

**Center for Urban &
Public Affairs**

Questions regarding this plan? Contact

Carol M. Hooker

Wright State University
3640 Colonel Glenn Hwy.
Dayton, OH 45435-0001

225 Millett Hall
Phone 937 775 2941
Fax 937 775 2422

Montgomery County Natural Hazard Mitigation Plan



View from Woodland Hills (looking north to downtown Dayton), Miami Valley Conservancy District Special Collections

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Montgomery County is the fourth largest populous county in the State of Ohio and is subject to flooding, hail, earthquakes, severe winter storms, and tornados or windstorms. It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the county's 559,062 residents, but with careful planning, it is possible to minimize the losses that could result from natural disasters.

Montgomery County most recently experienced large-scale economic losses during the snow and ice storm in March of 2003. The storm directly or indirectly affected all of the county's residents, when snow and ice caused a significant amount of loss to Montgomery County jurisdictions unprepared for snow removal of such a great magnitude over a short period of time.

Montgomery County was one of several counties that sought and received a Presidential Disaster Declaration to obtain federal assistance for its recovery efforts. The cost of recovery from this winter storm was estimated at approximately \$20 million for the 30 Ohio counties eligible for federal reimbursement of 75 percent of their snow removal costs during a continuous 48-hour period of their choosing.

Why Does Montgomery County Need this Plan?

Mitigation is the cornerstone of emergency management. It's the ongoing effort to lessen the impact disasters have on people's lives and property through damage prevention and flood insurance. Through measures such as, building safely within the floodplain or removing homes altogether; engineering buildings and infrastructures to withstand earthquakes; and creating and enforcing effective building codes to protect property from floods, hurricanes and other natural hazards, the impact on lives and communities is lessened.¹

The rising cost of natural disasters has led to a renewed interest in identifying effective ways to reduce vulnerability to disasters and as a result, Montgomery County was recently awarded a grant for the purpose of creating a County Mitigation Plan.

A Mitigation Plan is a plan that identifies mitigation priorities and projects for all communities within the county. The need for a county mitigation plan need came to light following an amendment to the Stafford Act in February of this 2002. It now mandates that after November 1, 2003, a local government must have a

¹ <http://www.fema.gov/fima/>. Mitigation Division.

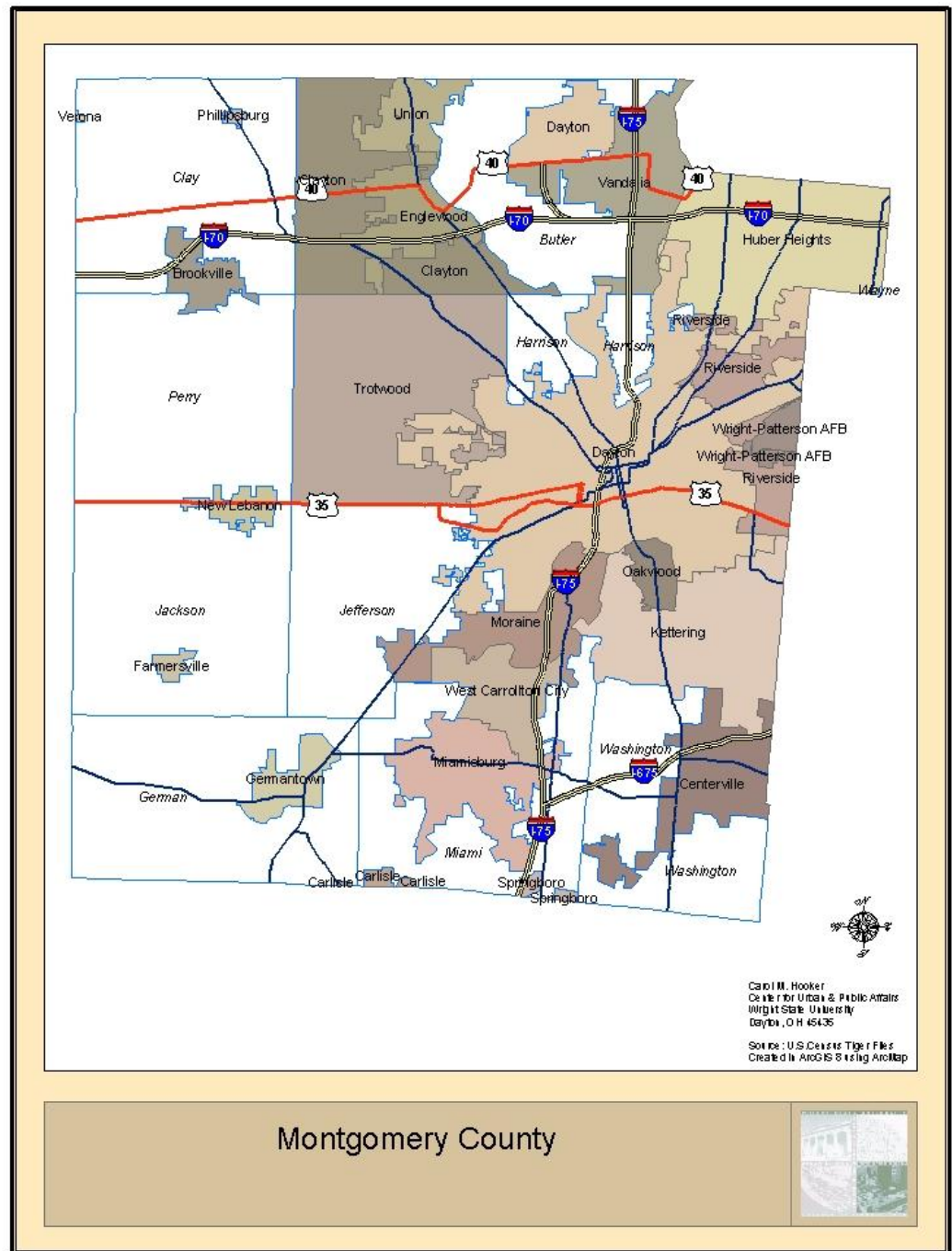
mitigation plan on file with the State in order to receive mitigation funding for any declared disaster.

Communities have the option to either adopt, through resolution, the countywide plan or create their own independent plan. A natural hazard mitigation plan sets the ground work for communities to reduce their risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping to coordinate mitigation activities throughout the county.

Montgomery County Office of Emergency Management has partnered with WSU for the completion of a Countywide Comprehensive Natural Hazard Mitigation Plan. In order to create this comprehensive plan, we first completed a hazard analysis that identified natural risks threatening each political jurisdiction within the county. This hazard analysis is the foundation upon which all emergency planning efforts in the community are built and provides an understanding of potential threats facing the communities.

The plan provides a set of action items to reduce risk from natural disasters through education and outreach programs, to develop partnerships, and to implement preventative projects. The information within the Mitigation Plan: (1) establishes the foundation for coordination and collaboration among agencies and the public in Montgomery County; (2) identifies and priorities future mitigation projects; and (3) assist in meeting the requirements of federal assistance programs. The mitigation plan does not stand-alone — it works in conjunction with other jurisdictional plans.

The Montgomery County Natural Hazards Mitigation Plan affects all areas of the county: incorporated urban areas, and the rural, unincorporated areas of the county. Figure 1-1 shows cities, urban unincorporated areas, and major roads and rivers in Montgomery County. While this plan does not establish requirements for the cities in the county, the resources and background information in the plan is applicable county-wide. It does provide suggestions for lessening the impact of natural hazards and recommendations for local mitigation efforts and partnerships.



• Figure 1-1: Montgomery County

All property mitigation lies with the local jurisdictions, and the primary responsibility for development and implementation of risk reduction strategies and policies lies with these jurisdictions.

Organizing Resources and Preparing to Plan

This first section describes the steps taken to prepare to plan and illustrates the six steps:

1. Get community's governmental leadership to support the planning effort

To seek support for the Planning Process, Montgomery County Office of Emergency Management and the Greene County Emergency Management Agency drafted and sent a letter seeking both support and information from the jurisdictions affected by the planning process (Refer to Appendix B for a list of the Jurisdictions notified and a copy of the letter). Obtaining the support of the community's governmental leaders (both elected officials and appointed agency directors) is the best foundation for a planning effort. The board of county commissioners passed a resolution of support and a letter of support is included in Appendix B

2. Form a core (planning) group – The Pre-mitigation Planning Team

Secondly, a core group was formed. This group is a committee serving as a task force, which lead the planning process. The core group consisted of fifteen members (not including Wright State and local Emergency Management personnel) and represented a cross-section of people in the community including local government staff, the public, local businesses, non-profit organizations, and local interest groups. This group reviewed the needs and concerns of all interested parties (stakeholders) and provided the input to prepare the plan.

The Pre-mitigation Planning Team convened about every 2 to 3 weeks, March through July, to guide development of the Mitigation Plan. The committee was developed to represent Montgomery County citizens and make decisions about mitigation planning and priorities for mitigation plan goals. This team was instrumental in developing the mission, goals, and action items for the mitigation plan. The committee consisted of resident and non-resident representatives of public, non-profit, and private organizations in Montgomery and Greene Counties, including:

- Miami Valley Emergency Management Authority (now operating separately as the Greene County Emergency Management Authority and the Montgomery County Office of Emergency Management)
- Wright State University Research & GIS staff and students
- Wright State University Seismic Office
- Wright State University Biological Sciences

- Miami Valley Regional Planning Commission
 - Miami Conservancy District
 - Montgomery County Community & Economic Development
 - Montgomery County Ohio State University Farm Extension Office
 - Greene County Building Regulations Department
 - Greene County Department of Public Works
 - Greene County Department of Environmental Services
 - Montgomery County Department of Public Works
 - SBC Ameritech, Damage Prevention Council
 - Ohio Environmental Protection Agency
 - Jones Warner Consultants
 - Greene County Health Department
 - Dayton Area Chapter of the Red Cross
 - City of Xenia
 - Montgomery County Building Regulations Department, Flood Plains Manager
 - Montgomery County Commission
3. Identify expertise to help with the planning process and provide input into the plan (see previous step – included in the core group)
 4. Involve other agencies (see step 2 – included in the core group)
 5. Choose a planning model to follow
 6. Decide how the public will be informed

The mitigation planning efforts during the development of the draft plan were published for the community on the Wright State University website. Future outreach efforts will include the following:

- Public service announcements

- Posting meeting agendas and minutes in public areas (library, community building)
- Presentations at meetings held by government, civic or other interest groups
- News release; public notice
- Web site

Conducting the Hazard Analysis

Hazard analysis is the foundation upon which all emergency planning efforts in the community are built and provides an understanding of the potential threats facing the community. By pinpointing the exact location, extent and magnitude of past disasters, and by examining new or emerging risks, it is possible to determine the probability of such events occurring and the vulnerability of people and property. By reviewing this information along with available land use, geographic, economic, and demographic information, the pre-mitigation planning team developed priorities and goals for mitigation for the segments of the community, which might be adversely impacted by various types of hazards.

Hazard analysis can be broken into four basic steps:

- Develop a community profile
- Identify the hazards
- Profile each hazard
- Conduct a vulnerability analysis and estimate losses

Develop community profile

To develop a community profile, the key areas in the community were identified such as historical resources, industries, critical facilities, present and future land uses and development. Information regarding geography, climate, and demographics were also included in this profile.

Identifying and profiling hazards

The next step in hazard analysis involved the identification of those natural hazards to which the community is susceptible. Montgomery County is susceptible to a number of natural hazards. The following natural hazards were determined to be the most pervasive and concerning hazards to mitigate for:

- Tornados and Wind
- Sever winter storms
- Flood
- Sever summer heat and drought
- Hail
- Earthquakes

In the identification process the research team found no record of the following natural hazards, these hazards were not considered to adversely affect the community on a regular or recurring basis.

- Wildfires
- Landslides
- Land subsidence

The following sources assisted in the hazard identification process.

Historical records

The pre-mitigation planning team researched local historical data (such as newspaper accounts) to determine the types of hazards the community either has experienced or to which the county is susceptible. In addition, long-term community residents were interviewed as a good source of information regarding historical natural hazard events. Another resource utilized was the local historical societies and local historical special collections and archives. Drawing from local information sources is important because it provides information on those events that may not have been widespread or severe enough to receive national attention, but nonetheless had a significant impact on the community.

Existing plans and reports

The pre-mitigation planning team reviewed existing reports and plans such as state mitigation plans, hazard identification reports, studies, local emergency response plans, and local comprehensive plans, etc. However, these plans were lacking in information regarding mitigation for natural hazards. The Miami Valley Emergency Operations Plan requested and made specific suggestions concerning mitigation; however, no jurisdiction provided any of these reports for this hazard analysis. Upon this review the pre-mitigation planning team finds it important that each jurisdiction carry out the requests and suggestions from the Miami Valley Emergency Operations Plan.

Internet websites

Information on hazards was also obtained through Internet websites.

Hazard Research

After the completion of the initial hazard identification of Montgomery County, the pre-mitigation planning team focused on identifying the most prevalent hazards.

- Tornadoes and Wind
- Severe winter storms
- Flood
- Severe summer heat and drought
- Hail
- Earthquakes

A hazard event profile was developed for each potential hazard that was identified as a threat to Montgomery County.

Flood hazard information was obtained from the boundaries of the Flood Insurance Rate Map (FIRM) as translated by the Ohio Department of Natural Resources (ODNR).

Earthquake hazard information was collected from the <http://geohazards.cr.usgs.gov> website and OhioSeis maps and data.

All weather hazard information was obtained from the <http://www.ncdc.gov> and www.fema.gov website.

Population and business figures were collected from the U.S. Census, Ohio Bureau of Employment Services and Powerfinder software.

During this step the Pre-mitigation Planning Team determined how much property and what segment of the population are located in probable hazard areas. To complete this step the committee needed to:

- Determine the total number of buildings in the community. The information was obtained from Census 2000 and tax assessment maps, Geographic Information Systems (GIS), Aerial Photographs and local planning documents.

- Determine the total estimated value of buildings in the community. When available, this information was obtained from tax assessments of individual buildings.
- Determine the total number of people in the community. This information was obtained from census data and local data. Noted were any large seasonal or daily population changes.
- Determine the total number of buildings inside the hazard areas. The information was obtained from tax assessment maps, GIS, and/or aerial photographs.
- Determine the total estimated value of buildings inside the hazard areas. This information was obtained from tax assessment values and from estimating whole areas from Census figures.
- Determine the total number of people inside the hazard areas. This information was obtained from census data and local data. Noted were any large seasonal or daily population changes.
- Determine the location of expected growth in the community by consulting local officials.
- Complete vulnerability analysis and estimate losses

To complete the hazard analysis, the vulnerability of the community to various hazards needed to be determined. A hazard is only a problem when it can cause harm to people or damage property. In determining the communities' vulnerability the Pre-mitigation Planning Committee:

- Identified and mapped community hazard areas
- Developed and applied hazard-specific disaster scenarios to determine critical issues that needed to be addressed pertaining to specific community sectors, safety, loss of critical functions or facilities, public health impacts, economic impacts, and short and long-term recovery
- Determined who had the emergency response authority for each identified vulnerability
- Determined planning and resource allocation needs and considerations for implementing priority activities identified in the previous steps.

The final step in the hazard analysis process is estimating losses that would occur during a hazard event and creating a composite map of the loss areas. The expected percentage of damage to structures will vary greatly, based upon the age of the building, construction materials used and severity of the hazard. In this step our committee needed to:

- Determine the extent of damage from floods.
- Determine the extent of damages from earthquakes.
- Determine the extent of damages from tornadoes. The percent of losses are based upon worst-case scenarios developed from regional past occurrences.
- Determine the extent of damages from all other hazards identified as a threat to the community.

Information in the Mitigation Plan is based on research from a variety of federal, state, and local resources. The Center for Urban and Public Affairs (CUPA) at Wright State University conducted data research and analysis, facilitated Pre-mitigation Planning Team meetings, held public informational sessions, and developed the final mitigation plan.

CUPA collected data and compiled research on all of the hazards identified in the FEMA – Understanding Your Risks Guide: flood, landslide, severe winter storm, windstorm, wildfire, earthquake, and volcanic eruption. Research materials came from Federal, State of Ohio, and local agencies including:

- Federal Emergency Management Agency
- United States Department of the Interior, United States Geological Survey
- National Climatic Data Center
- National Oceanic and Atmospheric Administration
- National Parks Service
- Ohio Department of Natural Resources (ODNR)
- Ohio Department of Public Safety (ODPS), Emergency Management Agency (EMA)

In addition, CUPA staff and students conducted research by referencing historical local newspapers and documents and locating County information in recent and historical scientific documents.

Estimated Hazard Costs

Wherever possible in this analysis and plan, costs are expressed in terms of "real dollars," and have been adjusted for inflation so that all dollar figures are expressed using the value of money in the current year (2003). Dollar figures have been calculated to 2003 values using the Consumer Price Index for all urban consumers (CPI-U) as provided on the Bureau of Labor Statistics website,

<http://www.bls.gov/> and/or the Federal Reserve Bank website, <http://minneapolisfed.org/research/data/us/calc/index.cfm>.

Some figures in this report are expressed in “nominal dollars” (without adjusting for inflation), because estimates for disaster declarations were expressed for several disasters over a multiple years without a specific year breakdown, and therefore could not be adjusted. These figures are represented with an asterisk (*) behind the dollar figure.

Selecting and Ranking the Problem Statements

The core group brainstormed and outlined every problem statement. Problem statements with insufficient data to support them were then removed. Problems beyond the influence of the core group, or poorly defined problems were also removed. Once this phase was complete, the planning team ranked the problems considering the impact each problem has on the community.

Setting Goals

Once the group had a clear understanding of community hazard problems, the next step is to identify the goals, which would most effectively minimize or eliminate the problems.

CUPA examined existing mitigation plans from around the country, current planning and regulation documentation from the County’s many jurisdictions, current FEMA planning standards, and the National Flood Insurance Program’s Community Rating System. Statewide reference materials consisted of community and county mitigation plans.

CUPA conducted interviews with and collected data from local jurisdictions. Research identified common concerns related to natural hazards and identified existing and potential activities to reduce risk from natural hazards. A complete listing of all stakeholders is located in Appendix B.

Stakeholders interviewed for the plan included representatives from:

- City Government
- Township Government
- Regional Planning Organizations
- Fire Departments
- Utility Providers

In the final step, the planning team developed the goals - general guidelines that explain what you want to achieve - and the activities - strategies or implementation steps to attain the identified goals.

How this plan is constructed

Chapter 1: Introduction

The Introduction describes the background and process of developing the Mitigation plan for Montgomery County

Chapter 2: Community Profile

This section illustrates the history, geography, demographics and socioeconomics of Montgomery County.

Chapters 3 through 9: Natural Hazard Risk Assessment

These chapters provide the hazard identification, vulnerability and risk associated with natural hazards in Montgomery County.

Chapter 10: Multi-Hazard Goals and Action Items

This section provides information on the process used to develop the goals and action items to address the problems faced from natural hazards.

Chapter 11: Plan Maintenance

This section provides information on implementing, monitoring, and updating the plan.

Appendices

Appendix A: Public, Private, and Governmental Participation in the Process

This section provides the documentation of all correspondence during the planning process. In addition, meeting minutes and rosters are documented in this section. It also contains the resolutions passed by the individual jurisdictions supporting the plan.

Appendix B: Critical Facilities

This section provides detailed information regarding the critical facilities inventory as required by the State of Ohio Emergency Management Agency and FEMA Region V. These documents were not included in the general text of the plan for security reasons, but can be provided on a need-to-know basis.

Appendix C: List of Acronyms and Definitions

This section provides a list of acronyms for the organizations and plans referenced in this Mitigation Plan.

Appendix D: Structures in the Special Flood Hazard Areas

This section provides documentation of the structures existing within the Special Flood Hazard Areas by jurisdiction.
