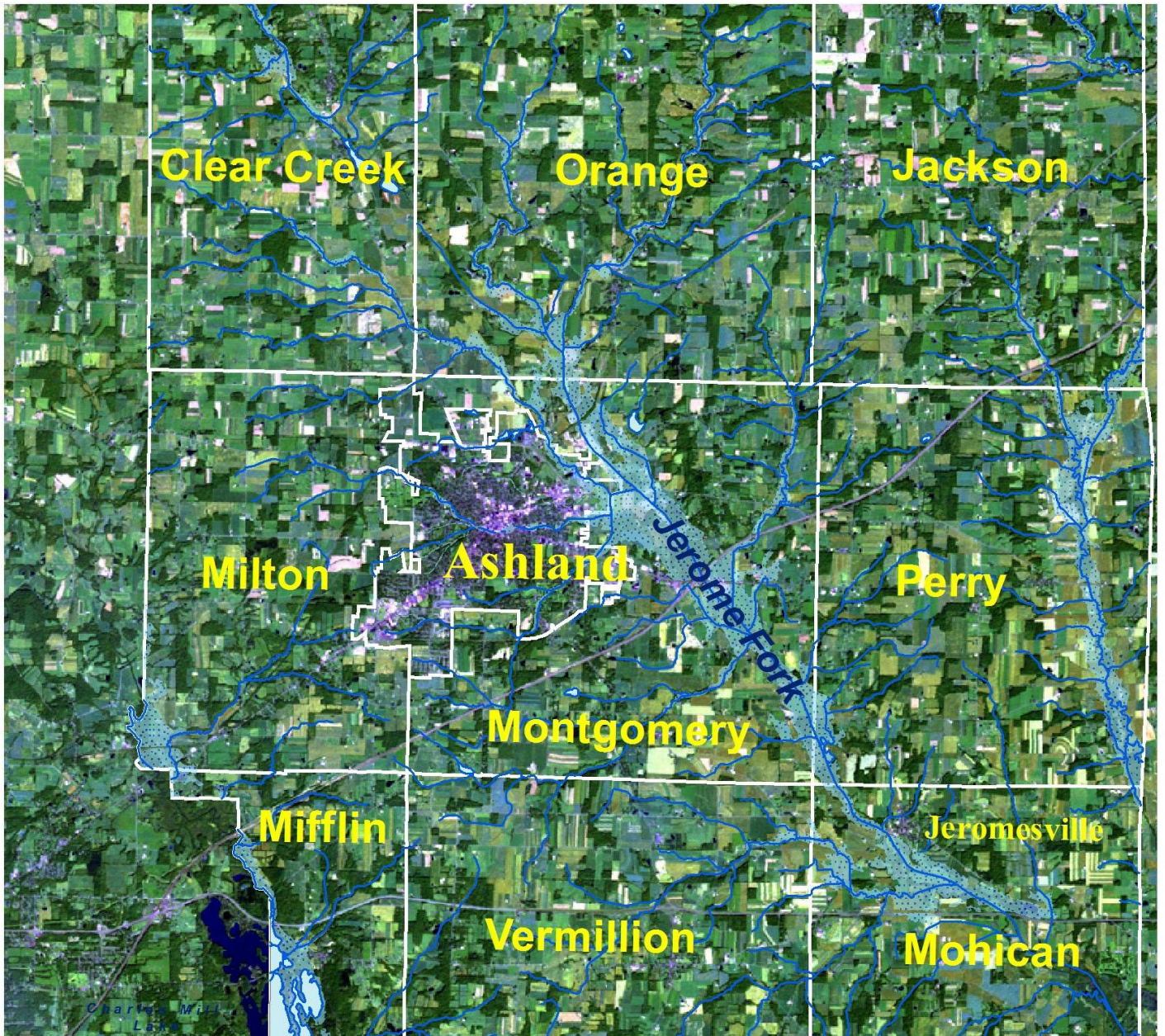
[House Number Application Form \(PDF Format\)](#)

Ashland County Mitigation Plan for Natural Disasters

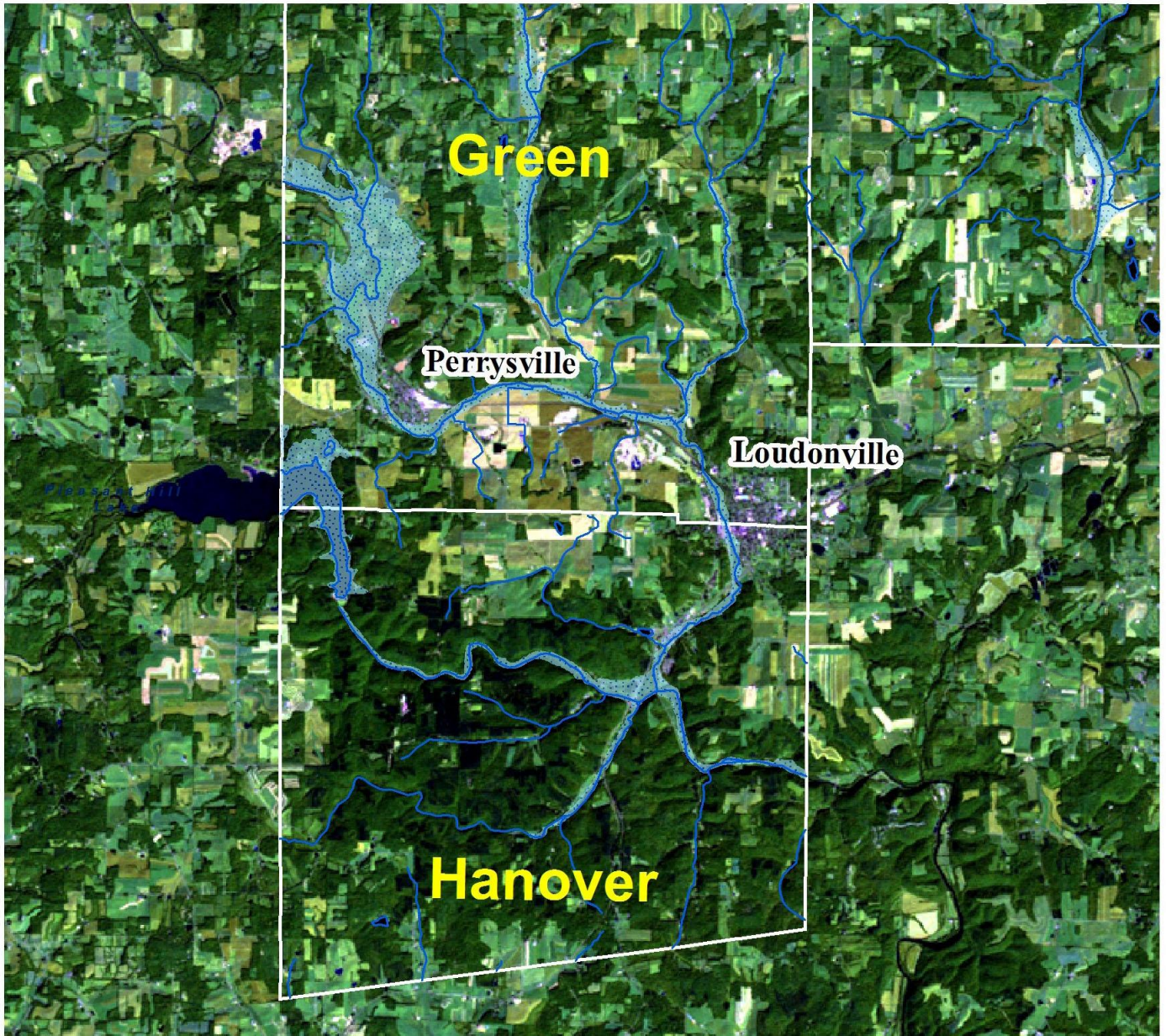
APPENDIX B: 100-Year Floodplain



100-Year Floodplain: Jerome Fork



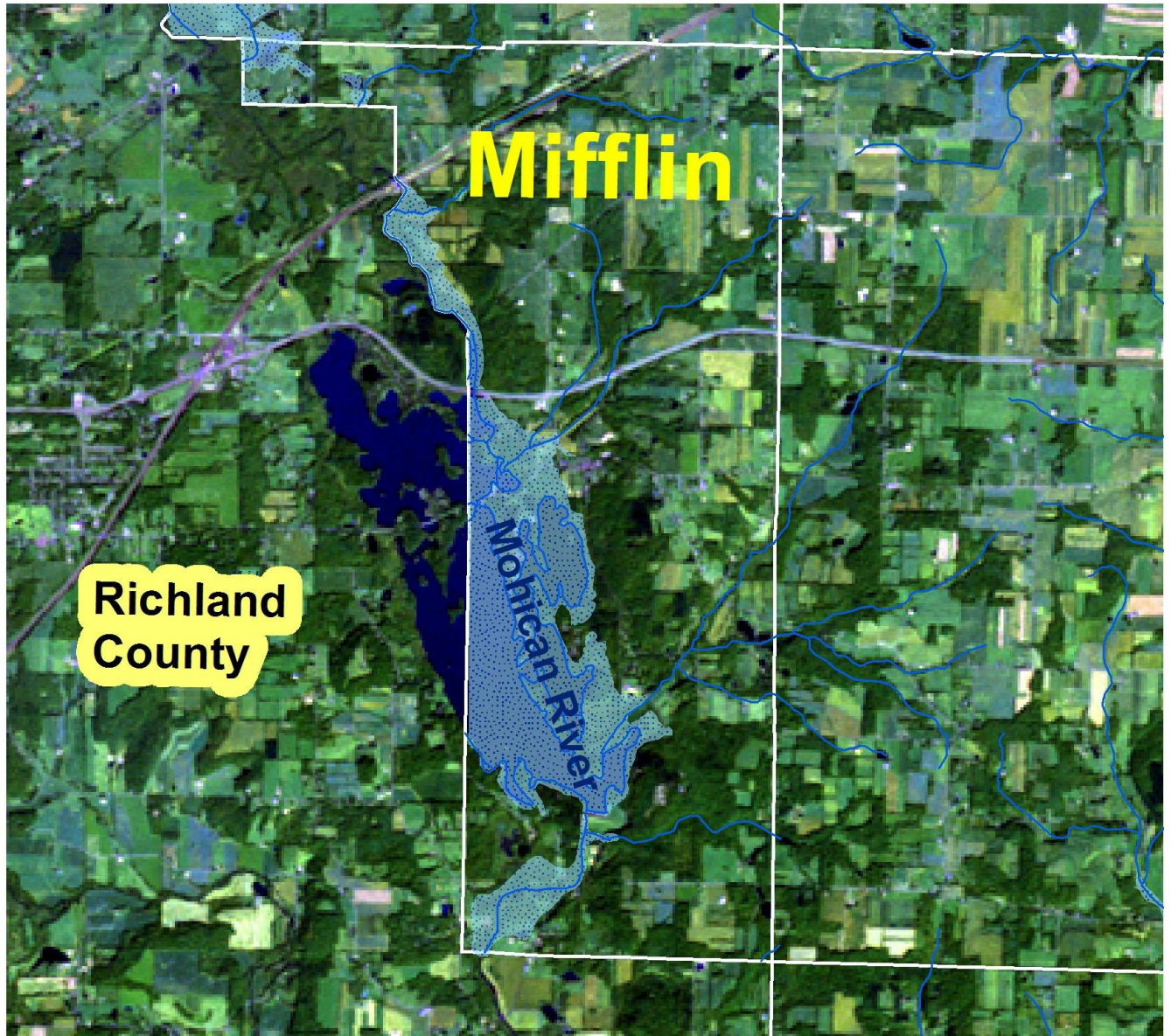
100-Year Floodplain: Black Fork of Mohican River



100-Year Floodplain: Vermillion River

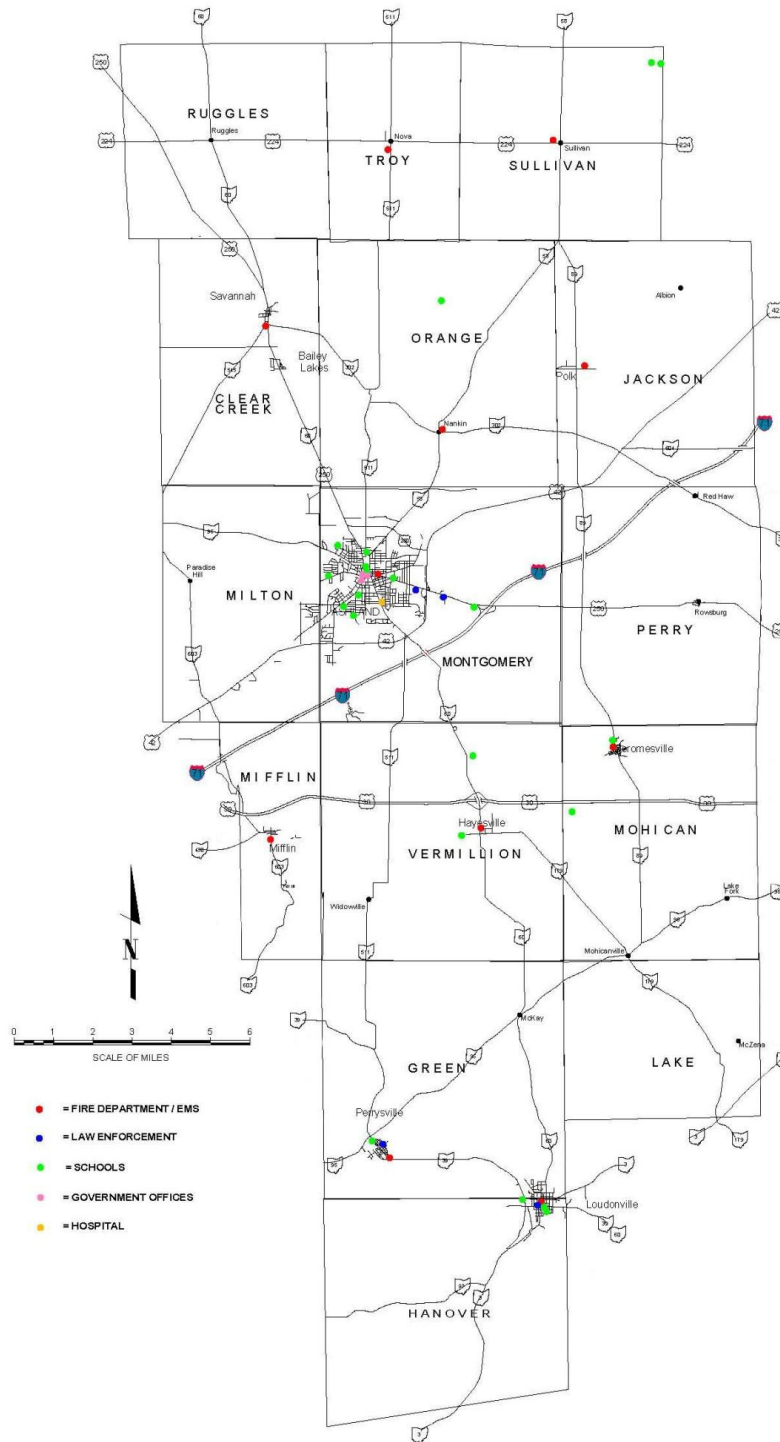


100-Year Floodplain: Mohican River at
Charles Mill Lake



Ashland County Mitigation Plan for Natural Disasters

APPENDIX C: Critical Facilities



Ashland County Mitigation Plan for Natural Disasters

APPENDIX D:

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction:	Title of Plan:	Date of Plan:
Local Point of Contact:		Address:
Title:		
Agency:		
Phone Number:		
		E-Mail:

State Reviewer:	Title:	Date:

FEMA Reviewer:	Title:	Date:
Date Received in FEMA Region (insert #)		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		

Ashland County Mitigation Plan for Natural Disasters

SECTION 1: REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST	Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)			
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))			
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))			
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))			
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))			
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))			
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))			
ELEMENT A: REQUIRED REVISIONS			

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Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))				
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))				
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))				
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))				
<u>ELEMENT B: REQUIRED REVISIONS</u>				
ELEMENT C. MITIGATION STRATEGY				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))				
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))				
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))				
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))				
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))				
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))				
<u>ELEMENT C: REQUIRED REVISIONS</u>				

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Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))				
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))				
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))				
<u>ELEMENT D: REQUIRED REVISIONS</u>				
ELEMENT E. PLAN ADOPTION				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))				
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))				
<u>ELEMENT E: REQUIRED REVISIONS</u>				
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)				
F1.				
F2.				
<u>ELEMENT F: REQUIRED REVISIONS</u>				

APPENDIX E: Copies of Signed Resolutions
