MARSHALL, OHIO, AND WETZEL COUNTIES

Multi-Jurisdictional Hazard Mitigation Plan

JH Consulting LLC

MARSHALL, OHIO, AND WETZEL COUNTIES
HAZARD MITIGATION PLAN
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SECTION 1.0

INTRODUCTION

Section 1.0 provides introductory material for the regional Hazard Mitigation Plan (HMP). This section presents an overall purpose statement, documents the process used to develop the plan, and describes the planning area in detail.

1.1 PURPOSE STATEMENT

This multi-jurisdictional hazard mitigation plan has been completed in accordance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000. The guidelines for the completion of this plan appear in the Code of Federal Regulations (CFR) under Title 44: Emergency Services, Part 201.6. The West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) further monitored the planning process. Funding for the project was distributed by the WVDHSEM under the Flood Mitigation Assistance (FMA) program.

The county-level emergency managers for Marshall, Ohio, and Wetzel Counties acted as the lead agencies for the completion of this plan. Each county contracted out the completion of their own, individual update and jointly agreed that the contractor would consolidate the individual documents into a regional plan; the plan was completed between May, 2008, and February, 2011.

The *Marshall, Ohio, and Wetzel Counties Multi-Jurisdictional Hazard Mitigation Plan* is considered "multi-jurisdictional" for several reasons. In addition to the three (3) county governing bodies, all 16 municipal governments located within the counties participated in the data compilation and action plan development through the efforts of individual county emergency managers. All municipalities are represented by at least one (1) project in the action plan. Further, all participating government entities formally adopted the plan by resolution.

It is significant to note that this document mimics the all-hazards approach that the local emergency management community takes as part of its regular operation. Such a decision was considered prudent because county-level emergency management offices are the ones charged with the maintenance and implementation (at a coordinating level) of many of the strategies listed in this plan. As such, this document assumes that the responsibility for mitigation activities rests with the lowest affected jurisdictional level, which is also consistent with the National Incident Management System (NIMS).

A number of documents were utilized as resources throughout the development of the HMP. References to these documents are, at times, direct and cited; other references are indirect and implied. This paragraph serves to formally recognize these documents.

- *Marshall County Emergency Operations Plan*
- *Marshall County Multi-Jurisdictional Hazard Mitigation Plan*
- *Marshall-Wetzel Commodity Flow Study*
- *Marshall-Wetzel Hazardous Materials Emergency Plan*
- *Wetzel County Emergency Operations Plan*
- *Wetzel County Multi-Jurisdictional Hazard Mitigation Plan*
- *Wheeling-Ohio County All Hazard Mitigation Plan*
- *Wheeling-Ohio County Emergency Management Agency Emergency Operations Plan*

Organization of the Plan

This plan has been organized in a way that both follows the federal criteria for hazard mitigation plans and is user-friendly.

- **Section 1.0: Introduction:** Describes the process used to develop the plan as well as profiles the planning area.
- **Section 2.0: Risk Assessment:** Identifies and profiles the hazard risks most probable throughout the region. This section also analyzes the regional implications of the risks (i.e., how does an occurrence of a hazard in one county affect the neighboring county). *NOTE: Hazard profiles contain averaged loss estimates. Such estimates are based on the county-specific loss estimates (and asset inventories), which are developed and maintained separately by individual jurisdictions.
- **Section 3.0: Mitigation Strategy:** Identifies mitigation projects to be undertaken by the individual governments in the region. Again, the regional implications of implementing these projects are examined.
- **Section 4.0: Plan Maintenance Process:** Identifies the process by which the member governments plan to update their own mitigation efforts as well as how this document is to be maintained.

1.2 DOCUMENTATION OF THE PLANNING PROCESS

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

To guide the completion of this plan, a multi-jurisdictional core planning team was established. This team was comprised of the emergency management directors for each of the three (3) participating counties. Further, these emergency managers served as liaisons with a more extensive committee formed for their own county and municipalities. Generally, the directors work with officials in their home county, compile information, and then share it with the other emergency managers. As such, a tiered approach has been established, and keeps individual working groups to manageable numbers of members.

Each county in the region undertook its own project to update its multi-jurisdictional hazard mitigation plan. These plans included the municipal jurisdictions in the counties and were originally developed in 2003 and 2004. During the updating process, the Federal Emergency Management Agency (FEMA) and West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) began to encourage the regionalization of mitigation plans following a model from other states in FEMA's Region 3. This document is the finalization of the initial regional process for Marshall, Ohio, and Wetzel Counties.

Beginning in 2008, Marshall, Wetzel, and Ohio Counties began coordinating with the WVDHSEM – Mitigation and Recovery Division on this project. The WVDHSEM had originally contacted the Region 10 Planning and Development Council (PDC) about facilitating the update, but the PDC was unable to take on the project. As such, the

WVDHSEM and the participating counties decided that, since all three (3) counties were utilizing the same contractor to complete county-level updates, they would discuss with that contractor the possibility of combining the documents into a single, multi-jurisdictional plan upon completion. The contractor agreed to do so.

Throughout 2009 and 2010, the consultant worked with the individual counties to create both updated individual documents and the framework for the initial regional document. It is significant to note that a number of stakeholders were involved locally as well as the public. Marshall and Wetzel Counties' individual plans were completed in early 2010; Ohio County's plan was underway when the timeframe for the regional project (i.e., deadline for the grant funding the regional project) was truncated. (*NOTE: It is significant to note that the public had been invited to participate in Ohio County's process via its Local Emergency Planning Committee [LEPC].) As such, the individual efforts for Ohio County were integrated into the regional format. Further, an advertisement was published in all three (3) counties encouraging the public to visit the emergency managers' offices to review the regional plan in its final draft form (see Appendix 4). Coupled with the efforts of the individual counties to engage their populations in the process, this extra step was deemed sufficient. Following document creation and public review, the plan was sent to the WVDHSEM and FEMA Region 3 for review and approval.

Following approval of the document, all participating governments were provided the opportunity to officially adopt the plan. Copies of executed resolutions will be included as a part of Appendix 4.

It is significant to note that though the creation of this document would not be considered an "update", it did take information previously compiled in "county" formats and re-organized it. As such, a general section listing with a bulleted list of updates cannot be generated.

Upon completion of the regional document, the contractor submitted a draft of the regional plan to each county along with a list of the ways that the information contained in their individual plan (if they had completed one) had been altered. (The contractor asked the emergency managers to share the information with the municipal jurisdictions in those counties.) This list went section-by-section through the regional document, describing the alterations and asking for comments. See Appendix 4 for a reproduction of this list.

1.3 REGION PROFILE

The planning area of Marshall, Ohio, and Wetzel Counties is comprised of a total of 19 governments, three (3) of which are counties and 16 of which are municipalities. Table 1.3.1 lists the participating governments.

Table 1.3.1

NAME	TYPE	COUNTY
Benwood	City	Marshall
Bethlehem	Village	Ohio
Cameron	City	Marshall
Clearview	Village	Ohio
Glen Dale	City	Marshall
Hundred	Town	Wetzel
Marshall County	County	N/A
McMechen	City	Marshall
Moundsville	City	Marshall
New Martinsville	City	Wetzel
Ohio County	County	N/A
Paden City	City	Wetzel
Pine Grove	Town	Wetzel
Smithfield	Town	Wetzel
Triadelphia	Town	Ohio
Valley Grove	Village	Ohio
West Liberty	Town	Ohio
Wetzel County	County	N/A
Wheeling	City	Ohio

Transportation

The transportation network of the planning area includes four (4)-lane, divided highways, two (2)-lane roadways, and single-lane roadways. This network passes through a mostly rural and mountainous area; therefore, many of the routes are curvy and traverse steep grades. Further, State Route (SR) 2, the primary north-south thoroughfare through the western portions of the planning area, runs parallel to the Ohio River. The primary transportation routes through planning area are as follows:

- Interstate 70
- Interstate 470 (Wheeling Bypass)
- US 40
- US Route 250

- SR 2

Secondary routes are as follows:

- SR 20
- SR 86
- SR 88
- SR 180
- SR 891

Interstates 70 and 470 run east-west through the southern portions of Ohio County. I-70 runs through the center of the City of Wheeling, passing through a tunnel. I-470 is typically referred to as the Wheeling Bypass; it does traverse a portion of the southern parts of Wheeling and does pass very near the Marshall County line. US Routes 40 and 250 also provide access in a generally east-west flow through the planning area. US 40 runs exclusively in Ohio County, from the Wheeling-Triadelphia area northeastward toward Pennsylvania. US 250 runs southeastward from Moundsville, through Cameron and Hundred, and out of southern Wetzel County into Marion County. SR 2, as mentioned, runs parallel to the Ohio River throughout the entire region. It varies from two (2) to four (4) lanes and runs through the county seats of all three (3) participating counties (i.e., New Martinsville, Moundsville, and Wheeling). SR 2 and the interstates see the highest-density traffic as well as the higher percentages of hazardous material traffic.

Economy

In all five (5) counties, the economy (i.e., local work force) is driven by government and education and health. Other trends are more difficult to discern. Marshall County does have two (2) large manufacturing facilities in PPG and Bayer that account for the high manufacturing total. The high rank of education in Ohio County is also not surprising given the presence of Wheeling Jesuit University, Northern West Virginia Community College, and West Liberty University. Table 1.3.2 shows the top four (4) industries in each county, with the number of individuals employed by each.

Table 1.3.2

Top Industries by Jurisdiction				
County	*INDUSTRY 1 Name (#)*	*INDUSTRY 2 Name (#)*	*INDUSTRY 3 Name (#)*	*INDUSTRY 4 Name (#)*
Marshall	Government (1,905)	Manufacturing (1,518)	Education and Health (1,502)	Natural Resources & Mining (1,251)
Ohio	Education & Health (6,686)	Leisure & Hospitality (4,193)	Government (3,922)	Professional & Business Services (3,777)
Wetzel	Government (1,181)	Retail Trade (983)	Leisure & Hospital (570)	Education & Health (479)

Source: WVBEP

All three (3) counties have available space for development, primarily commercial/business but also some space for industrial development. See "Analyzing Development Trends" below. All counties employ Economic Development Authorities (EDAs) that work to bring development and jobs to the counties. The top employers, by jurisdiction, are as follows (*Source: WV Bureau of Employment Programs*).

- Marshall County
  - Marshall County Board of Education
  - McElroy Coal Company
  - PPG Industries
  - Reynolds Memorial Hospital
  - Bayer Material Sciences

- Ohio County
  - Wheeling Hospital
  - Ohio County Board of Education
  - Ohio Valley Medical Center
  - Cabelas Wholesale
  - Wheeling Downs Racing Association

- Wetzel County
  - Wetzel County Board of Education
  - Wal-Mart
  - Wetzel County Hospital
  - Sunhealth Specialty Services

- Northwood Health Systems

Climate

The climate of the planning area is generally a continental climate influenced by air that has crossed the central United States. Summers are moderate, with warmer days followed by cool nights; winters are cold, but not severe. The weather, however, is subject to change. Recent years, for example, have seen an increase in snow and ice during the winter months. The plant hardiness zones (as determined by the US Department of Agriculture [USDA]) range from zone 5b in western Wetzel County (and the extreme southwestern corner of Marshall County) to zone 6a in the remainder of the planning area.

Average January temperatures range from a low of 18°F in Marshall and Ohio Counties to 20°F in Wetzel County. As can be seen, temperatures are generally cooler as one travels north. July temperatures average 73°F. Annual precipitation ranges fall within the low 40" area. In Marshall and Ohio Counties, 40.8" of precipitation is normal; Wetzel County can expect slightly more precipitation (i.e., 43.8"). In the planning area, an average of 33 inches of snow falls annually.

DEMOGRAPHICS

Demographic data has been consolidated based on Census data from each of the counties unless otherwise noted.

Population

The population of the planning area is 92,797 according to 2009 Census estimates. A breakdown by counties is shown in Figure 1.3.1 (*Source: US Census Bureau*). Generally speaking, the majority of the population is located in the western portions of the region along the Ohio River. Such a figure could be expected given the presence of more developable (i.e., flatter) land along the Ohio River and the opportunities for waterborne commerce. A number of commercial and industrial

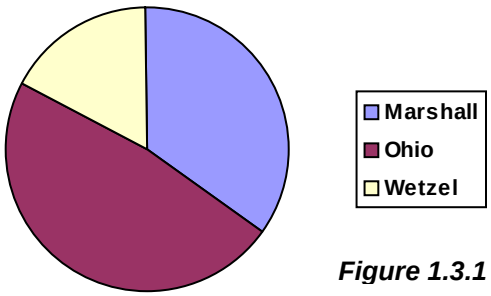


Figure 1.3.1

operations are located along the Ohio River.

The eastern, less-densely populated portions of the region see a more natural resource-based economy. The oil and natural gas industry is rapidly growing throughout the planning area, particularly in these rural areas, which has been cause of concern for emergency services agencies. The topography in these rural areas is rugged, with steep grades and curvy roads. Accessing many of these areas, particularly in the winter months, can be difficult.

Nearly 68% of the population in the region lives within a municipality (approximately 63,022 residents). It is also significant to note that the bulk of Ohio County's population, in particular, lies along the river in Wheeling and the towns of Triadelphia and Bethlehem. 79% of Ohio County's population lives in these municipalities.

Housing

As with population, it is not surprising to see that portions of the planning area with the densest population have the highest number of housing units. There are 46,750 housing units in the region. On average, 75% of residents in the region own their own homes. (The average median value of housing is $66,667.)

Figure 1.3.2 shows the distribution of housing across the region. Table 1.3.3 provides a more detailed overview of the housing characteristics in each one of the counties (*Source: US Census Bureau*).

Figure 1.3.2

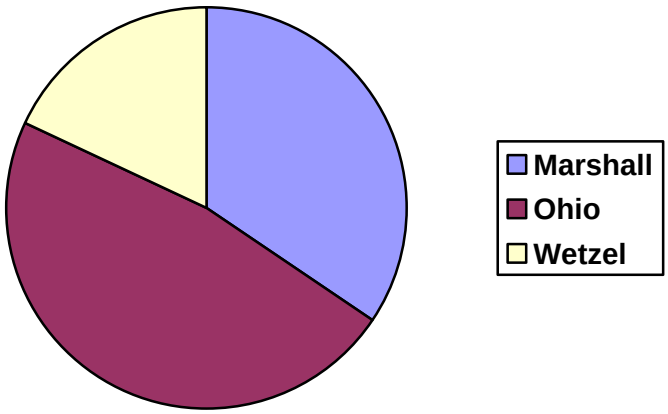


Table 1.3.3

Housing Characteristics in Participating Counties			
Demographic	*Marshall*	*Ohio*	*Wetzel*
Housing Units	16,108	22,240	8,402
Owner Occupied	12,500	15,257	6,596
Renter Occupied	3,608	6,983	1,806
Ownership Rate	77.6%	68.6%	78.5%
Median Value	$62,600	$71,400	$66,000

UTILITIES

Utilities are provided by many different companies. Electricity is provided by Allegheny Power and Appalachian Electric Power (AEP). Allegheny provides power to Wetzel County; AEP provides electricity to Marshall and Ohio Counties. Telephone service is provided primarily by Frontier Communications; a secondary provide is Stratus Wave. Cellular and internet connectivity is provided by numerous private companies, including Ovis, Stratus Wave, Verizon, Frontier, Sprint, AT& T, US Cellular, etc.

Water and wastewater service is also provided in a variety of ways. Most municipalities provide water service which is supplemented, primarily in unincorporated areas, by Public Service Districts (PSDs). Many residents still rely on private water wells throughout the region. Public sewer service is generally less available than public water. It is provided primarily by the larger municipalities in the planning area.

ANALYZING DEVELOPMENT TRENDS: CURRENT AND FUTURE LAND USE

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

Most of the development in the planning area is located along the Ohio River. All of the municipalities can be said to have a relatively regular trend of commercial development in their central business districts, but the bulk of the development – commercial and industrial – is along SR 2 and the Ohio River. The only notable exception would be areas along I-70 just east of Wheeling. The Highlands commercial area surrounding Cabelas continues to grow at a rapid pace. Generally,

denser residential development is likely to continue to occur near to municipalities and along roadways.

The following is a brief breakdown of areas targeted for development throughout the planning area.

- Marshall County

  Marshall County's Ohio River waterfront will likely continue to be an attraction for industrial development. The area could see new companies as well as expansion by existing companies, such as PPG Industries and Bayer Material Science. Representatives from existing industries serve on the Marshall-Wetzel Local Emergency Planning Committee, which allows company and community officials to share information as it pertains to the potential hazards those facilities may face. The northern portions of the county should also benefit from the continued growth of the Wheeling area and the population may stabilize given the area's proximity to the City of Pittsburgh.

  Recreation opportunities are continually explored as changes/upgrades occur at the penitentiary and Grave Creek Mound. Further, the county has extensively developed Grand View Park. The Marshall County Fair continues to be an early summer attraction as well.

- **Ohio County:** The Highlands along I-70 just east of Wheeling is the primary location targeted for development. It would primarily be susceptible to hazardous material incidents, winter storms, severe wind, and possibly by land subsidence.
- **Wetzel County:** Most development is occurring in municipalities or along the Ohio River.

Many rural areas in the region see mining and natural gas operations. The oil and natural gas industry is rapidly expanding across West Virginia, and the Northern Panhandle is perhaps the focal point of that development. All three (3) counties are seeing significant growth in this sector. In Wetzel and Marshall Counties, the bulk of it is occurring in the more rural eastern portions of the counties, near Hundred and

Cameron. These areas are not only remote, they are served by infrastructure systems that were not designed to see the amount of heavy truck traffic associated with these industries. In Ohio County, the natural gas industry growth is encroaching on the densely populated areas near Wheeling. For example, a Marcellus shale well is planned within very close proximity to Wheeling Park High School.

Mine activity is also increasing, primarily in Marshall and Ohio Counties. This type of development spans the majority of both counties. Recently, a number of high-profile accidents have occurred at West Virginia mines, which has raised the profile of this development in the Northern Panhandle.

SECTION 2.0

RISK ASSESSMENT

Section 2.0 is a multi-hazard risk assessment, analyzing primarily the natural hazards affecting the entire planning area. This particular assessment includes brief analyses of the hazardous material and terrorism risks. In addition to a simple identification of applicable hazards, this section profiles those hazards (i.e., describes them in the context of how they affect the participating jurisdictions) and discusses the "regional" implications of these hazard risks.

It is important to understand that the risk assessment portion of this planning process was cyclical. For example, hazards were identified and analyzed on an "area-wide" basis. Upon completion of the initial assessment, such factors as targeted development areas, the locations of critical facilities, etc. were compared to the initial data. Where warranted, additional risk analysis was done in those areas to determine the primary hazards affecting, for example, a potential development. Further, determining probability and severity could be affected by the presence of a number of critical facilities or developable areas in a "hazard zone".

2.1 HAZARD IDENTIFICATION

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

The hazard identification serves as a guide to all participating jurisdictions when assessing their vulnerabilities to hazards. The purpose of the hazard identification is to (1) identify all the natural hazards that could affect the planning area, (2) assess the extent to which the area is vulnerable to the effects of these hazards, and (3) prioritize the potential risks to the community.

Hazard Identification

The following chart – Table 2.1.1 – Illustrates the hazards to which the planning area could be susceptible. The table also includes a list of the research sources used to identify the hazards as well as a brief statement justifying their inclusion in this analysis. Those hazards with justification for inclusion in the hazard profiling section are highlighted in yellow. In addition to all sources identified in the following table, each county's current hazard mitigation plan was also used as a

research source.

It is significant to note that it is not the intent of Table 2.1.1 to list all occurrences of the hazards in consideration. Table 2.1.1 simply seeks to demonstrate that a particular hazard is indeed worthy of further risk analysis.

Table 2.1.1

HAZARD	HOW IDENTIFIED	WHY IDENTIFIED
Avalanche	• Research indicates that these jurisdictions are not susceptible to this hazard.	• The general contour of the land in the region is mountainous, but they are not steep enough to cause avalanche activity. • Further, the amount of snowfall the region receives is insufficient for any kind of avalanche.
Coastal Erosion	• MapQuest	• Coastal erosion is not a significant risk as the region is more than 450 miles from the Atlantic Ocean.
Coastal Storm	• See "Thunderstorm"	• Coastal storms are not a threat to the region as it is more than 450 miles from the Atlantic Ocean.
Dam Failure	• WV Department of Environmental Protection (WVDEP) Dam Safety • Interviews w/ Local Officials • Internet Research http://itouchmap.com	• The Benwood flood wall is in need of mitigation efforts. • Ohio County contains the Pike Island Lock and Dam facility. • Wetzel County contains the Hannibal Lock and Dam facility.
Debris Flow	• See "Land Subsidence"	• See "Land Subsidence"
Drought	• National Climatic Data Center (NCDC) Event Records	• NCDC reports the following two (2) drought events for each county in 1999. • All three (3) counties report long stretches of dry weather in the late summer/ early fall months.
Earthquake	• US Geological Survey (USGS) • Internet Research http://www.earthquake.gov	• The USGS rates the planning area as having a 4 to 12%g Peak Ground Acceleration (PGA). • According to the USGS, the counties in Region range from a 2 to a 4 in Peak Ground Acceleration (PGA) with a 10% chance of exceedance in 50 years.

		• While perceived shaking is expected to be light and damage minimal, USDHS Federal Emergency Management Agency (FEMA) still recommends analyzing hazards in areas with these PGAs.
Expansive Soils	• See "Land Subsidence"	• See "Land Subsidence"
Extreme Heat	• NCDC Event Records	• Temperatures in the region seldom exceed 100 degrees. • If the temperature meets or exceeds 100 degrees, it has not been hot enough for the amount of time appropriate to denote "extreme heat".
Flooding	• NCDC Event Records • Interviews w/ Local Officials	• NCDC reports the following: o Marshall – 61 since 1993 o Ohio – 30 since 1993 o Wetzel – 34 since 1996 • Local officials unanimously indicated that flooding was the most probable hazard in all jurisdictions.
Hailstorm	• NCDC Event Records	NCDC reports the following: • Marshall – 30 hail events since 1983 • Ohio – 24 hail events since 1962 • Wetzel – 17 hail events since 1986
Hazmat Incident	• *Marshall-Wetzel LEPC Commodity Flow Study*, 2009 • *Marshall-Wetzel Hazardous Materials Emergency Plan*, 2007 • *Marshall-Wetzel Vulnerability Assessment*, 2009 • Interviews w/ Local Officials	• State Route 2 sees a high volume of hazardous material traffic. • Interstates 70 and 470 see high volumes of hazardous material traffic. • All 3 counties could be impacted by an emergency at industrial facilities along the Ohio River. • Natural gas operations have increased the amounts of materials such as hydrochloric acid and liquid nitrogen on rural roadways.
Hurricane	• See "Thunderstorm"	• The region does not experience the hurricane conditions of extremely high winds, rains, and hail. • In some instances, the

		region may be affected by rainfall brought about by the remnants of a hurricane, which are addressed elsewhere.
Land Subsidence	• Interviews w/ Local Officials • Internet Research http://www.nationalatlas.gov	• Wetzel County is located in "high risk" area according to *USGS Landslide Overview Map*. • Landslides are frequent occurrences along SR 2 in Marshall County. • According to local officials, land subsidence occurs as a secondary result to other hazards and development.
Landslide	• See "Land Subsidence"	• See "Land Subsidence"
Terrorism	• Interviews w/ Local Officials	•
Thunderstorm	• NCDC Event Records	NCDC reports the following: • Marshall – 102 thunderstorms since 1966 • Ohio – 86 thunderstorms since 1955 • Wetzel – 45 thunderstorms since 1969
Tsunami	• MapQuest	• The Atlantic Ocean is approximately 450 miles from the region. • The Appalachian Mountains will most likely protect the area from a tsunami affecting the US east coast.
Volcano	• USGS	• No volcanoes exist on the east coast.
Wildfire	• Interviews w/ Local Officials	• Local firefighters respond to a number of "brush fires" in any given year. • Local officials have become concerned about the number of natural gas well fires in the planning area; in rural areas, these well fires could spark a wildfire.
Wind	• NCDC Event Records	NCDC reports the following: • Marshall – 10 high wind events since 1995 and 2 tornados since 1998 • Ohio – 14 wind events since 1995 and 2 tornadoes since 1961 • Wetzel – 8 high wind events since 2001 and 1 tornado in 1996

Winter Storm	• NCDC Event Records	NCDC reports the following: • Marshall – 25 snow/ice events since 1993 • Ohio – 23 snow/ice events since 1993 • Wetzel – 27 snow/ice events since 1993

Over an area as large as the lower Northern Panhandle, it seems intuitively obvious that the hazards listed in Table 2.1.1 above would not affect the entire planning in the same manner. For instance, the western portions of the county are much more populated, so hazards could be impactful in these areas. The response to hazards in the eastern portions of the planning area, though, could be difficult, adding to the magnitude of "cascading" hazard effects. Further, the western side of the planning area runs parallel to the Ohio River, increasing the likelihood for riverine flooding, while flash flooding or small-stream flooding is more likely in the east.

To further illustrate this concept, Table 2.1.2 depicts the participating county jurisdictions in comparison. The baseline hazard risk is a generalized average in each county. If a county appears to be more or less affected by a particular hazard, evidence was sought through research. The variances in risk are discussed in Section 2.2 below.

Table 2.1.2

JURISDICTION	HAZARDS											
	Dam Failure	***Drought***	***Earthquake***	***Flooding***	***Hailstorm***	***Hazmat Incident***	***Land Subsidence***	***Terrorism***	***Thunderstorm***	***Wildfire***	***Wind***	***Winter Storm***
Marshall County	>	=	=	=	=	>	>	>	=	=	=	=
Ohio County	=	=	=	>	=	>	=	>	=	=	=	=
Wetzel County	=	=	=	=	=	>	=	<	=	=	=	=

KEY:
=: Equal risk
<: Lower risk
>: Higher risk

Probability vs. Severity Explanation

The historical data collected includes accounts of all the hazard types listed above. Some hazards, however, have occurred much more frequently than others with a wide range of impacts. By analyzing the historical frequency of each hazard along with the associated impacts, the hazards that pose the most significant risks to the planning area can be identified. Such an analysis allows participating communities to focus mitigation strategies on those hazards that are most likely to cause significant losses.

Prioritizing the potential hazards that can threaten the planning area is based on two (2) separate factors:

- The probability that a potential hazard will affect the community, and
- The potential impacts to the community in the event that such a hazard occurs (i.e., severity).

The probability of a hazard event occurring is largely based on the historical recurrence interval of the hazard. Such sources as the NCDC's "event record database", local media archives, and interviews with local officials were used to determine the number of occurrences. If repeated coverage was given to a particular hazard event, that event was considered highly probable to occur. Also, local officials were able to verify or identify those hazards occurring frequently. For instance, if flood damage occurs every five (5) years versus a tornado causing damage every 50 years, the flood probability would score much higher than the tornado.

Figure 2.1.1

CALCULATING AVERAGE HAZARD OCCURRENCES

NCDC lists Marshall County as having 61 floods, Ohio County as having 30 floods, and Wetzel County as having 34 floods.

(61+30+34)/3 = 42 Floods (avg)

Probability for each county jurisdiction in the planning area was calculated in comparison to one another. For instance, the total number of hazard events reported in each county was averaged to determine the number of occurrences of each hazard on an area-wide basis. Figure 2.1.1 explains this calculation with an example.

With these figures, another computation determined the average number of total hazard events. The average number of total hazards (15.6) was used as the median to determine probability. Table 2.1.3 depicts this calculation. The distance

above or below the median was determined by a percentage.

Table 2.1.3

CALCULATING MEDIAN HAZARD OCCURRENCES											
Dam	***Drought***	***Quake***	***Flood***	***Hail***	***Hazmat***	***Sub.***	***Terror***	***Thunder***	***Fire***	***Wind***	***Winter***
0	2	0	41.7	23.7	5	1	0	77.7	0	10.7	25
AVERAGE (Sum of Averages / 12):											**15.6**

**NOTE: Averages for each hazard were calculated per Figure 2.1.1 above.*

Table 2.1.4 lists the classifications considered for hazard probability. The percentages were used to determine the appropriate "hazard probability classification". For instance, 0 – 20% was listed as improbable, 21 – 40% was listed as remote, 41 – 60% was listed as occasional, 61 – 80% was listed as probable, and 81 – 100% was listed as frequent.

Table 2.1.4

Hazard Probability Classifications

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

The hazard's severity is made up of three (3) separate factors: the extent of the potentially affected geographic area, the primary impacts of the hazard event, and any cascading (or secondary) effects. While primary impacts are a direct result of the hazard, secondary impacts can only arise subsequent to a primary impact. For example, a primary impact of a flood may be road closures due to submerged pavement. A possible secondary impact in such an incident would be restricted access of emergency vehicles due to a road closure.

Severity calculations, on the whole, were less exact. The median and various

averages were calculated as outlined above for probability. The figures used for the severity calculations, however, were estimates with no mathematical basis. Loss figures presented with NCDC event records, local official recollections, and the loss estimates for each hazard presented in previous versions of each individual county's hazard mitigation plans were used to compare severity. Percentages were again used.

As with probability, severity classifications were made. Table 2.1.5 lists the severity classifications that were considered. Percentage assignments were as follows:

- 0 – 25%: Negligible;
- 26 – 50%: Marginal;
- 51 – 75%: Critical; and
- 76 – 100%: Catastrophic.

Table 2.1.5

Hazard Severity Classifications

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

Figure 2.1.2 combines the probability and severity information into a "risk assessment matrix" that generalizes the potential impact of each hazard included in the plan. This is the figure that was re-formatted into a bar graph as described above.

Figure 2.1.2

Risk Assessment Matrix

Hazard Severity	*Hazard Probability*				
	Frequent	Probable	Occasional	Remote	Improbable
Catastrophic	**Flood**				
Critical		**Winter Storm**			**Land Subsidence**

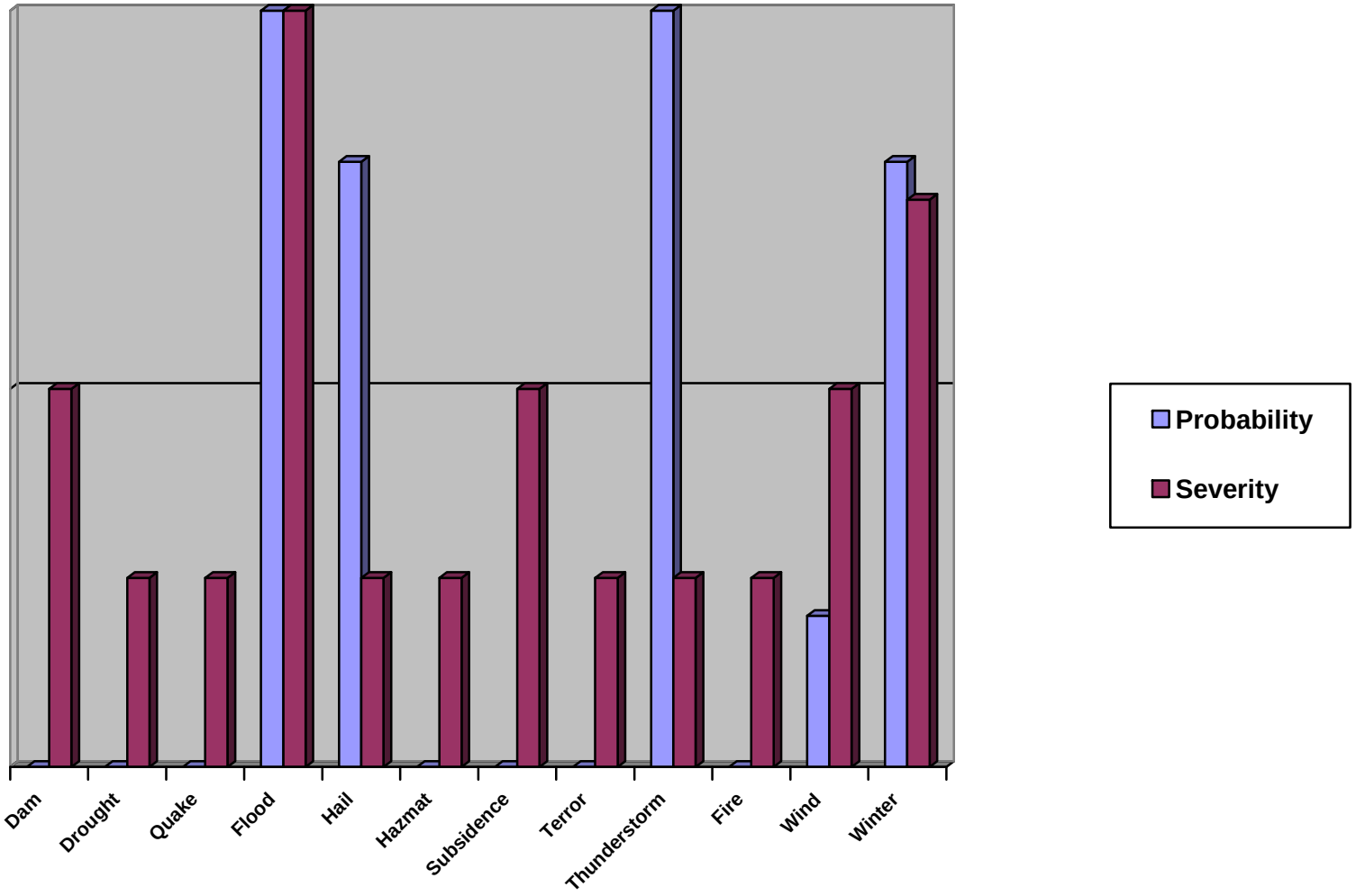
Marginal				**Wind**	**Dam Failure, Hazmat Incident**
Negligible	**Thunderstorm**	**Hailstorm**			**Drought, Earthquake, Terrorism, Wildfire**

Figure 2.1.3 below was created to enhance the usability of the plan. It provides a more holistic snapshot of risk in terms of probability and severity in a format that is more familiar to most readers of this plan. To create the bar graph, the following approximations were used.

- Probability
  - Frequent = 4
  - Probable = 3
  - Occasional = 2
  - Remote = 1
  - Improbable = 0

- Severity
  - Catastrophic = 4
  - Critical = 3
  - Marginal = 2
  - Negligible = 1

Figure 2.1.1


Dam
Drought
Quake
Flood
Hail
Hazmat
Subsidence
Terror
Thunderstorm
Fire
Wind
Winter
Probability
Severity

Inventorying Assets

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

Inventorying assets first involves determining what in the community can be affected by a hazard event. Each county maintains a specific list of community assets as part of this and a number of other plans (e.g., its emergency operations plan, critical infrastructure protection plans, etc.). Assets were grouped into the following categories.

- **Critical Facilities:** Governmental facilities, water/wastewater facilities, dams, emergency services facilities, medical facilities (hospitals/clinics), military facilities, and the transportation infrastructure.
- **Vulnerable Populations:** Schools, nursing homes, and senior centers.
- **Economic Assets:** Large commercial/industrial facilities or large employers (not covered in other categories).
- **Special Considerations:** Residences, community outreach facilities, post offices, and libraries.
- **Historical Considerations:** Areas/structures listed on the National Register of Historic Places.

While compiling the inventory, much information can be gathered that could assist in estimating the impact that the loss of each asset could have on the community. Each specific asset is listed with its size, replacement value (structure only), contents value, function use or value (annual operating budget), displacement cost ($ per day), and occupancy. Following is a brief description of how the above numbers are derived.

- **Size:** County assessor data or by directly contacting the facility.
- **Replacement Value:** County assessor data or by directly contacting the facility.
- **Contents Value:** Directly contacting the facility.

- **Function Use or Value:** Directly contacting the facility.
- **Displacement Cost:** Function Use or Value divided by 365.
- **Occupancy:** Directly contacting the facility.

Table 2.1.6 lists the assets identified throughout the planning area. This matrix is loosely derived from Worksheet #3b in the FEMA 386-2, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks* document.

Asset Inventory - Marshall, Ohio, and Wetzel Counties

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
Air Products & Chemicals Inc.			X			6,480	$4,471,200.00	$20,000,000.00	$1,460,000.00	$4,000.00	5
Bayer			X			N/A	N/A	N/A	N/A	N/A	N/A
Benwood McMechen Public Library				X		4,000	$438,600.00	$184,608.00	$25,000.00	$68.00	2
Benwood City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Benwood VFD	X					7,600	$965,000.00	$3,300,000.00	$1,095,000.00	$3,000.00	35
Big Wheeling Creek VFD	X					1,400	$120,000.00	$1,000,000.00	$365,000.00	$1,000.00	25
Bishop Donahue HS		X				18,000	$1,638,000.00	$1,638,000.00	$375,000.00	$1,027.00	75
Boggs Run VFD	X					1,200	$105,000.00	$750,000.00	$365,000.00	$1,000.00	12
Bridges	X					18,592	$306,768,000.00	N/A	N/A	N/A	N/A
Bushrod Washington Price House					X	N/A	N/A	N/A	N/A	N/A	N/A
Cameron City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Cameron City Pool			X			N/A	N/A	N/A	N/A	N/A	N/A
Cameron Downtown					X	N/A	N/A	N/A	N/A	N/A	N/A
Cameron ES		X				47,930	$4,361,630.00	$4,361,630.00	$1,965,000.00	$5,384.00	393
Cameron HS		X				47,129	$4,288,739.00	$4,288,739.00	$1,875,000.00	$5,137.00	375
Cameron Public Library				X		1,100	$96,800.00	$151,168.00	$20,000.00	$55.00	N/A
Cameron VFD	X					1,400	$120,000.00	$1,000,000.00	$365,000.00	$1,000.00	25
Center McMechen ES	X					26,955	$2,452,905.00	$2,452,905.00	$1,185,000.00	$3,247.00	237
Central ES		X				32,543	$2,961,413.00	$2,961,413.00	$835,000.00	$2,288.00	167
Certainteed Gypsum			X			N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
CII Carbon			X			N/A	N/A	N/A	N/A	N/A	N/A
Consolidation Coal Company			X			N/A	N/A	N/A	N/A	N/A	N/A
Dallas VFD	X					1,800	$158,400.00	$500,000.00	$438,000.00	$1,200.00	15
Ferrell-Holt House					X	N/A	N/A	N/A	N/A	N/A	N/A
Fish Creek VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Fork Ridge VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
General Hydrogen			X			1,040	$1,000,000.00	$20,000,000.00	$7,300,000.00	$20,000.00	8
Glen Dale ES		X				25,504	$2,320,864.00	$2,320,864.00	$1,185,000.00	$3,247.00	237
Glen Dale City Hall	X					1,800	$234,000.00	$200,000.00	$175,000.00	$479.00	4
Glen Dale VFD	X					1,800	$158,400.00	$750,000.00	$438,000.00	$1,200.00	19
Glendale Airport			X			2,600	$10,000,000.00	N/A	N/A	N/A	N/A
Grave Creek Mound					X	28,646	$2,000,000.00	N/A	$1,825,000.00	$5,000.00	6
John Marshall HS		X				253,918	$23,106,538.00	$23,106,538.00	$6,790,000.00	$18,603.00	1358
Kammer Plant			X			N/A	N/A	N/A	N/A	N/A	N/A
Limestone ES		X				17,552	$1,597,232.00	$1,597,232.00	$940,000.00	$2,575.00	188
Limestone VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Marshal County Airport			X			3,300	$16,500,000.00	N/A	N/A	N/A	N/A
Marshall County Co-Op Inc.			X			2,000	$138,000.00	$50,000.00	$182,500.00	$500.00	N/A
Marshall County Courthouse Complex	X					N/A	N/A	N/A	N/A	N/A	N/A
McMechen City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
McMechen Lockmaster Houses					X	N/A	N/A	N/A	N/A	N/A	N/A
McMechen VFD	X					1,200	$105,000.00	$750,000.00	$365,000.00	$1,000.00	15
McNinch ES		X				50,939	$4,635,449.00	$4,635,449.00	$2,000,000.00	$5,479.00	400

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
Mentor Management			X			N/A	N/A	N/A	N/A	N/A	N/A
Mitchell Plant			X			N/A	N/A	N/A	N/A	N/A	N/A
Moundsville Christian School		X				1,500	$136,500.00	$136,500.00	$70,000.00	$192.00	14
Moundsville City FD	X					6,525	$848,250.00	$1,000,000.00	$1,350,000.00	$3,699.00	47
Moundsville City Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Moundsville Commercial Historic District					X	N/A	N/A	N/A	N/A	N/A	N/A
Moundsville Daily Echo			X			9,000	$621,000.00	$200,000.00	$1,825,000.00	$5,000.00	7
Moundsville MS		X				81,663	$7,431,333.00	$7,431,333.00	$2,250,000.00	$6,164.00	450
Moundsville Police Dept.	X					800	$104,000.00	$450,000.00	$500,000.00	$1,370.00	18
Moundsville Public Library				X		6,000	$814,817.00	$923,954.00	$2,500.00	$68.00	3
Moundsville Sewage Plant	X					12,000	$7,000,000.00	$2,000,000.00	$1,183,396.00	$3,242.00	11
Moundsville State Police	X					2,800	$300,000.00	$250,000.00	$320,000.00	$877.00	12
Moundsville VFD	X					2,000	$176,000.00	$1,000,000.00	$471,274.00	$1,291.00	4
North American Galvanizing			X			N/A	N/A	N/A	N/A	N/A	N/A
Our Lady of Peace School	X					16,484	$1,500,000.00	$1,500,000.00	$1,155,000.00	$3,164.00	231
PPG			X			N/A	N/A	N/A	N/A	N/A	N/A
Railroads	X					969,422	$17,916,902.00	N/A	N/A	N/A	N/A
Residential				X		N/A	$1,004,272,042.00	$0.00	$0.00	$0.00	32,766
Reynolds Memorial Hospital	X					213,192	$30,912,800.00	$22,000,000.00	$30,000,000.00	$82,192.00	350

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
	X	X	X	X	X						
Roads	X					412,303	$2,491,218,000.00	N/A	N/A	N/A	N/A
Roberts Ridge VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Saint Joseph VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Sand Hill ES		X				8,734	$794,794.00	$794,794.00	$325,000.00	$890.00	65
Sand Hill Library				X		1,200	$10,560.00	$25,000.00	$0.00	$0.00	1
Sherrard ES		X				277,714	$2,521,974.00	$2,521,974.00	$1,600,000.00	$4,384.00	320
Sherrard MS		X				61,860	$5,629,260.00	$5,629,260.00	$1,490,000.00	$4,082.00	298
Sherrard VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
St. Francis Xavier School		X				22,000	$2,002,000.00	$2,002,000.00	$515,000.00	$1,411.00	103
Sts. James & John School		X				17,500	$1,592,500.00	$1,592,500.00	$30,000.00	$822.00	60
Teletech Customer Care			X			N/A	N/A	N/A	N/A	N/A	N/A
Upper Grave No. 1	X					111,052	$15,680,500.00	N/A	N/A	N/A	N/A
Wal Mart			X			N/A	N/A	N/A	N/A	N/A	N/A
Warren Distribution			X			N/A	N/A	N/A	N/A	N/A	N/A
Washington Lands ES		X				58,116	$5,288,556.00	$5,288,556.00	$1,820,000.00	$4,986.00	364
Washington Lands VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
West Virginia State Penitentiary					X	N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Creek No. 18	X					329,649	$46,546,400.00	N/A	N/A	N/A	N/A
Wheeling Creek No. 23	X					361,196	$51,000,800.00	N/A	N/A	N/A	N/A
Wheeling Creek No. 25	X					459,086	$64,850,000.00	N/A	N/A	N/A	N/A
Wheeling Creek No. 3	X					652,257	$75,451,000.00	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
Allister Ridge (Radio Transmitter)			X			N/A	150,000	N/A	N/A	N/A	N/A
Arrow Concrete	X					14,500	$1,000,000.00	$800,000.00	$1,095,000.00	$3,000.00	10
Coen, Mike Logging	X					N/A	N/A	N/A	N/A	N/A	N/A
Conner Run Flyash Dam		X				320,932	$14,441,900.00	N/A	N/A	N/A	N/A
Wetzel County Courthouse						N/A	N/A	N/A	N/A	N/A	N/A
Dallison Logging Inc.	X					14,500	$1,000,000.00	$800,000.00	$1,095,000.00	$3,000.00	10
Dallison Lumber Inc.					X	4,350	$3,000,000.00	$1,500,000.00	$5,475,000.00	$15,000.00	N/A
Fish Creek Covered Bridge	X					N/A	N/A	N/A	N/A	N/A	N/A
Folsom VFD	X					48,000	$624,000.00	$1,000,000.00	$100,000.00	$270.00	14
Grandview VFD		X				N/A	N/A	N/A	N/A	N/A	N/A
Hannibal Locks and Dam	X					33,750	$66,750,000.00	N/A	N/A	N/A	N/A
Hasting By-Prodcuts (CNG Trans Corp)		X				N/A	$11,785,200.00	N/A	N/A	N/A	N/A
Hastings Extraction		X				750	$50,000.00	$200,000.00	$730,000.00	$2,000.00	1
Hundred FD	X					N/A	N/A	N/A	N/A	N/A	N/A
Hundred HS	X					86,000	$7,826,000.00	$7,826,000.00	$615,000.00	$1,685.00	123
Hundred Public Library					X	600	$528,000.00	$15,000.00	$1,825.00	$5.00	3
Hundred Senior Building		X				3,000	$75,000.00	$50,000.00	N/A	N/A	N/A
Jacksonburg VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Jail & Wardens Building	X					8,860	$1,249,446,000.00	$229,520.00	N/A	N/A	N/A
JP Productions			X			750	$50,000.00	$50,000.00	$365,000.00	$1,000.00	1
Lanam Foundry Inc.		X				12,900	$890,100.00	$1,500,000.00	$3,650,000.00	$10,000.00	15

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
	X	X	X	X	X						
Lewis Wetzel Nursing Home	X					16,884	$658,823.00	$500,000.00	N/A	N/A	N/A
Long Drain ES		X				42,249	$3,844,659.00	$3,844,659.00	$1,725,000.00	N/A	N/A
Magnolia HS		X				54,747	$4,981,977.00	$4,981,977.00	$2,680,000.00	$7,343.00	536
Marble King Inc.					X	17,400	$1,200,000.00	$1,000,000.00	$1,825,000.00	$5,000.00	32
McNeely Machine Works Inc.		X				3,600	$248,400.00	$200,000.00	$292,000.00	$800.00	6
Mobley (Equitable Gas Co.)		X	X			N/A	N/A	N/A	N/A	N/A	N/A
Morris Logging		X				N/A	N/A	N/A	N/A	N/A	N/A
Mountain Craft Shop			X			14,500	$1,000,000.00	$100,000,000.00	$3,650,000.00	$10,000.00	50
New Martinsville Airport	X					1,200	$175,000.00	$325,000.00	$100,000.00	$274.00	6
New Martinsville Downtown Historic District					X	N/A	N/A	N/A	N/A	N/A	N/A
New Martinsville ES			X			127,800	$11,629,800.00	$11,629,800.00	$5,175,000.00	$14,178.00	345
New Martinsville FD			X			6,800	$884,000.00	$1,500,000.00	$150,000.00	$400.00	25
New Martinsville Health Center	X		X			N/A	N/A	N/A	N/A	N/A	N/A
New Martinsville Police Department					X	N/A	N/A	N/A	N/A	N/A	N/A
New Martinsville Public Library		X				9,200	$835,000.00	$25,000.00	$1,825.00	$5.00	3
North Street Historic District			X			N/A	N/A	N/A	N/A	N/A	N/A
Northern West Virginia Community College					X	N/A	N/A	N/A	N/A	N/A	N/A
Optiques Ltd.			X			N/A	N/A	N/A	N/A	N/A	N/A
Paden City ES	X					31,320	$2,850,120.00	$2,850,120.00	$1,175,000.00	$3,220.00	235
Paden City HS	X					50,452	$4,591,132.00	$4,591,132.00	$1,010,000.00	$2,767.00	202

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
Paden City Police Department			X			2,400	$170,000.00	$80,000.00	$4,400,000.00	$12,054.00	30
Paden City Public Library		X				2,500	$227,500.00	$75,000.00	$27,375.00	$75.00	2
Paden City VFD			X			N/A	N/A	N/A	N/A	N/A	N/A
Pine Grove Health Center	X					N/A	N/A	N/A	N/A	N/A	N/A
Pine Grove Public Library	X					N/A	N/A	N/A	N/A	N/A	N/A
Pine Grove VFD		X				N/A	N/A	N/A	N/A	N/A	N/A
Post Office (New Martinsville)	X	X	X			N/A	N/A	N/A	N/A	N/A	N/A
Post Office (Paden City)		X				1,300	$60,000.00	$60,000.00	$438,000.00	$1,200.00	7
Post Office (Proctor)	X					3,105	$30,000.00	$50,000.00	$547,500.00	$1,500.00	6
PW Johnson Memorial Airport	X					12,500	$600,000.00	$250,000.00	N/A	N/A	4
RCS Printing Inc.			X			10,000	$690,000.00	$70,000.00	$292,000.00	$800.00	6
Reader FD	X					N/A	N/A	N/A	N/A	N/A	N/A
Sheriff's Department	X					N/A	N/A	N/A	N/A	N/A	N/A
Short Line ES		X				54,756	$4,982,796.00	$4,982,796.00	$28,600,007,835.00	$7,835.00	174
Silver Hill VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Smithfield VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Sprouse Bulding Products			X			N/A	N/A	N/A	N/A	N/A	N/A
State Police Dep. (Hundred)	X					N/A	N/A	N/A	N/A	N/A	N/A
State Police Dep. New Martinsville	X					N/A	N/A	N/A	N/A	N/A	N/A
Ten A Coal Co.			X			N/A	N/A	N/A	N/A	N/A	N/A
Valley HS		X				70,037	$6,373,367.00	$6,373,367.00	$1,050,000.00	$2,877.00	210

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
Victory A Columbia Gas Tans Cor)			X			N/A	N/A	N/A	N/A	N/A	N/A
War Memorial Buliding					X	8,783	$499,758.00	$2,800.00	N/A	N/A	N/A
Wastewater Treatment Plant (South)	X					18,312	$2,158,096.00	$225,350.00	N/A	N/A	N/A
Wastewater Treatment Plant Paden City	X					N/A	N/A	N/A	N/A	N/A	N/A
Wastewater Treatment Plant Pine Grove	X					N/A	N/A	N/A	N/A	N/A	N/A
Water Treatment Plant New Martinsville	X					N/A	N/A	N/A	N/A	N/A	N/A
Water Treatment Plant Paden City	X					N/A	N/A	N/A	N/A	N/A	N/A
Wetzel Co. 4H Camp		X				13,700	$823,979.00	$57,600.00	N/A	N/A	N/A
Wetzel County Center for Families		X				30,400	$2,766,400.00	$2,766,400.00	$870,000.00	$2,380.00	174
Wetzel County Hospital	X					62,300	$9,468,500.00	$14,202,750.00	$16,980,000.00	$46,500.00	250
Wetzel Publishing Co.			X			40,000	$400,000.00	$200,000.00	$730,000.00	$2,000.00	
Wileyville VFD	X					N/A	N/A	N/A	N/A	N/A	N/A
Wissmach, Paul Glass Co. Inc.					X	1,450	$100,000.00	$500,000.00	$3,650,000.00	$10,000.00	25
Wheeling-Ohio County City-County Building	X					N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility X	Vulnerable Populations X	Economic Assets X	Special Considerations X	Historic/Other Considerations X	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
Triadelphia Town Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Clearview Village Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Bethlehem Village Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Valley Grove Village Hall	X					N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Hospital	X					N/A	N/A	N/A	N/A	N/A	N/A
Ohio Valley Medical Center	X					N/A	N/A	N/A	N/A	N/A	N/A
Cabella's			X			N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Downs			X			N/A	N/A	N/A	N/A	N/A	N/A
Wesbanco Arena				X		N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Jesuit University		X				N/A	N/A	N/A	N/A	N/A	N/A
West Liberty University		X				N/A	N/A	N/A	N/A	N/A	N/A
Bethlehem ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Elm Grove ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Madison ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Middle Creek ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Ritchie ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Steenrod ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Warwood School		X				N/A	N/A	N/A	N/A	N/A	N/A
West Liberty ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Woodsdale ES		X				N/A	N/A	N/A	N/A	N/A	N/A
Bridge Street MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Triadelphia MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Warwood MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling MS		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Park HS		X				N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
	X	X	X	X	X						
Wheeling Central Catholic HS		X				N/A	N/A	N/A	N/A	N/A	N/A
Linsley School		X				N/A	N/A	N/A	N/A	N/A	N/A
St. Michael Church School		X				N/A	N/A	N/A	N/A	N/A	N/A
St. Vincent De Paul School		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Country Day School		X				N/A	N/A	N/A	N/A	N/A	N/A
Speiro Academy		X				N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Water Plant	X					N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Sewer Plant	X					N/A	N/A	N/A	N/A	N/A	N/A
Elmhurst		X				N/A	N/A	N/A	N/A	N/A	N/A
Good Sherpherd		X				N/A	N/A	N/A	N/A	N/A	N/A
Guardian Elder Care		X				N/A	N/A	N/A	N/A	N/A	N/A
Beagle Hotel					X	N/A	N/A	N/A	N/A	N/A	N/A
Carter Farm					X	N/A	N/A	N/A	N/A	N/A	N/A
Cathedral Parish					X	N/A	N/A	N/A	N/A	N/A	N/A
Center Wheeling Market					X	N/A	N/A	N/A	N/A	N/A	N/A
Edemar					X	N/A	N/A	N/A	N/A	N/A	N/A
Elm Grove Stone Arch Bridge					X	N/A	N/A	N/A	N/A	N/A	N/A
Elm Hill					X	N/A	N/A	N/A	N/A	N/A	N/A
Feay Inn					X	N/A	N/A	N/A	N/A	N/A	N/A
Fischer-Lasch Farmhouse					X	N/A	N/A	N/A	N/A	N/A	N/A
Good, L.S. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Franzheim House					X	N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
	X	X	X	X	X						
Hazlett, Robert W. House					X	N/A	N/A	N/A	N/A	N/A	N/A
La Belle Iron Works					X	N/A	N/A	N/A	N/A	N/A	N/A
Lang Hess House					X	N/A	N/A	N/A	N/A	N/A	N/A
List, Henry K. House					X	N/A	N/A	N/A	N/A	N/A	N/A
McKinley, Johnson, Camden House					X	N/A	N/A	N/A	N/A	N/A	N/A
McLure, John House					X	N/A	N/A	N/A	N/A	N/A	N/A
Mount de Chantel Visitation Academy					X	N/A	N/A	N/A	N/A	N/A	N/A
Mount Saint Joseph					X	N/A	N/A	N/A	N/A	N/A	N/A
Ogden, H.C. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Olgebay Mansion Museum				X	X	N/A	N/A	N/A	N/A	N/A	N/A
Russell, Charles W. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Shaw Hall (WLSU)					X	N/A	N/A	N/A	N/A	N/A	N/A
Steward, David Farm					X	N/A	N/A	N/A	N/A	N/A	N/A
Stone Tavern at Rodney's Point					X	N/A	N/A	N/A	N/A	N/A	N/A
Tiernan, William M. House					X	N/A	N/A	N/A	N/A	N/A	N/A
Warwood Fire Station					X	N/A	N/A	N/A	N/A	N/A	N/A
West Liberty Presbeterian Church					X	N/A	N/A	N/A	N/A	N/A	N/A
WV Independence Hall					X	N/A	N/A	N/A	N/A	N/A	N/A

Name or Description of Asset	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Bldg. (sq. ft.)	Replacement Value ($)	Contents Value ($)	Function Use or Value ($)	Displacement Cost ($)	Occupancy or Capacity (#)
	X	X	X	X	X						
Wheeling B&O Railroad Station					X	N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Country Club					X	N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Suspension Bridge					X	N/A	N/A	N/A	N/A	N/A	N/A
Pike Island Locks and Dam				X		N/A	N/A	N/A	N/A	N/A	N/A
Wheeling Tunnel				X		N/A	N/A	N/A	N/A	N/A	N/A
Woodridge					X	N/A	N/A	N/A	N/A	N/A	N/A
Woods, Robert C. House					X	N/A	N/A	N/A	N/A	N/A	N/A

2.2 HAZARD PROFILES

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

The section above identifies which hazards affect the planning area, but it does not explain *how* these hazards affect it. To do so, "profiles" have been developed for each hazard identified in Section 2.1. The profile describes how each hazard manifests itself in each of the participating.

Each of the 12 profiles below contains estimated losses as a result of the hazard being profiled. All loss estimates were calculated in the same manner, which is as follows. See Appendix 2 below for copies of the applicable worksheets from each county.

For Wetzel County, Worksheet #3a from FEMA 386-2, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*, contained space for the total number of structures and the total value of structures. For each (the number and the value), a percentage in hazard-prone areas is identified. The values corresponding to the percentage in hazard areas correspond to the loss estimates for each category: residential, commercial, industrial, agricultural, religious/non-profit, government, education, and utilities. Worksheet #4 from FEMA 38602, *State and Local Mitigation Planning How-To Guide: Understanding Your Risks*, was utilized for Marshall County. Data from historical hazard events and from county assessor data were used for Ohio County.

Historical hazard event research often contains estimates of losses in a variety of categories, some of which correspond with the categories used in this plan; consequently, historical data contributed heavily to the process of determining potential damage percentages. During the hazard identification research for this project, planners noted loss totals from large incidents. Dollar amounts computed on Worksheets #3a and #4 are compared to those from historical events.

2.2.1: Dam Failure

A dam failure is when downstream flooding occurs as the result of the complete or partial inundation of an impoundment.

RESEARCH SOURCES

- WV Department of Environmental Protection (WVDEP) Dam Safety
- Interviews with Local Officials
- Internet Research (http://itouchmap.com)

Period of Occurrence:	At any time
Number of Events to Date (1950-2010):	0
Probability of Event:	Infrequent – Dams that fail typically have some deficiency that causes the failure that should be detected by regular inspections and subsequently repaired. Heavy rains or moderate earthquakes may trigger a dam failure.
Warning Time:	Minimal – Depends on frequency of inspection
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	30 days or more

HAZARD EFFECTS

Dam failure is often the result of prolonged rainfall or flooding or, during prolonged dry periods, erosion. The primary hazard surrounding dam failure is the swift, unpredictable flooding of those areas immediately downstream. While general inundation areas can be determined, it is often impossible to know exactly how and where water held back by a dam will flow during a rapid failure of the dam.

Generally, there are three (3) types of dam failures: hydraulic, seepage, and structural.

- **Hydraulic Failure:** Hydraulic failures result from the uncontrolled flow of water over the dam, around and adjacent to the dam, and the erosive action of water on the dam and its foundation. Earthen dams are particularly vulnerable to hydraulic failure since earth erodes at relatively small velocities.

- **Seepage Failure:** All dams exhibit some seepage that must be controlled in velocity and amount. Seepage occurs both through the dam and the foundation. If uncontrolled, seepage can erode material from the foundation of an earthen dam to form a conduit through which water can pass. This passing of water often leads to a complete failure of the structure, known as piping.
- **Structural Failure:** Structural failures involve the rupture of the dam and/or its foundation. This is particularly a hazard for large dams and for dams built of low strength materials such as silts, slag, fly ash, etc.

Dam failures generally result from a complex interrelationship of several failure modes. Uncontrolled seepage may weaken the soils and lead to a structural failure. Structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may lead to structural or piping failures.

The WVDEP classifies dams into four (4) categories, including the following:

- **Class 1 (High Hazard):** Dams located where failure may cause loss of human life or major damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or where a high risk highway may be affected or damaged.
- **Class 2 (Significant Hazard):** Dams located where failure may cause minor damage to dwellings, commercial or industrial buildings, important public utilities, main railroads, or cause major damage to unoccupied buildings, or where a low risk highway may be affected or damaged. Loss of human life from a failure of a Class 2 dam is unlikely.
- **Class 3 (Low Hazard):** Dams located in rural or agricultural areas where failure may cause minor damage to non-residential and normally unoccupied buildings, or rural or agricultural land. Failure of a Class 3 dam would cause only a loss of the dam itself and a loss of property use, such as use of related roads, with little additional damage to adjacent property.
- **Class 4 (Negligible Hazard):** Dams where failure is expected to have no potential for loss of human life, no potential for property damage, and no potential for significant harm to the environment.

HAZARD PROFILE

There are numerous dam facilities throughout the region, some of which are more high profile than others. Given its location along the Ohio River, Ohio and Wetzel County contain US Army Corps of Engineers (USACE) lock and dam facilities. The Pike Island facility is located in Ohio County and the Hannibal facility is located in Wetzel County (in the northern parts of New Martinsville). Failures of these facilities would disrupt the region's economy as well as impact downstream communities via flooding.

Other dam facilities are not as high profile. Marshall County, for instance, contains nine (9) Class I dams (as categorized by the West Virginia Department of Environmental Protection [WVDEP]). Those facilities include:

Dam Name	Hazard Class	ID Number
Class Two	4	05117
Conner Run Dam	1	05102
Upper Grave #1	1	05104
Upper Grave #3	1	05105
Upper Grave #4	1	05106
Upper Grave #5	1	05107
Upper Grave #7	1	05109
Upper Grave #8	1	05110
Upper Grave #9	1	05111
Wheeling Creek Dam #3	1	05120
Wheeling Creek Dam #18	1	05112

Some of these are recognized hazards. According to an article in the *Charleston Gazette* (January 2009), the Conner Run Dam also contains a coal impoundment that is ranked as a "High Hazard" structure.

Dam facilities in the planning area also include flood control structures for the municipalities along the Ohio River. For instance, the City of Benwood is said to have a slightly higher risk of dam failure than other areas in Marshall County. Such a determination is made given the need to upgrade the city's floodwall. Portions of the city are located "below" the level of the Ohio River. If the dam were to fail, these portions would be severely impacted. This structure could be at risk from the cascading effects of other dam incidents. For example, a failure of the Pike Island facility upriver could raise water levels enough to cause failure of the Benwood structure.

Impoundments from the coal and natural gas industries are also a concern

throughout all three (3) counties in the planning area. These facilities sometimes impound huge quantities of water and are not strictly regulated. Further, many of these facilities are earthen structures, subject to erosion and a number of other natural phenomena. Fortunately, all three (3) emergency management agencies in the participating counties have worked diligently with mine and natural gas companies to strengthen preparedness. These efforts include the identification of large impoundments. In general, these facilities are located in the rural areas of the county, primarily on the eastern "side" of the planning area.

Additionally, the failure of dams outside of the region could impact participating counties. While there are USACE facilities in two (2) of the three (3) participating counties, it should be noted that there are also facilities located upstream from the planning area that could cause impacts. These facilities include: New Cumberland Locks and Dam (New Cumberland, WV), Montgomery Locks and Dam (Monaca, PA), Dashields Locks and Dam (Coraopolis, PA), and Emsworth Locks and Dam (Pittsburgh, PA).

While moderate dam failure hazards exist elsewhere in the planning area (as described above), the primary risk areas for dam failure are those along the Ohio Rivers, including the cities of Wheeling, McMechen, Benwood, Glen Dale, Moundsville, New Martinsville, and Paden City.

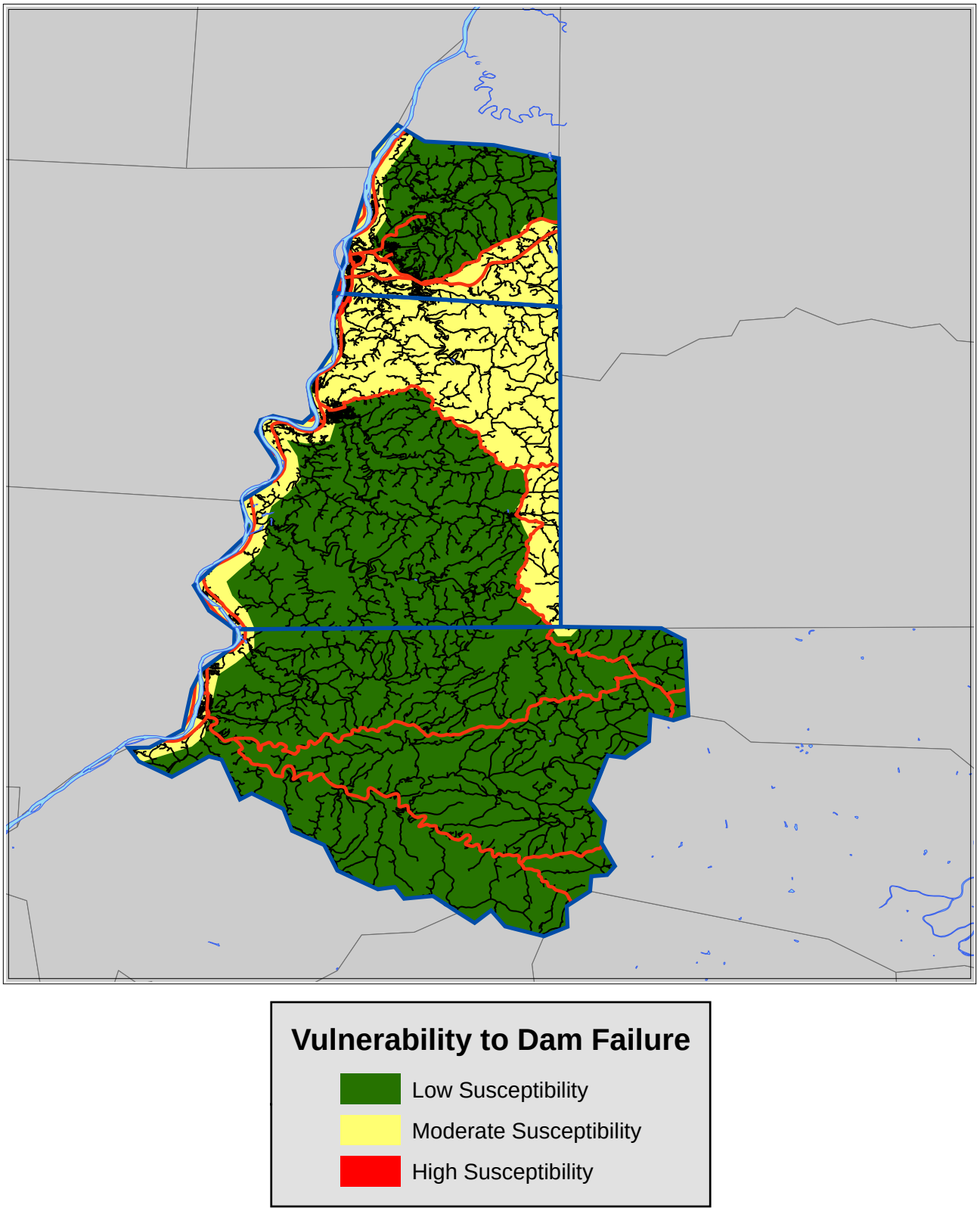
VULNERABLE STRUCTURES

Vulnerable Structures – Dam Failure								
County	*Residential*	*Commercial*	*Industrial*	*Agricultural*	*Religious*	*Government*	*Education*	*Utilities*
Marshall	10,000	250	30	300	55	35	20	5
Ohio	1,112	30	10	0	4	0	0	2
Wetzel	1,087	100	8	11	6	2	1	3
TOTALS	**12,199**	**380**	**48**	**311**	**65**	**37**	**21**	**10**

LOSS ESTIMATES

In an effort to assist jurisdictional understanding of risks and implementation of strategies, loss estimates were done for each county (see Appendix 2). By averaging

those estimates, this plan assumes a total, regional loss estimate *per dam failure incident* to be as much as $354,071,364. If all counties in the region were affected to the "worst case scenario" level, as much as $1,062,214,093 could be lost.


Vulnerability to Dam Failure
Low Susceptibility
Moderate Susceptibility
High Susceptibility

2.2.2: Drought

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

RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records

Period of Occurrence:	Summer months or extended periods with no precipitation
Number of Events to Date (1999 – 2010):	2
Probability of Event:	Infrequent – Small scale droughts occur frequently, but events causing major disruption and economic loss are infrequent
Warning Time:	Weeks
Potential Impacts:	Activities that rely heavily on high water usage may be impacted significantly, including agriculture, tourism, wildlife protection, municipal water usage, commerce, recreation, electric power generation, and water quality deterioration. Droughts can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Minimal risk of damage or cracking to structural foundations, due to soils.
Cause Injury or Death:	None
Potential Facility Shutdown:	None

HAZARD EFFECTS

Droughts are defined according to meteorological, hydrological, and agricultural criteria. Any significant deficit of precipitation is categorized as meteorological. Hydrological drought is apparent in noticeably reduced river and stream flow and critically low groundwater tables. Agricultural drought indicates an extended dry period that results in crop stress and harvest reduction.

The Palmer Drought Severity Index (PDSI) is widely used throughout the United States as a measure of drought and to track moisture conditions. The PDSI is defined as “an interval of time, generally in months or years in duration, during which the actual moisture supply at a given place rather consistently falls short of the climatically expected or climatically appropriate moisture supply”. The range of the PDSI is from -

4.0 (extremely dry) to +4.0 (excessively wet), with the central half (-2.0 to +2.0) representing normal or near normal conditions.

HAZARD PROFILE

A drought could have a significant impact to the economy of the planning area, as all counties are home to agricultural activity. Marshall County sees the most farming, with 752 working farms. While Ohio and Wetzel Counties see less agriculture, the numbers of farms (241 and 353 working farms respectively) show that drought could have an impact in those areas as well. The following table summarizes the number of farms in each county (*Source: 2007 Census of Agriculture*) as well as the market value of crops sold. As can be seen from the table, agriculture's contribution to the local economy increased in every Region 4 county between the years of 2002 and 2007.

Agriculture in Region 4 Counties

County	*Number of Farms*	*Market Value of Crops*	*Percent Change in Value from 2002*
Marshall	752	$3,035,000	+3
Ohio	241	$2,453,000	+41
Wetzel	353	$972,000	+35
TOTALS	**1,346**	**$6,460,000**	

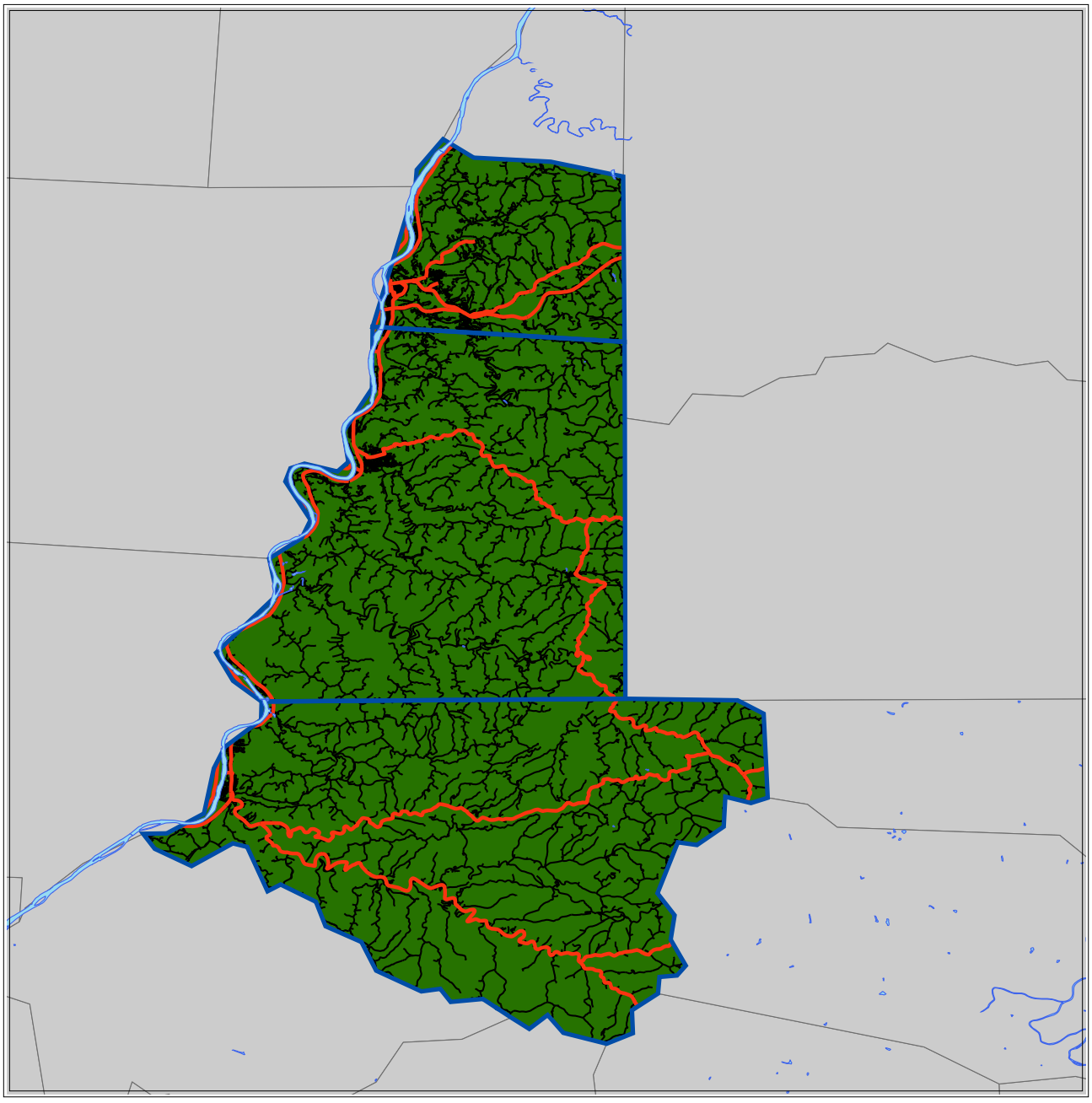
It is also significant to note the effect that a prolonged drought could have on the local water supply. Many residents, especially in Wetzel County, the eastern portions of Marshall County, and the north-eastern portions of Ohio County rely on private wells. Additionally, the Public Service Districts (PSDs) that serve the region could be impacted if their source water is diminished. Even those PSDs that purchase water from larger municipalities, such as Wheeling and Moundsville, could be impacted if those municipalities choose to "ration" water for the use of their primary service area.

As with many hazards, determining specific risk and vulnerability areas for drought is difficult. Drought is an "overall" hydrologic condition; that is, if one small area was without precipitation but a nearby area was not, it would be difficult to classify the entire area as "in a drought" due to the eventual seepage of said precipitation to the overall groundwater supply. Consequently, drought is said to affect the entire planning area evenly.

LOSS ESTIMATES

To show drought's impact on the region, though, the following chart depicts historical drought losses (*Source: NCDC Event Records*) as well as each county's estimate of Worst-Case Scenario (WCS) drought losses.

Historical Drought Occurrences and Losses		
County	*Number of Droughts*	*Total Drought Losses*
Marshall	2	N/A
Ohio	2	N/A
Wetzel	2	N/A
TOTALS	**2** (i.e., each represents the "same" drought incident)	**N/A**


Vulnerability to Drought
Low Susceptibility

2.2.3: Earthquake

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

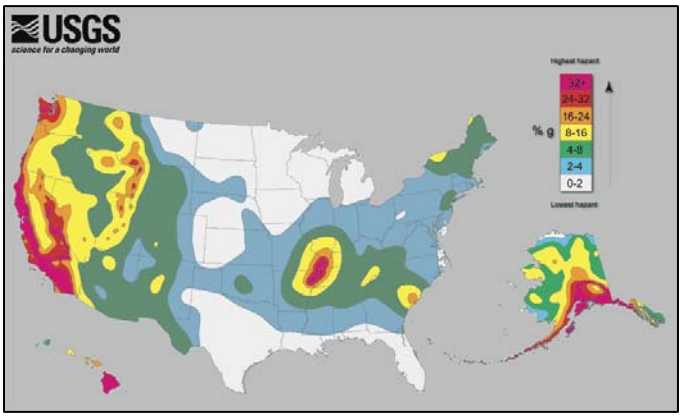
RESEARCH SOURCES

- US Geological Survey (USGS)
- Internet Research (http://www.earthquake.gov)

Period of Occurrence:	At any time
Number of Events to Date (1950 – 2010):	0 Epicenters
Probability of Event:	Infrequent
Warning Time:	None
Potential Impacts:	According to FEMA, areas with a PGA of 3 to 5 (0.03 to 0.05) will incur little to no damage with no function loss.
Cause Injury or Death:	Minor risk of injury
Potential Facility Shutdown:	None

HAZARD EFFECTS

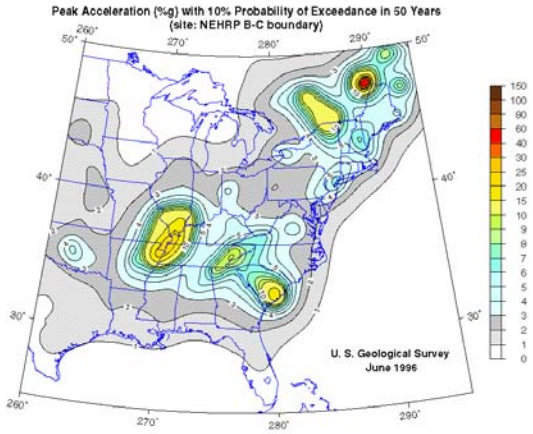
An earthquake's sudden release of stored energy may manifest itself by shaking or displacing the ground. The severity of these effects is dependent on the amount of energy released from the fault (or epicenter) of the quake. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Peak Ground Acceleration (PGA) is a measure of strength of ground movements. The PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity.



HAZARD PROFILE

The map provided by the USGS (shown below) depicts the PGA values for areas with a 10% chance of being exceeded over the next 50 years. West Virginia does have

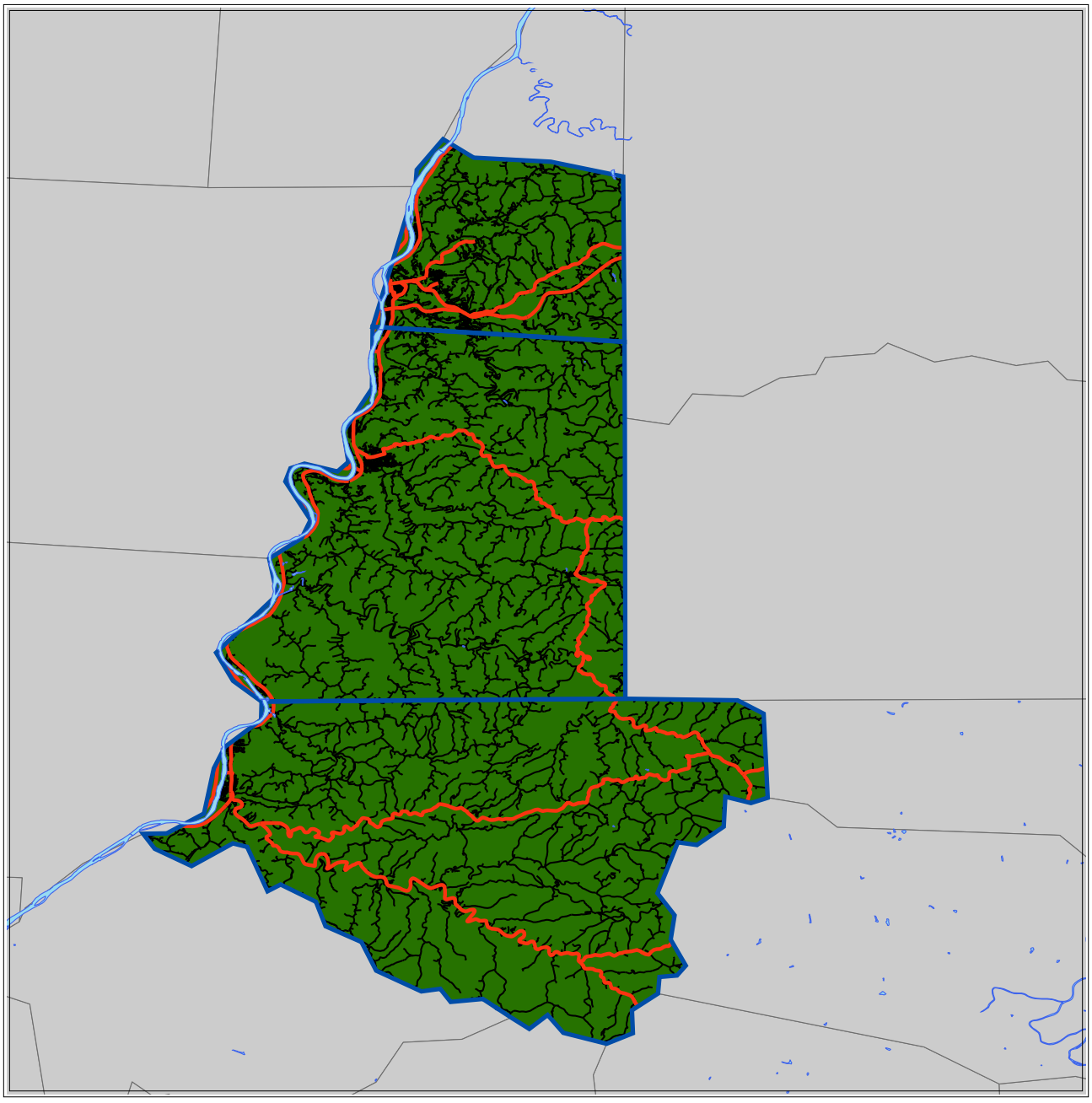
an earthquake risk as it is located in the 2 and 3%g area. All of the counties in the planning area are located in the lower risk areas of West Virginia. PGA values for each of the participating counties are as follows: Marshall (2), Ohio (2), and Wetzel (2). The Federal Emergency Management Agency (FEMA) states that areas with these PGAs are considered to have a low to moderate earthquake risk. As such, earthquake vulnerability is rated "low".



The Central and Southeast U.S. region covers a large area of relatively diffuse, low-rate seismicity. Principle areas of activity include the New Madrid Seismic Zone of the central Mississippi Valley and the Southern Appalachian Seismic Zone, extending from Virginia to Alabama. These areas of continued seismic activity increase the likelihood of the participating counties experiencing or being affected by an earthquake at some point in time even though there is no historical evidence of an earthquake occurring in the past. This assumption recently proved true, as a small earthquake recently occurred (early 2010) in northeastern Ohio that caused relatively significant perceived shaking in Wheeling.

LOSS ESTIMATES

The somewhat random historical occurrences of earthquakes would indicate that all structures throughout the planning area to be equally at risk from earthquakes. The severity of those earthquakes, though, is expected to be very low (according to FEMA's 386-2 document). Given this low severity, officials in all three (3) counties in the planning area estimated earthquake losses to be zero.



Vulnerability to Earthquake

Low Susceptibility

2.2.4: Flooding

Flooding is defined as a general temporary condition of partial or complete inundation of normally dry land areas from: overflow of inland or tidal waters; unusual and rapid accumulation of runoff of surface water from any source; mudflows; or the sudden collapse of shoreline land. A flash flood is a rapid flooding of low-lying areas, rivers, and streams that is caused by intense rainfall and is often associated with thunderstorms.

RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records
- Interviews with Local Officials

Period of Occurrence:	Greenbrier River – Primarily January through May (history shows incidents occurring year-round) Flash Flood – At any time depending on recent weather conditions Result of Dam Failure – At any time
Number of Events to Date (1985 – 2010):	128
Probability of Event:	Frequent
Warning Time:	River Flood – 3 to 5 days Flash Flood – Minutes to hours Dam Failure – None
Potential Impacts:	Impacts to human life, health, and public safety. Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, fire, damaged or destroyed critical facilities, and hazardous material releases. Can lead to economic losses such as unemployment, decreased land values, and agrobusiness losses. Floodwaters are a public safety issue due to contaminants and pollutants.
Cause Injury or Death:	Injury and moderate risk of death
Potential Facility Shutdown:	Days to Weeks

HAZARD EFFECTS

Flooding is arguably the highest priority hazard in all three (3) participating counties (as is the case in most of West Virginia). The counties are susceptible to flooding largely due to physical geography, which includes several rivers and creeks as well as varied topography. The worst floods usually occur when a river overflows its

banks. Periodic floods occur naturally on most rivers, forming an area known as a "floodplain". With enough rainfall, the rivers and creeks will rise up to and over the floodplain, thus causing a flood.

Flash flooding is also a common concern throughout the planning area. Historical occurrences can indicate where flash flooding will strike, but it is somewhat more unpredictable than riverine flooding. Flash flooding can be a result of an overloaded storm water management system, a washed out creek bed, water rushing off of a hill or mountain, etc. In some cases, flash floods result in great damage because areas that are not in identified floodplains (and are thus not prepared for potential flooding) are affected.

DESCRIPTION OF EXISTING FLOOD HAZARD AND IDENTIFICATION OF FLOOD RISK

All of the lower Northern Panhandle counties have an extensive history of flooding. The table below lists the number of flooding events faced in the counties since 1985 as well as the reported damage and any injury/death information.

Historical Flood Events in Region 4				
County	*Number of Events*	*Reported Damage*	*Injuries*	*Deaths*
Marshall	62	$13,900,000	0	1
Ohio	31	$53,500,000	0	0
Wetzel	35	$28,970,000	0	0
TOTALS	**128**	**$106,370,000**	**0**	**1**

To better profile the type of impact flooding events could have on the planning, Hazus data was generated for 10-year, 25-year, and 50-year flood events in each of the region's counties. (*NOTE: Mapping based on Hazus reports is included in Appendix 1.)

10-Year Flood Event

This type of flood event has a 10% chance of occurring in any single year (*Source: Wikipedia*). The following impacts, listed by county, are anticipated.

- Marshall
  - Areas with Potential Losses Approaching $5,000,000
    - Areas along Little Grave Creek in northern Moundsville
    - Along the riverfront in Glen Dale

        - Areas near Graysville
        - Areas along Wheeling Creek near Cricket Hollow

    - Areas with Potential Losses Between $1M and $5M
        - General area of Sherrard and eastward
        - General areas west of Grave Creek south of Moundsville
        - Areas near Lynn Camp

    - Areas with Potential Losses Between $500,000 and $1,000,000
        - General Fish Creek areas
        - General eastern Grave Creek areas
        - General Sand Hill area

- Ohio
    - Areas with Potential Losses Approaching $5,000,000
        - Southern portions of Wheeling Island

    - Areas with Potential Losses Between $1M and $5M
        - Northern portions of Wheeling Island
        - Areas along Wheeling Creek throughout Wheeling (especially in the eastern portions of the city)

    - Areas with Potential Losses Between $500,000 and $1,000,000
        - General Short Creek area
        - Areas east of Triadelphia

- Wetzel
    - Areas with Potential Losses Approaching $5,000,000
        - Riverfront from just south of New Martinsville through Paden City

    - Areas with Potential Losses Between $1M and $5M
        - Riverfront throughout New Martinsville
        - Central Pine Grove
        - Central Smithfield

- Areas with Potential Losses Between $500,000 and $1,000,000
  - Areas along Fishing Creek, just east and south of Pine Grove

25-Year Flood Event

Twenty-five (25)-year floods have a 4% chance of occurring in any single year. The following impacts, listed by county, are anticipated.

- Marshall
  - Areas with Potential Losses Approaching $5,000,000
    - Areas along Little Grave Creek in northern Moundsville
    - Along the riverfront in Glen Dale
    - Areas near Graysville
    - Areas along Wheeling Creek near Cricket Hollow
  - Areas with Potential Losses Between $1M and $5M
    - Areas in the Grave Creek area affected by a 10-year flood, plus a general trend of affected areas eastward
    - Areas in and near Sherrard
  - Areas with Potential Losses Between $500,000 and $1,000,000
    - General Fish Creek areas
    - General eastern Grave Creek areas
    - General Sand Hill area
- Ohio
  - Areas with Potential Losses Approaching $5,000,000
    - Southern portions of Wheeling Island
  - Areas with Potential Losses Between $1M and $5M
    - Northern portions of Wheeling Island
    - Areas along Wheeling Creek throughout Wheeling (especially in the eastern portions of the city)
  - Areas with Potential Losses Between $500,000 and $1,000,000

- General Short Creek area
- Areas east of Triadelphia

- Wetzel
  - Areas with Potential Losses Approaching $5,000,000
    - Riverfront from just south of New Martinsville through Paden City
  - Areas with Potential Losses Between $1M and $5M
    - Riverfront throughout New Martinsville
    - Central Pine Grove
    - Central Smithfield
    - Areas along Fishing Creek
  - Areas with Potential Losses Between $500,000 and $1,000,000
    - Areas along Fishing Creek, just east and south of Pine Grove
    - Areas near Reader

50-Year Flood Event

These types of events have a 2% chance of occurring in any single year. The following impacts, listed by county, are anticipated.

- Marshall
  - Areas with Potential Losses Approaching $5,000,000
    - Areas along Little Grave Creek in northern Moundsville
    - Along the riverfront in Glen Dale
    - Areas near Graysville
    - Areas along Wheeling Creek and Big Wheeling Creek Road
  - Areas with Potential Losses Between $1M and $5M
    - Areas in the Grave Creek area affected by a 25-year flood, plus a general trend of affected areas eastward
    - Areas in and near Sherrard
  - Areas with Potential Losses Between $500,000 and $1,000,000
    - General Fish Creek areas

- General eastern Grave Creek areas
- General Sand Hill area

- Ohio
  - Areas with Potential Losses Approaching $5,000,000
    - Southern portions of Wheeling Island
    - Northern portions of Wheeling Island
  - Areas with Potential Losses Between $1M and $5M
    - Areas along Wheeling Creek throughout Wheeling (especially in the eastern portions of the city)
  - Areas with Potential Losses Between $500,000 and $1,000,000
    - General Short Creek area
    - Areas east of Triadelphia
    - Warwood area

- Wetzel
  - Areas with Potential Losses Approaching $5,000,000
    - Riverfront from just south of New Martinsville through Paden City
  - Areas with Potential Losses Between $1M and $5M
    - Riverfront throughout New Martinsville
    - Central Pine Grove
    - Central Smithfield
    - Areas along Fishing Creek
  - Areas with Potential Losses Between $500,000 and $1,000,000
    - Areas along Fishing Creek, just east and south of Pine Grove
    - Areas near Reader
    - Areas along Little Fishing Creek

100-Year Flood Event

This type of event represents a flood with a 1% chance of being equaled or

exceeded in any single year (*Source: Wikipedia*). If an event, though, were to be classified as a 100-year flood in any county, it is likely that the event itself would be regional and affect, at least minimally, other nearby counties.

- Marshall
    - Areas with Potential Losses Approaching $5,000,000
        - Areas along Little Grave Creek in northern Moundsville
        - Along the riverfront in Glen Dale
        - Areas near Graysville
        - Areas along Wheeling Creek and Big Wheeling Creek Road
        - General areas west of Grave Creek south of Moundsville
    - Areas with Potential Losses Between $1M and $5M
        - Areas in and near Grave Creek
        - Areas in and near Sherrard
    - Areas with Potential Losses Between $500,000 and $1,000,000
        - General Fish Creek areas
        - General eastern Grave Creek areas
        - General Sand Hill area
- Ohio
    - Areas with Potential Losses Approaching $5,000,000
        - Southern portions of Wheeling Island
        - Northern portions of Wheeling Island
    - Areas with Potential Losses Between $1M and $5M
        - Areas along Wheeling Creek throughout Wheeling (especially in the eastern portions of the city)
        - Lower Wheeling Creek areas (just east of Bethlehem, near Elm Grove)
        - Portions of the northern Warwood area
    - Areas with Potential Losses Between $500,000 and $1,000,000
        - General Short Creek area

- Areas east of Triadelphia
- Warwood area

- Wetzel
  - Areas with Potential Losses Approaching $5,000,000
    - Riverfront from just south of New Martinsville through Paden City
  - Areas with Potential Losses Between $1M and $5M
    - Riverfront throughout New Martinsville
    - Central Pine Grove
    - Central Smithfield
    - Areas along Fishing Creek
  - Areas with Potential Losses Between $500,000 and $1,000,000
    - Areas along Fishing Creek, just east and south of Pine Grove
    - Areas near Reader
    - Areas along Little Fishing Creek
    - Areas near Hundred and Littleton

REPETITVE LOSS PROPERTIES

Several communities see repeated flooding problems. Some even contain a number of properties that have been flooded and repaired multiple times. These properties are referred to as “Repetitive Loss” (RL) properties. Actual RL listings are protected by privacy laws because of the presence of names, addresses, losses, etc. These properties, though, can be depicted in this document by type (i.e., single family, 2-4 family, etc.). To better illustrate areas with repeated flooding problems, the *general* areas where these properties are located is also listed.

- Benwood: 14 total properties (8 single family, 4 non-residential, and 2 2-4 family)
- Glen Dale: 3 single family properties
- Hundred: 1 non-residential property
- Marshall County: 28 total properties (24 single family, 3 non-residential, and 1 condo)
- McMechen: 1 single family property

- Moundsville: 11 total properties (6 single family, 2 non-residential, 1 condo, and 2 2-4 family)
- New Martinsville: 37 total properties (26 single family and 11 non-residential)
- Ohio County: 7 total properties (6 single family and 1 2-4 family)
- Pine Grove: 6 total properties (5 single family and 1 condo)
- Triadelphia: 2 single family properties
- Wetzel County: 60 total properties (45 single family, 13 non-residential, and 2 condo)
- Wheeling: 486 total properties (379 single family, 53 2-4 family, 2 condo, 43 non-residential, and 9 other residential)

NFIP COMPLIANCE

The following local governments in the planning area are participants in the National Flood Insurance Program (NFIP). (The date the jurisdiction joined the NFIP is included in parentheses.)

- City of Benwood (May, 1980)
- Village of Bethlehem (July, 2006)
- City of Cameron (September, 1986)
- Village of Clearview (July, 2006)
- City of Glen Dale (April, 1980)
- Town of Hundred (April, 1988)
- Marshall County (April, 1984)
- City of McMechen (April, 1980)
- City of Moundsville (May, 1980)
- City of New Martinsville (September, 1982)
- Ohio County (April, 1983)
- City of Paden City (March, 1989)
- Town of Pine Grove (April, 1988)
- Town of Smithfield (April, 1988)
- Town of Triadelphia (January, 1984)
- Village of Valley Grove (September, 1979)
- Town of West Liberty (July, 2006)
- Wetzel County (April, 1983)
- City of Wheeling (February, 1981)

Each jurisdiction has designated an “NFIP Coordinator”, sometimes referred to as the “Floodplain Manager”. This individual maintains the jurisdiction’s floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP). The operations of the floodplain offices throughout the planning area are similar from jurisdiction to jurisdiction (*Source:* Interviews with floodplain

managers). Generally, all provide three (3) basic services: floodplain identification, floodplain management, and outreach. It should also be noted that Ohio County's floodplain coordinator is a designee and is currently taking floodplain manager courses.

Floodplain Identification

Throughout the region, the floodplain managers are the primary local contact for floodplain mapping. In many cases, they are responsible for using these maps to determine whether structures or proposed structures/developments are either in or out of the floodplain. Floodplain managers can provide information as to the "zone" (e.g., A, AE, etc.) a proposed development is located. Zone designations can affect insurance policies and rates.

Floodplain managers work with surveyors and engineers to assist the public with elevation certificates. This assistance includes putting those in need in contact with appropriate surveyors, providing access to certain forms (e.g., letter of map amendment, etc.), etc. Floodplain managers may also serve as a liaison with the Federal Emergency Management Agency (FEMA) by collecting and submitting completed certificates.

Finally, on an as-needed basis, floodplain managers review updates to the flood maps themselves. Though all three (3) counties currently use D-FIRM data (i.e., their maps have been updated), this type of service is done to varying degrees throughout the planning area. As a follow-up to map review, floodplain managers work with their governing body to update the floodplain ordinance appropriately.

Floodplain Management

In many ways, "floodplain management" is difficult to define. All floodplain managers work closely with their governing bodies to ensure that the floodplain ordinance is current and viable. Floodplain managers are responsible for enforcing the floodplain ordinance (usually through the floodplain identification tasks discussed above). Floodplain managers also keep records of all maps and certificates for their jurisdictions.

The coordinators for the three (3) counties also often provide support to municipal floodplain coordinators. Floodplain coordinators often support each other with advice, technical assistance, quality control (i.e., a "second opinion"), etc. Further, many of the municipal jurisdictions throughout the region are small with part-time or volunteer government staff. County coordinators can support these efforts as well. The

municipalities themselves, though, are responsible for providing the "ultimate say" for cases within their jurisdiction.

Municipal floodplain management is also closely related to the building permitting process. Many municipal coordinators indicated that determining whether a proposed project was in the floodplain was a part of their approval process.

Outreach

Finally, the floodplain coordinators serve as the Points of Contact (POCs) for their jurisdiction's residents regarding floodplain regulations. All coordinators indicated that they maintain the appropriate forms, contact lists for local surveyors and engineers, the most recent version of Flood Insurance Rate Map (FIRM) or D-FIRM information, etc. Educating the community about the value of flood insurance also falls under this category.

VULNERABLE STRUCTURES

Vulnerable Structures – Flooding								
County	*Residential*	*Commercial*	*Industrial*	*Agricultural*	*Religious*	*Government*	*Education*	*Utilities*
Marshall	4,275	107	35	0	27	15	6	2
Ohio	1,334	717	20	24	8	0	1	14
Wetzel	919	16	13	38	8	0	4	2
TOTALS	**6,528**	**840**	**68**	**62**	**43**	**15**	**11**	**18**

LOSS ESTIMATES: See Hazus information above.

*NOTE: Detailed flood mapping for each county is maintained by each participating jurisdiction. Identification of floodplain areas on those maps is based on Digitial Flood Insurance Rate Map (D-FIRM) data produced by the National Flood Insurance Program NFIP. Additional resources, such as the West Virginia Flood Hazard Determination Tool (http://www.mapwv.gov/flood/) can also be used. Due to the variance in the mapping that is available throughout the region, the above sources are referenced into this document (rather than re-created in any way).

2.2.5: Hailstorm

Hail is a form of precipitation which occurs when freezing water in thunderstorm type clouds accumulates in layers around an icy core. When this event takes place, balls or irregular lumps of ice are created. On average, hail can be from 5mm to 50mm in diameter.

RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records

Period of Occurrence:	At any time
Number of Events to Date (1962 – 2010):	71
Probability of Event:	Likely – Usually associated with severe thunderstorms
Warning Time:	Minutes to hours
Potential Impacts:	Large hail can minimally damage property (facilities) as well as crops
Cause Injury or Death:	Injury
Potential Facility Shutdown:	Minimal

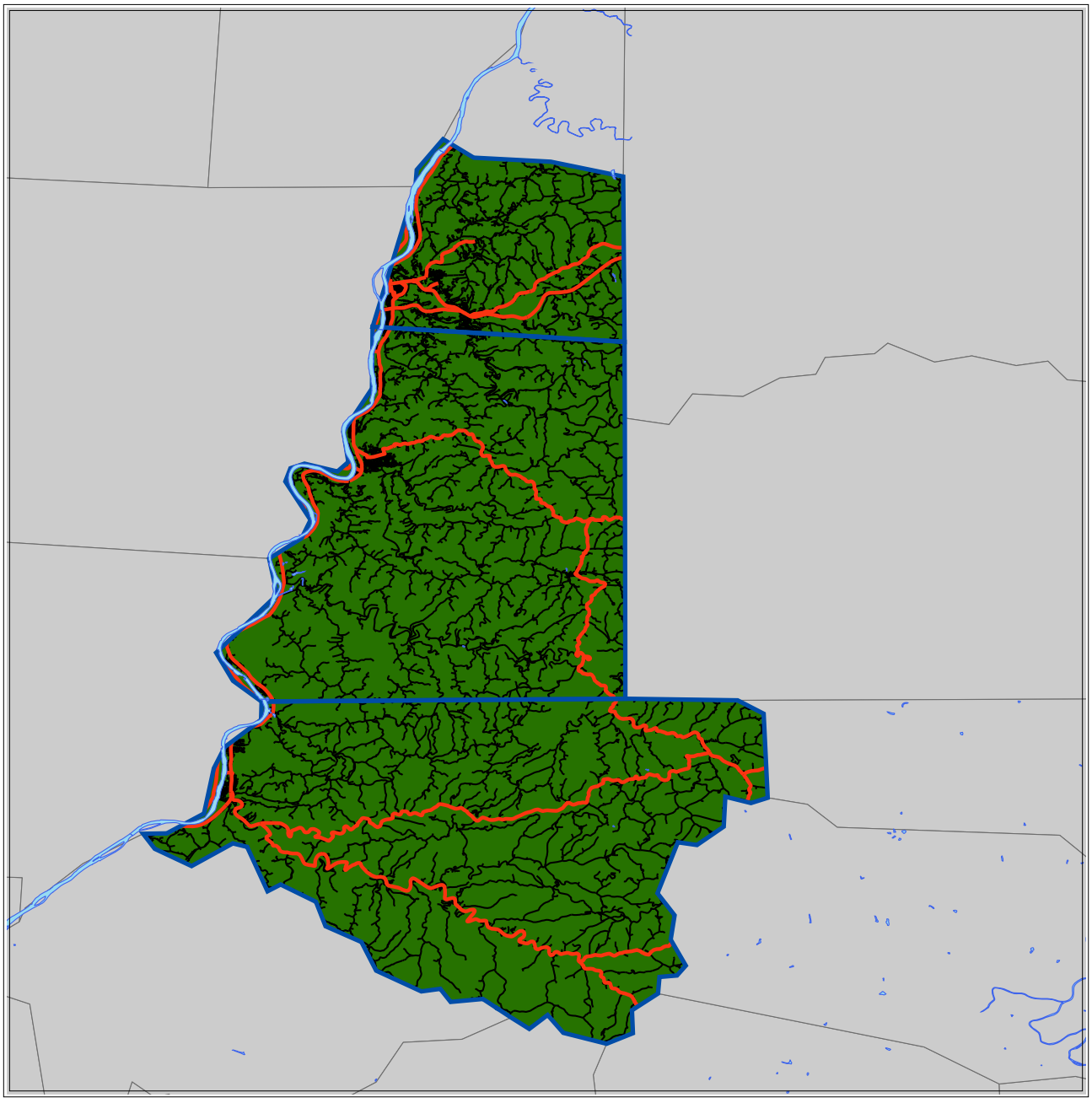
HAZARD EFFECTS

When hail occurs, it can cause damage by battering crops, structures, automobiles, and transportation systems. When hailstorms are large, especially when combined with high winds, damage can be somewhat extensive. Hailstorms are more common in elevated areas, such as the mountains, than tropical areas since locations such as mountains are closer to the bottom of thunderstorms. In mountainous areas, the falling hail has less time to melt before touching the ground. Marshall, Ohio, and Wetzel Counties are susceptible to hailstorms due to their location in the elevated portions of the lower Northern Panhandle of West Virginia.

Hail is a relatively minor natural hazard in all parts of the planning area. It has been included in this plan by virtue of frequent occurrences. All parts of the area are affected equally. Even with these frequent occurrences, losses are small, especially to critical facilities and other infrastructure. Much like minor thunderstorms, hailstorms rarely slow down the daily lives of the counties' residents. If their vehicles or homes are damaged, they usually claim those damages on their insurance policies or repair the damage themselves.

LOSS ESTIMATES

As a minor hazard, potential losses as a result of hail are small, even though all structures in the planning area can be said to be at risk of hail damage. The average losses per worst-case scenario hail event could total $147,758. If all counties were damaged to the “worst-case scenario” level, losses could be as much as $443,274. *NOTE: Loss estimates are listed at these levels because of the confusion usually results in damage from hailstorms (as directly from hail or as part of the thunderstorm producing hail).



Vulnerability to Hailstorm

Low Susceptibility

2.2.6: Hazardous Material Incident

A technological hazard refers to the origins of incidents that can arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials.

RESEARCH SOURCES

- *Marshall-Wetzel LEPC Commodity Flow Study* (CFS), 2009
- *Marshall-Wetzel Hazardous Materials Emergency Plan*, 2007
- *Marshall-Wetzel Vulnerability Assessment*, 2009
- Interviews with Local Officials

Period of Occurrence:	At any time
Number of Events to Date (2003 – 2010):	5
Probability of Event:	Infrequent
Warning Time:	None
Potential Impacts:	Potential loss of human life, economic loss, environmental damage
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks

HAZARD EFFECTS

The manufacture, storage, transportation, and use of hazardous materials can become a hazard if an accident occurs. Hazardous material incidents typically happen in one (1) of two (2) ways: fixed facility releases and transportation accidents. The major difference between the two is that it is reasonably possible to identify and prepare for a fixed facility incident because laws require those facilities to notify state and local authorities of what materials are being used, stored, and/or produced at that facility.

Transportation incidents are substantially more difficult for which to prepare, however, because it is difficult to determine what material(s) could be involved until the accident actually happens. Information is routinely compiled on the locations of facilities that store hazardous materials. Further, the US Department of Transportation (USDOT) estimates that the vast majority of hazardous material incidents occur during the

transport phase.

HAZARD PROFILE

All participating counties contain "covered facilities" that report the use and/or storage of hazardous materials to the appropriate county Local Emergency Planning Committee (LEPC). The following are approximate facility counts for each county (*Source: Local LEPCs*):

- Marshall: 13
- Ohio: 25
- Wetzel: 2

It could be easy to predict the location of fixed facility hazardous material incidents. The probability of such occurrences, though, is relatively low. Should an event occur, many facilities have internal response protocols to contain the incident.

Two (2) of the three (3) counties in the planning have recently completed commodity flow studies to analyze the transport of materials, primarily along highways. The area itself is traversed by three (3) major thoroughfares: SR (N/S), Interstate 79 (E/W), and Interstate 470 (E/W). Other routes, such as State Route (SR) 20, US 40, and US 250 also run through the area. All nine (9) of the USDOT's hazard classes were sighted along SR 2 in Marshall and Wetzel Counties; Ohio County officials indicate that all nine (9) have been regularly reported along I-70. The implication is that responders in the region must prepare for an incident involving any class of material.

Some predictions, though, can be made. Citing the recent flow studies, flammable liquids were the most frequently transported material, followed closely by flammable/non-flammable gases and corrosive materials. (*NOTE: Ohio County's most recent flow study – done in 2006 – confirms that Class III flammable liquids are also the most-frequently transported material on I-70.) Such statements are intuitive. For example, gasoline is a Class III flammable liquid. Propane and oxygen are Class II gases and sodium hydroxide and chlorine carry corrosive placards. These materials are commonly used in transportation, water treatment, home heating, etc.

The map below depicts high and moderate risk areas for transportation hazardous material incidents throughout the region. The red bands roughly follow the paths of SR 2 and Interstate 70 and represent high risk areas. Each red band is buffered by a yellow band that represents a moderate risk area.

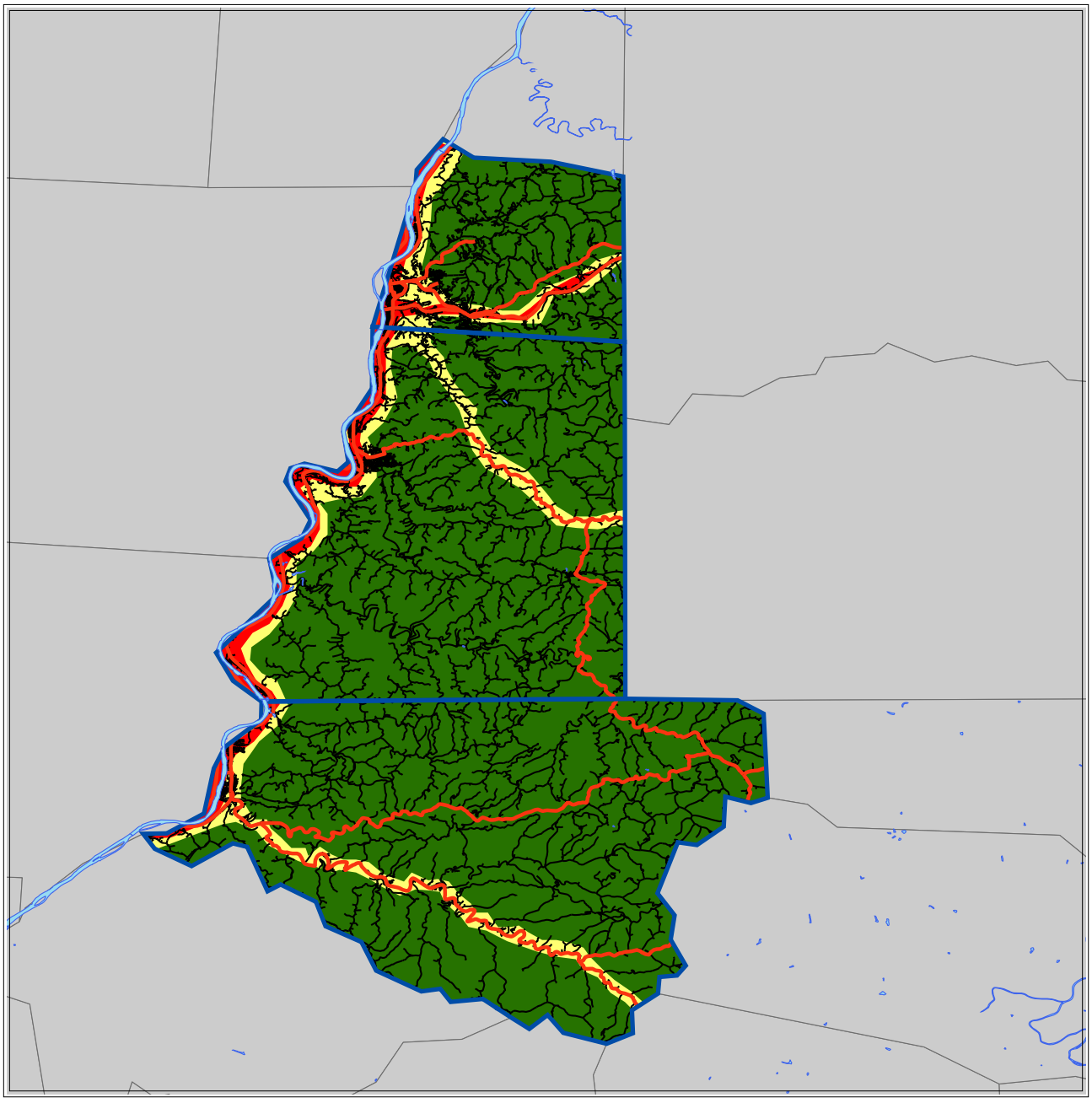
VULNERABLE STRUCTURES

Vulnerable Structures – Hazardous Material Incident								
County	*Residential*	*Commercial*	*Industrial*	*Agricultural*	*Religious*	*Government*	*Education*	*Utilities*
Marshall	10,000	300	110	100	12	20	8	5
Ohio	2,891	523	95	60	0	2	4	13
Wetzel	2,000	462	337	24	10	19	6	11
TOTALS	**14,891**	**1,285**	**542**	**184**	**22**	**40**	**18**	**29**

LOSS ESTIMATES

In general, due to the higher number of covered facilities and the presence of major thoroughfares, each county can be said to have a high risk in at least one (1) area. In an effort to assist jurisdictional understanding of risks and implementation of strategies, such estimates were done for each county; the following table reflects those efforts. These are Worst-Case Scenario (WCS) estimates and were organized by county because hazardous material incidents are site-specific hazards.

Estimated Hazardous Material Losses	
County	*Loss Estimate*
Marshall	$25,209,939
Ohio	$435,360,385
Wetzel	$272,130,718
TOTALS	**$732,701,042**


Vulnerability to Hazardous Materials
Low Susceptibility
Moderate Susceptibility
High Susceptibility

2.2.7: Land Subsidence

Land subsidence refers to any failures in the ground that cause collapses in the earth's surface.

RESEARCH SOURCES

- Interviews with Local Officials
- Internet Research (http://www.nationalatlas.gov)

Period of Occurrence:	At any time – Chance of occurrence increases following long periods of heavy rain, snowmelt, or near construction activity
Number of Events to Date (2003 – 2010):	1
Probability of Event:	Infrequent
Warning Time:	Weeks to months – Some instances of land subsidence can occur quickly without warning, but often in the context of other storm events.
Potential Impacts:	Economic losses such as decreased land values, agrobusiness losses, disruption of utility and transportation systems, and costs for any litigation. May cause geological movement, causing infrastructure damages ranging from minimal to severe.
Cause Injury or Death:	Injury
Potential Facility Shutdown:	Days to weeks

HAZARD EFFECTS

Land subsidence hazards include: landslides (a wide range of earth movement such as rock falls), debris flow (e.g., mudslides and avalanches), and expansive soils (which is the swelling and sinking of soil). Each of these hazards involves ground movement in or on the earth's surface. These hazards can be caused by natural processes such as the dissolving of limestone underground, earthquakes, or volcanic activity. Land subsidence hazards can also occur as a result of human actions such as the withdrawal of subsurface fluids or underground mining; unplanned commercial, residential or industrial developments; roadway construction; etc.

HAZARD PROFILE

All three (3) participating counties lie on a geological formation containing evaporate rock such as salt and gypsum (The map below demonstrates the presence of "evaporite rocks" in West Virginia and roughly throughout the Northern Panhandle.) Additionally, much of the area has been mined, which could lead to additional

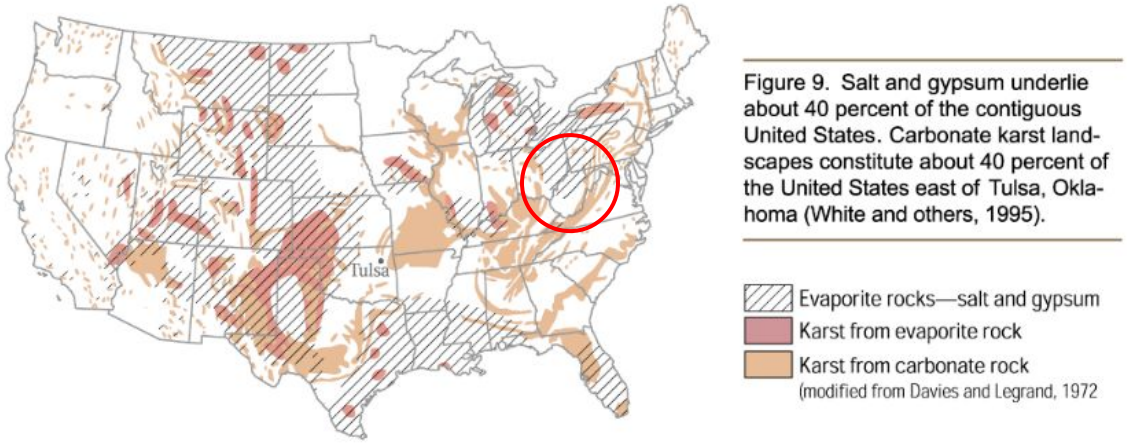


Figure 9. Salt and gypsum underlie about 40 percent of the contiguous United States. Carbonate karst landscapes constitute about 40 percent of the United States east of Tulsa, Oklahoma (White and others, 1995).

subsidence. As a result, the entire planning area appears susceptible to subsidence, but it should be noted that the type of subsidence could vary. According to nationalatlas.gov, sink holes and other subsidence are not predicted to be extensive in the areas of West Virginia containing these formations. The map above illustrates the areas corresponding to these different types of subsidence.

Fortunately, most participating counties have not reported significant numbers of historical land subsidence occurrences. Most slippage is a result of other hazards, such as heavy rains. Other instances of landslides result from construction activities. For example, Marshall County officials report a number of land subsidence problems along State Route (SR) 2 in an area known as "the Narrows".

As the mining and natural gas industries continue to develop throughout the planning area, subsidence occurrences could also increase. The heavy equipment associated with these industries could place a greater strain on roadways, especially in the more mountainous eastern portions of the planning area. Additionally, as noted above, underground mining could lead to subsidence over long periods of time.

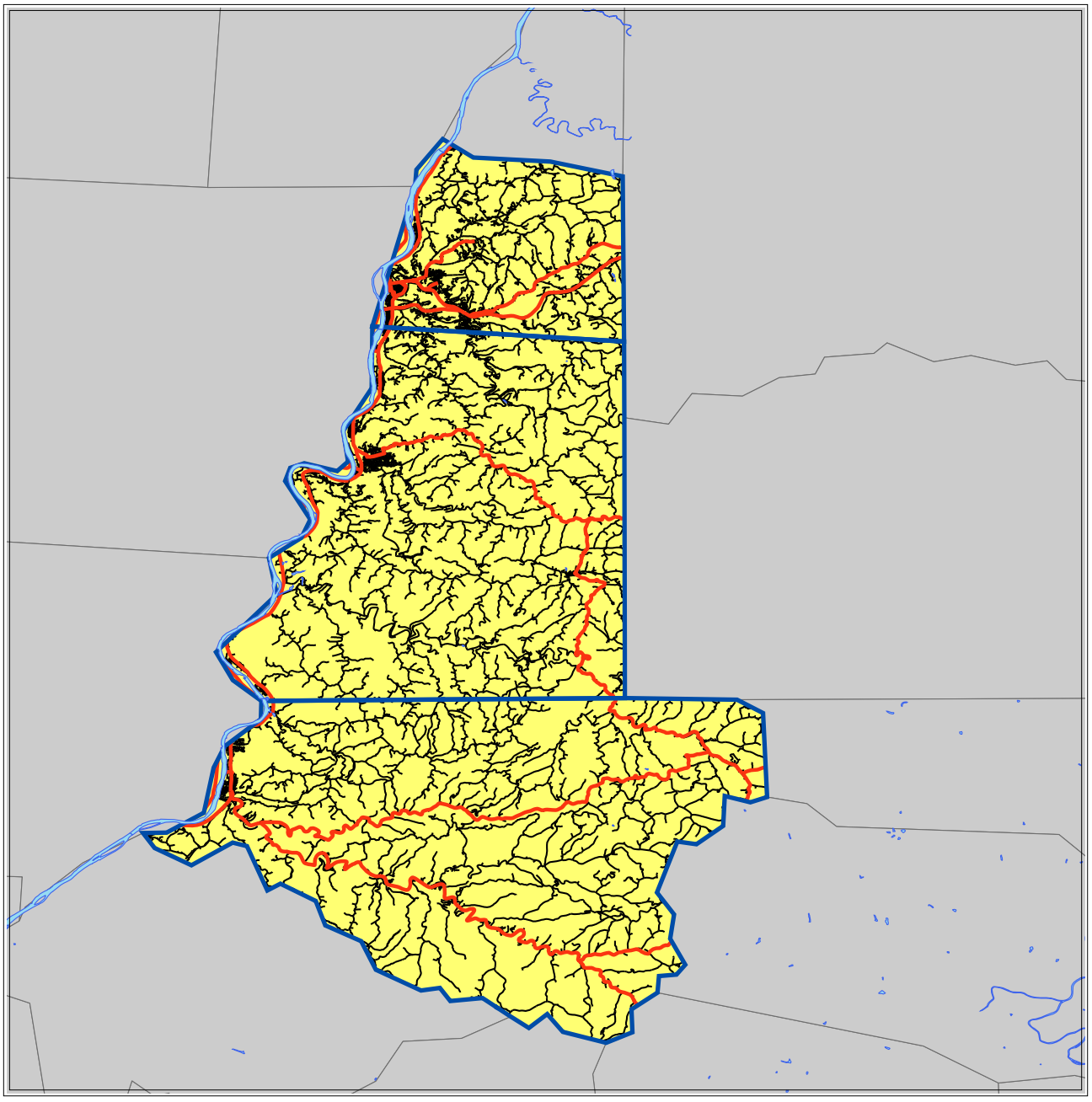
VULNERABLE STRUCTURES

Vulnerable Structures – Land Subsidence

County	*Residential*	*Commercial*	*Industrial*	*Agricultural*	*Religious*	*Government*	*Education*	*Utilities*
Marshall	4,561	175	36	350	30	16	7	2
Ohio	4,448	149	5	72	17	1	2	8
Wetzel	7,874	262	0	328	63	15	5	6
TOTALS	**16,883**	**586**	**41**	**750**	**110**	**32**	**14**	**16**

LOSS ESTIMATES

Land subsidence can be a gradually-occurring hazard or it can occur rapidly. In either case, repairing damages as a result of subsidence can be costly. Structural foundations can be damaged; transportation and other infrastructure can be damaged; etc. Consequently, subsidence-based loss estimates are somewhat high. The Worst-Case Scenario (WCS) average on a per county basis is $484,494,241. *NOTE: An area-wide estimate was not compiled since land subsidence is often considered a site-specific hazard.



Vulnerability to Land Subsidence

Moderate Susceptibility

2.2.8: Terrorism

Terrorism is the use of force or violence, including threats of force or violence, against persons or property in violation of the criminal laws of the United States for the purposes of intimidate, coercion, or ransom.

RESEARCH SOURCES

- Interviews with Local Officials

Period of Occurrence:	At any time
Number of Events to Date (2001 – 2010):	0
Probability of Event:	Infrequent
Warning Time:	Minimal – Depends on the presence of a threat
Potential Impacts:	Potential loss of human life, economic loss, environmental damage, disruption of lifeline facilities
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks or more

HAZARD EFFECTS

"Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail." (*Source: USDHS FEMA*)

NOTE: Throughout the remainder of this profile, terrorism will be discussed generally. This profile does not include any information on any threats that have been received, specific listings of potential targets in the region, etc.

HAZARD PROFILE

All of the counties in the planning area contain what could be considered "targets". In general, governmental, educational, and industrial facilities could be considered *targets*, but such a consideration usually has more to do with other circumstances surrounding the facility than the facility's identification as a governmental,

educational, or industrial facility. All three (3) counties contain significant targets due to the potential affect on infrastructure (both within and beyond the area), the population – either permanent or transient – that could be affected, the symbolic and/or historical influence of the site/facility, etc.

Terrorism is not always accomplished on a "grand scale", as is the case with international terrorists who are attempting to coerce the federal government. Such terrorism, while technically a hazard in throughout the Northern Panhandle, is more unlikely than what is known as "domestic terrorism". Domestic terrorism can involve disgruntled employees (in the case of large industrial plants), angry parents (at schools), upset citizens (at government facilities), etc. Domestic terrorists may often only intend to harm a single individual or a small group of individuals, but the threat of their actions can be highly disruptive. Historical acts of domestic terrorism include such incidents as the Columbine High School shooting and the bombing of the Murrah Federal Building in Oklahoma City.

A terrorist event would, at a minimum, cripple the planning area (as well as the entire state). The effects of a terrorist incident are not only monetary; they are often emotional and symbolic. The communities throughout the region are rural and small. Any mass loss of life would take an emotional toll on the affected and nearby communities. Recent technological hazard incidents in West Virginia (e.g. the Sago and Upper Big Branch mine disasters) have shown how these losses of life impact the entire state.

Symbolically, an implemented act of terrorist would erode the feeling of security that the Northern Panhandle counties enjoy. It would also likely result in a loss of faith in local decision makers and public safety officials. A loss of public support, especially in the public safety and emergency services sectors, could affect agency operating budgets, personnel recruitment, etc., thus adversely affecting the level of service that could be provided in subsequent years.

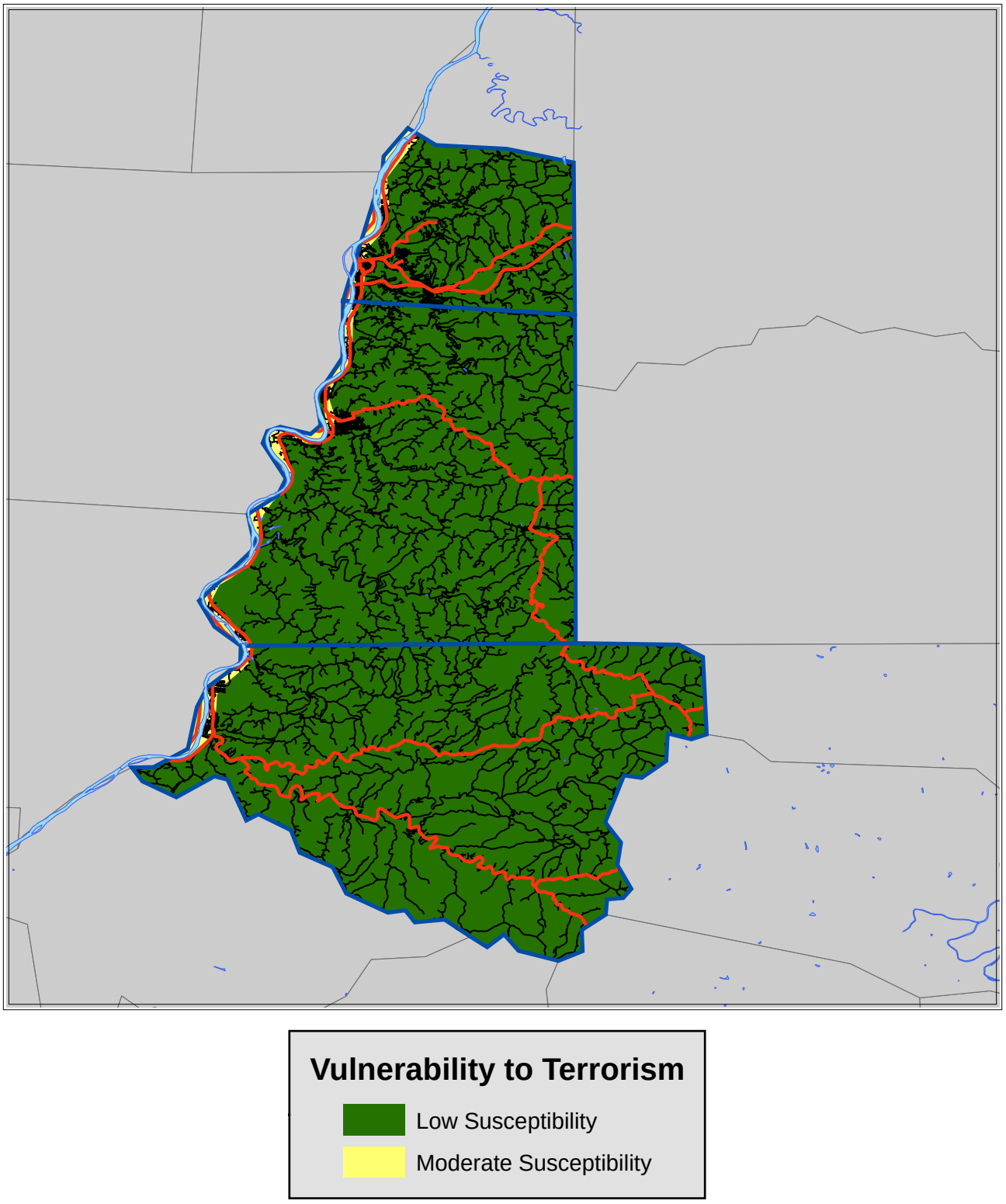
The most obvious effects of a terrorist incident would be economic. Infrastructure, including "hard" infrastructure such as facilities and systems, but also "soft" infrastructure such as people could be diminished or destroyed. Any loss of tax base and employment would be extremely hard for the communities throughout the region to overcome.

VULNERABLE STRUCTURES

Vulnerable Structures – Terrorism								
County	*Residential*	*Commercial*	*Industrial*	*Agricultural*	*Religious*	*Government*	*Education*	*Utilities*
Marshall	5,000	300	130	100	20	56	24	8
Ohio	17,570	1,194	90	5	13	18	40	15
Wetzel	5,416	619	131	13	63	35	9	18
TOTALS	**27,986**	**2,113**	**351**	**118**	**96**	**109**	**73**	**41**

LOSS ESTIMATES

In an effort to assist jurisdictional understanding of risks and implementation of strategies, loss estimates were done for each county (see Appendix 2). By averaging those estimates, this plan assumes a total, regional loss estimate *per incident* to be as much as $876,762,607. If all counties in the planning area were affected to the "worst case scenario" level, as much as $2,630,287,821 could be lost.


Vulnerability to Terrorism
Low Susceptibility
Moderate Susceptibility

2.2.9: Thunderstorm

A thunderstorm is considered severe when that storm produces a tornado, winds of at least 58 mph (50 knots), and/or hail at least ¾" in diameter. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal to or greater than 40 mph (35 knots) and/or hail of at least ½" is defined as "approaching severe".

RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records

Period of Occurrence:	Spring, summer, and fall
Number of Events to Date (1955 – 2010):	233
Probability of Event:	Frequent
Warning Time:	Minutes to hours
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems). Impacts human life, health, and public safety.
Cause Injury or Death:	Injury
Potential Facility Shutdown:	Days

HAZARD EFFECTS

The wind gusts associated with thunderstorms pose a threat to life and/or property. Severe thunderstorms also have the potential of producing a tornado with little or no advanced tornado warning. These storms may contain frequent cloud-to-ground lightning and heavy downpours which can lead to localized flooding. Generally, a weak thunderstorm which produces a wind gust of the required strength would be defined as "severe" whereas a very violent thunderstorm with continuous lightning and very heavy rain (but without the required wind gusts, hail, or tornado/funnel cloud) would not. For the purposes of this plan, though, these violent thunderstorms are also considered severe because they are more frequent and cause a significant amount of damage annually throughout the county.

HAZARD PROFILE

Thunderstorms are the most frequently-occurring hazards throughout the region. The following table illustrates the number of thunderstorm events in each of the region's counties as well as the damage caused by those storms (*Source: NCDC Event Records*).

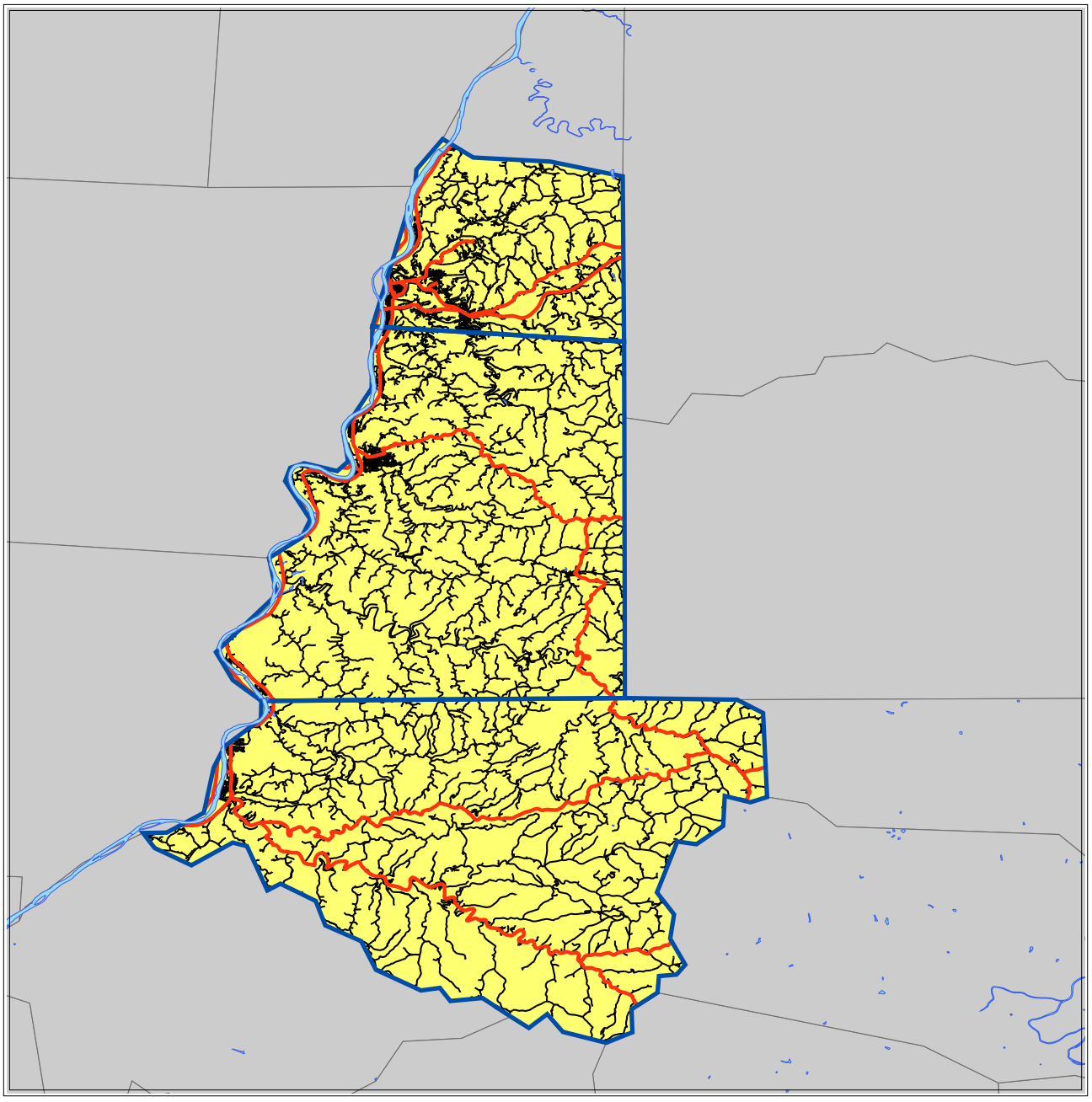
Thunderstorms Throughout Region 4		
County	*Number of Storms*	*Reported Damage*
Marshall	102	$14,092,902
Ohio	86	$665,000
Wetzel	45	$ 18,021,731
TOTALS	**233**	**$32,779,633**

Two (2) injuries directly related to these storms have been reported (one [1] each in Marshall and Ohio Counties). NCDC records reflect the most severe of thunderstorms. Storms, however, are common throughout the spring and summer months (although a thunderstorm can occur in any season) that cause downed trees and power lines. Residents and businesses are likely to incur more damage as a result of these "smaller" storms as individual houses and vehicles are damaged by fallen limbs and businesses are forced to close due to a lack of electricity.

LOSS ESTIMATES

Thunderstorm is another hazard that can be said to affect the entire area equally (i.e., all structures in the planning area are at risk). As part of the loss estimates completed by the individual counties, the average county-level Worst-Case Scenario (WCS) event could total $112,851,852 in losses. An area-wide WCS event could total as much as $338,555,557.

In many ways, the cascading effects of thunderstorms are more damaging than the storm itself. For example, as mentioned above, lightning strikes may cause power surges that result in damage. Thunderstorm winds may down trees that fall onto personal property. Tracking these types of damages is difficult as many people may not turn such claims into their insurance.



Vulnerability to Thunderstorm

Moderate Susceptibility

2.2.10: Wildfire

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

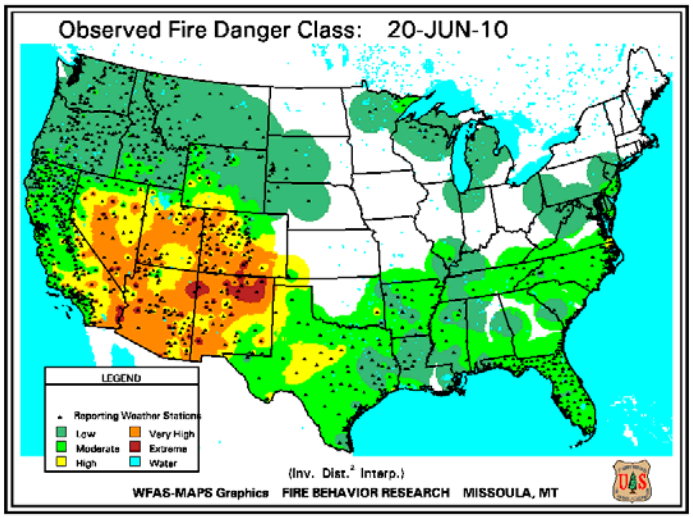
RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records

Period of Occurrence:	At any time – Primarily summer
Number of Events to Date (1950 – 2010):	0
Probability of Event:	Infrequent
Warning Time:	Minimal
Potential Impacts:	Impacts human life, health, and public safety. Loss of wildlife habitat, increased soil erosion, and degraded water quality. Utility damage and outages, infrastructure damage (transportation and communication systems), and damaged or destroyed critical facilities.
Cause Injury or Death:	Injury and risk death
Potential Facility Shutdown:	Days to weeks or more

HAZARD EFFECTS

Wildfires often begin unnoticed and spread quickly. They are usually signaled by dense smoke that fills the area for miles around. Grasses, bushes, trees, and other vegetation supply fuel for the wildfire. The size of a wildfire is contingent on the amount of fuel available, weather conditions, and wind speed and direction. In a map from Wildland Fire Assessment System (WFAS)-Maps, Fire Behavior Research (see left), the majority of West Virginia was labeled as being at low risk for wildfires. The National Interagency Fire Center also indicates that the Northern Panhandle is at a low risk of wildfires. No wildfires have been reported in the planning area.



HAZARD PROFILE

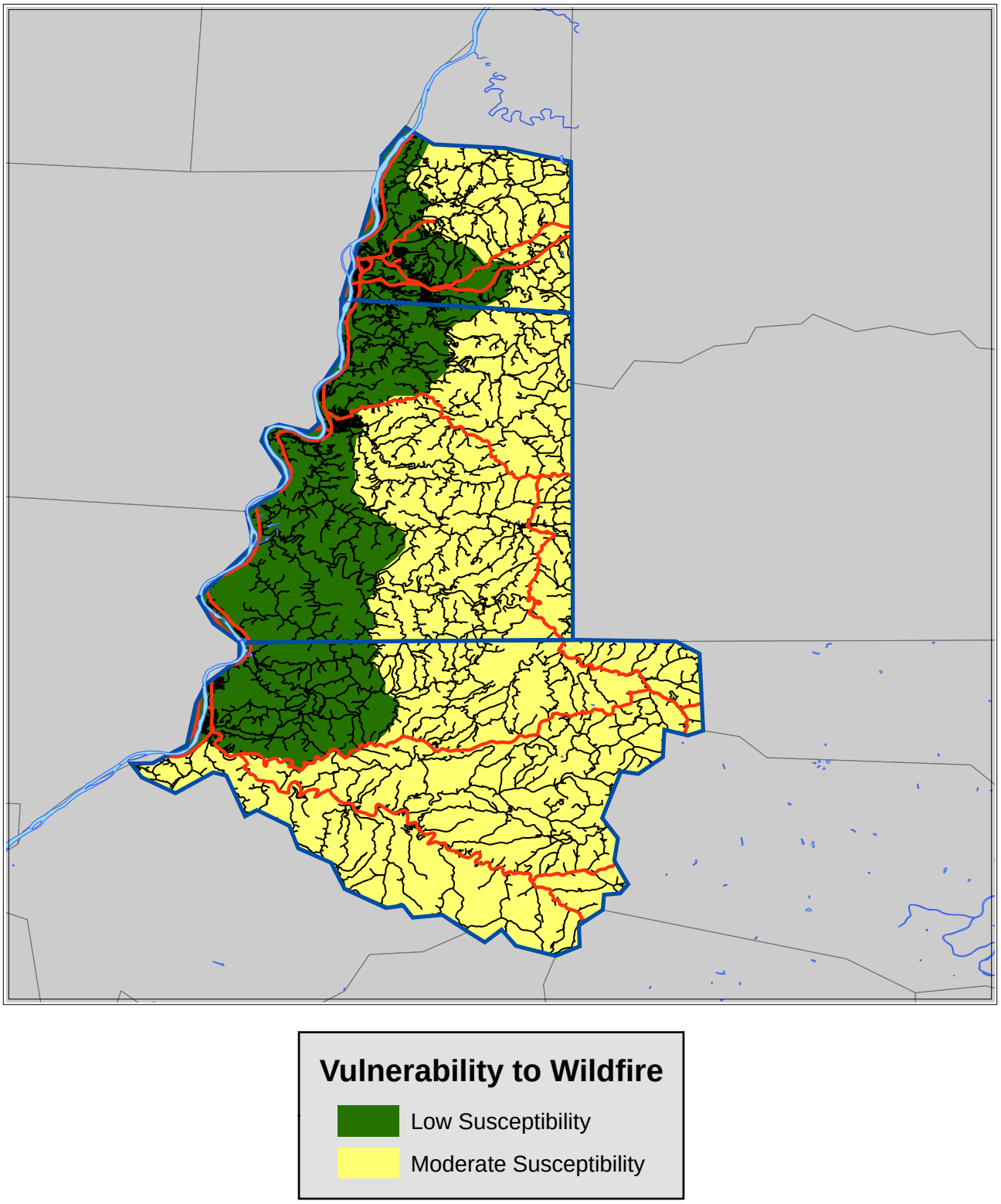
Just because no wildfires have been reported, one should not assume that vegetation fires do not occur frequently. Representatives from local fire departments throughout the area confirm that brush fires, ranging in size from a single acre to hundreds of acres occur each year. Many of these fires are extinguished before becoming a major problem. Additionally, most of these events occur in rural areas rather than in areas of urban-wildland interface.

VULNERABLE STRUCTURES

Vulnerable Structures – Wildfire								
County	*Residential*	*Commercial*	*Industrial*	*Agricultural*	*Religious*	*Government*	*Education*	*Utilities*
Marshall	8,525	122	55	702	40	6	9	4
Ohio	4,670	224	5	229	29	0	4	2
Wetzel	5,683	106	80	325	36	5	5	3
TOTALS	**18,878**	**452**	**140**	**1,256**	**105**	**11**	**18**	**9**

LOSS ESTIMATES

Individual county loss estimates were calculated on the assumption that a wildfire could occur in an area of urban-wildland interface; consequently, the estimates could be considered high when compared to historical occurrences. This document, however, estimates losses based on Worst-Case Scenario (WCS) events. The estimated WCS event for a single-county incident is $524,495,676, while the WCS estimate for an area-wide incident would be $1,573,487,028.


Vulnerability to Wildfire
Low Susceptibility
Moderate Susceptibility

2.2.11: Wind

Wind storms are destructive wind events that occur with or without the presence of other storm events, such as tornados or severe thunderstorms.

A tornado is a violently rotating column of air extending from a thunderstorm to the ground.

RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records

Period of Occurrence:	At any time – Primarily during March through August
Number of Events to Date (1995 – 2010):	32 (5 tornado events)
Probability of Event:	Infrequent
Warning Time:	Minutes to hours
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, and damaged or destroyed critical facilities. Impacts human life, health, and public safety.
Cause Injury or Death:	Injury and risk of multiple deaths
Potential Facility Shutdown:	Days to weeks or more

HAZARD EFFECTS – WIND

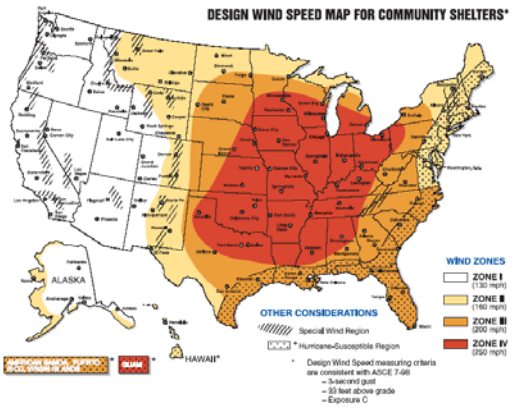
A wind storm is a severe weather condition indicated by high winds and with little or no rain. Localized geographical conditions can exacerbate the damages from high winds and cause increases in wind intensity. Since 1995, counties in the lower Northern Panhandle have experienced 32 high wind events.

HAZARD PROFILE – WIND

These events have resulted in significant damage as well as three (3) known injuries. The following table illustrates the high wind events, damages reported, and injuries known for each county.

High Wind Events in Region 4			
County	*Number of Events*	*Damages Reported*	*Known Injuries*
Marshall	10	$319,000	0
Ohio	14	$626,000	0
Wetzel	8	$340,000	0
TOTALS	**32**	**$1,285,000**	**0**

**NOTE: One of these was listed as "Strong Winds" by the NCDC.*



The "Design Wind Speed Map for Community Shelters" is one way of graphically analyzing wind risks. As can be seen, Wetzel County is in a "Zone III" with respect to design wind speeds, which means that shelters constructed for protective purposes should be designed to withstand up to 200 mph winds; Marshall and Ohio Counties contain areas in Zone IV, which means that shelters should be able to withstand 260 mph winds.

Severe wind events can cause a variety of secondary, or cascading, hazard events. For instance, wind may blow limbs from trees down knocking out electric power or blocking roadways. Wind often results in damages to roofs and other home finishings (such as siding, etc.).

HAZARD EFFECTS - TORNADO

The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one (1) mile wide and 50 miles long. Tornadoes are among the most unpredictable of weather phenomena. Tornadoes can occur in any state in the United States but are more frequent in the Midwest, Southeast, and Southwest.

The nature of tornadoes is that they strike at random. While it is known that some areas of the country experience tornadoes more than others, predicting exactly what parts of the region have a greater chance of being struck by a tornado is difficult. The best predictor of future tornadoes is the occurrence of previous tornadoes.

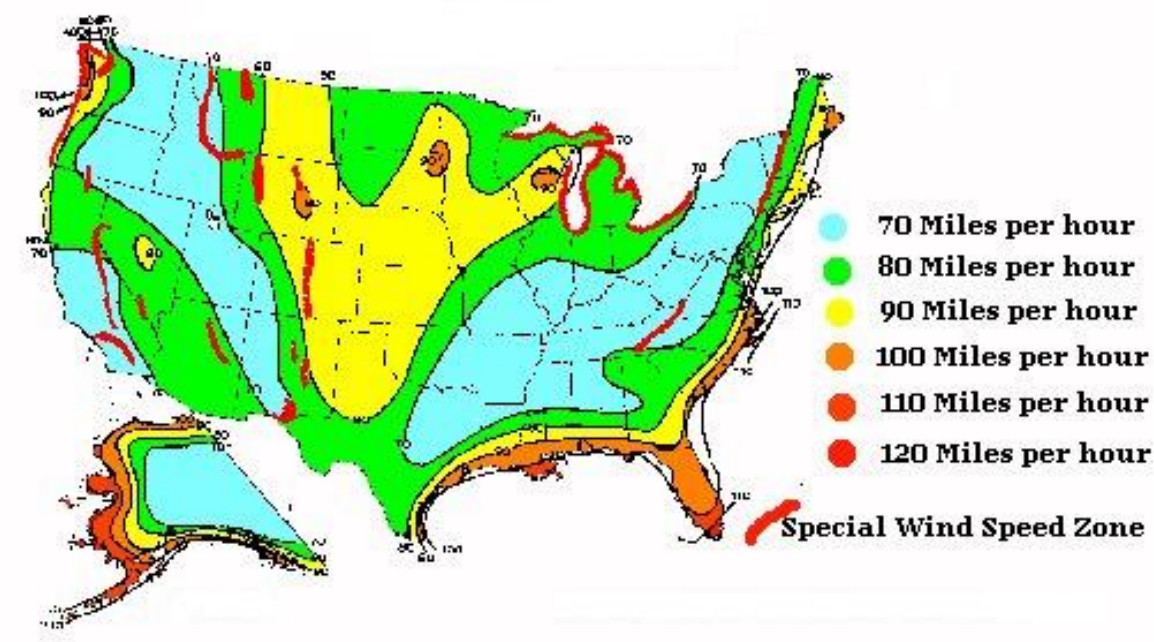
	Description	Wind Speeds
F0	***Gale Tornado***: Some damage to chimneys; break branches off of trees, pushes over shallow-rooted trees, damages signs.	40-70
F1	***Moderate Tornado***: The lower limit is the beginning of hurricane wind speed; peels surfaces off of roofs; mobile homes destroyed.	73-112
F2	***Significant Tornado***: Considerable damage; roofs torn off frame houses; mobile homes demolished; boxcars pushed over; larger trees snapped or uprooted; light object missiles generated.	113-157
F3	***Severe Tornado***: Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.	158-206
F4	***Devastating Tornado***: Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown; large missiles generated.	207-260
F5	***Incredible Tornado***: Strong frame houses lifted off foundations and carried considerable distances; automobile-sized missiles fly in excess of 100 meters.	261-318
F6	***Inconceivable Tornado***: The area of damage produced would be unrecognizable.	319-379

HAZARD PROFILE – TORNADO

According to NCDC records, there have been 5 tornadoes recorded in the region since 1961. Two (2) tornadoes have been recorded each in Marshall and Ohio Counties, totaling more than $175,000 in damage, and causing four (4) injuries. All four (4) incidents were listed as F1 (see table above). One (1) tornado has been reported in Wetzel County, causing

approximately $10,000 in damage and no known injuries.

For planning purposes, it is less important to map the tornado risk than it is to identify it. This is because it is so difficult to predict the path of future tornadoes. The Fujita scale provides us with an idea of the strength and extent of damages of tornadoes that can occur in the planning. An additional resource to help understand the extent of tornado risks in the county is the "Design Wind Speed Map for Community Shelters" developed by the Disaster Center. The Disaster Center has also developed a map (shown below) that is similar to the "Design Wind Speed Map for Community Shelters" that suggests building standards with respect to wind speed.



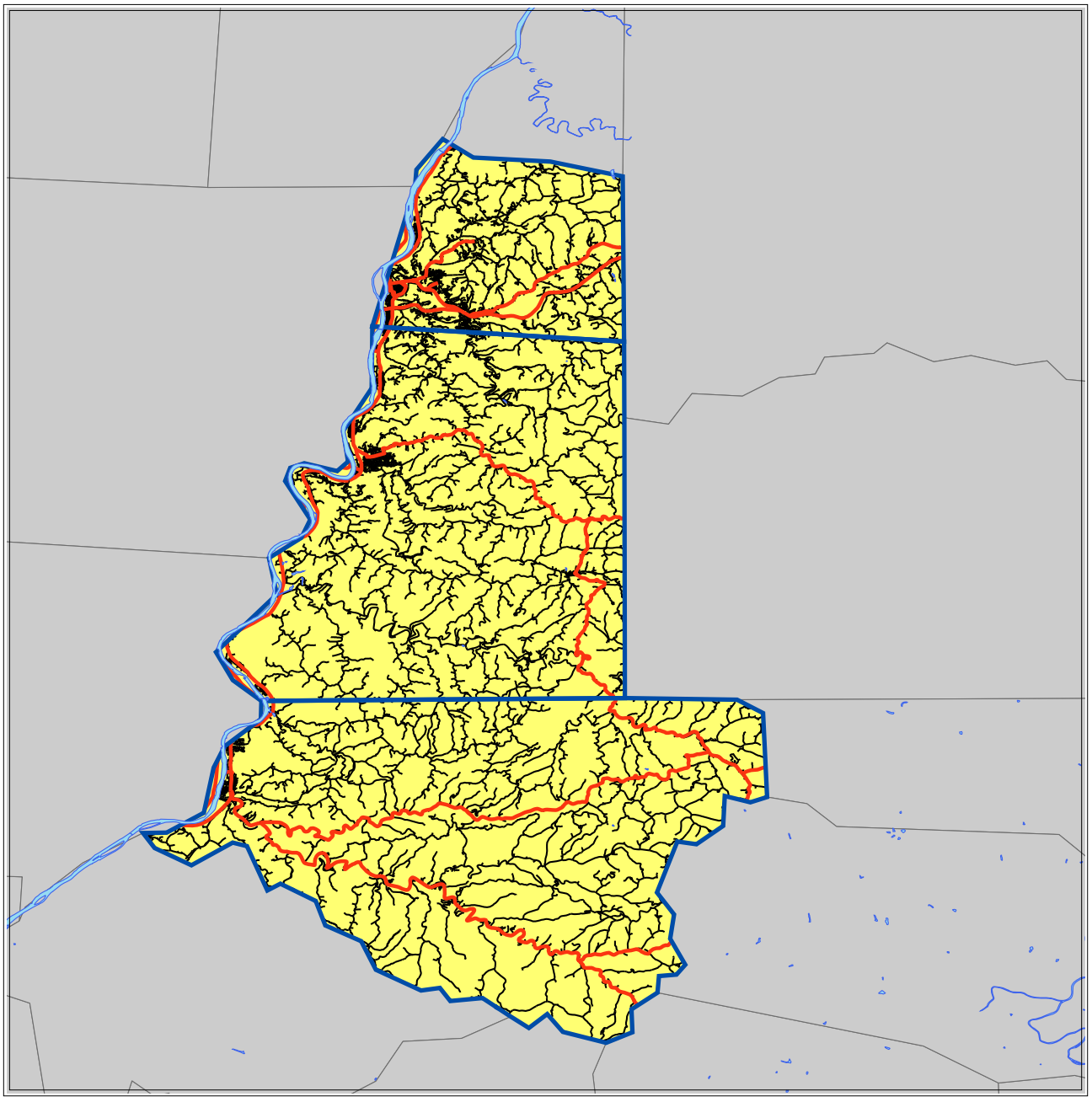
As can be seen, all of West Virginia is shown with the lowest wind speed (or the equivalent to a "gale tornado" as described above).

High wind, in general, is another of the hazards that can be said to affect the entire area. Tornadoes can also be said to affect the entire area due to their unpredictable nature.

LOSS ESTIMATES

Wind-related loss estimates are quite high because both high wind and tornado loss estimates are combined and because of the amount of damage that can be done by

a single incident. As an example, consider the extremely high damage estimates from the tornado events versus just the high wind events. The average Worst-Case Scenario (WCS) wind event in a single county could result in as much as $218,897,722 in losses; an area-wide WCS event could tally $656,693,166 in losses.



Vulnerability to Severe Wind

Moderate Susceptibility

2.2.12: Winter Storm

A winter storm is a type of storm in which the dominant varieties of precipitation are forms that only occur at cold temperatures such as snow or sleet, or a rainstorm where ground temperatures are cold enough to allow ice to form.

RESEARCH SOURCES

- National Climatic Data Center (NCDC) Event Records

Period of Occurrence:	Winter
Number of Events to Date (1993–2010):	75
Probability of Event:	Likely
Warning Time:	Snow – Days Ice – Minutes to hours
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, damaged critical facilities. Can cause severe transportation problems and make travel extremely dangerous. Power outages, which result in loss of electrical power and potentially loss of heat. Extreme cold temperatures may lead to frozen water mains and pipes, damaged car engines, and prolonged exposure to cold resulting in frostbite.
Cause Injury or Death:	Injury
Potential Facility Shutdown:	Days

HAZARD EFFECTS

Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous wind chill. There are three (3) categories of winter storms:

- **Blizzard:** A blizzard is the most dangerous of all winter storms. It combines low temperatures, heavy snowfall, and winds of at least 35 miles per hour (mph), reducing visibility to only a few yards.
- **Heavy Snowstorms:** A heavy snowstorm is one that drops four (4) or more inches of snow in a 12-hour period.

- **Ice Storm:** An ice storm occurs when moisture falls and freezes immediately upon impact.

Winter storms tend to encompass the entire county whereas flooding generally occurs within predictable boundaries along the regulatory Special Flood Hazard Area (SFHA) and its main branches and tributaries. Risks associated and identified with severe winter storms include but are not limited to the following:

- Emergency medical evacuation of the sick, elderly, and infirmed to shelters.
- Power outages to those on life support systems.
- Communications interruptions and/or outages.
- Loss of the ability to heat homes.
- Interruption of the delivery of home supplies and food.

These above-described events fall within two (2) general categories 1) road closures due to snow drifts and 2) utility failures (such as damaged supply lines). Additionally, data indicates that structural damage has occurred in several instances in the past as a result of extremely heavy snowfall. Structures damaged were usually buildings such as barns, garages, carports, etc. Additionally, severe winter storms, because of the county's mountainous terrain, frequently result in dangerous driving conditions.

HAZARD PROFILE

Winter storms are reported to be one of the most frequently-occurring hazards in the planning area (along with thunderstorms, floods, and hailstorms). The following table illustrates the number of winter storm (i.e., snow, ice, and blizzard) events in each of the region's counties as well as the damage caused by those storms (*Source: NCDC Event Records*).

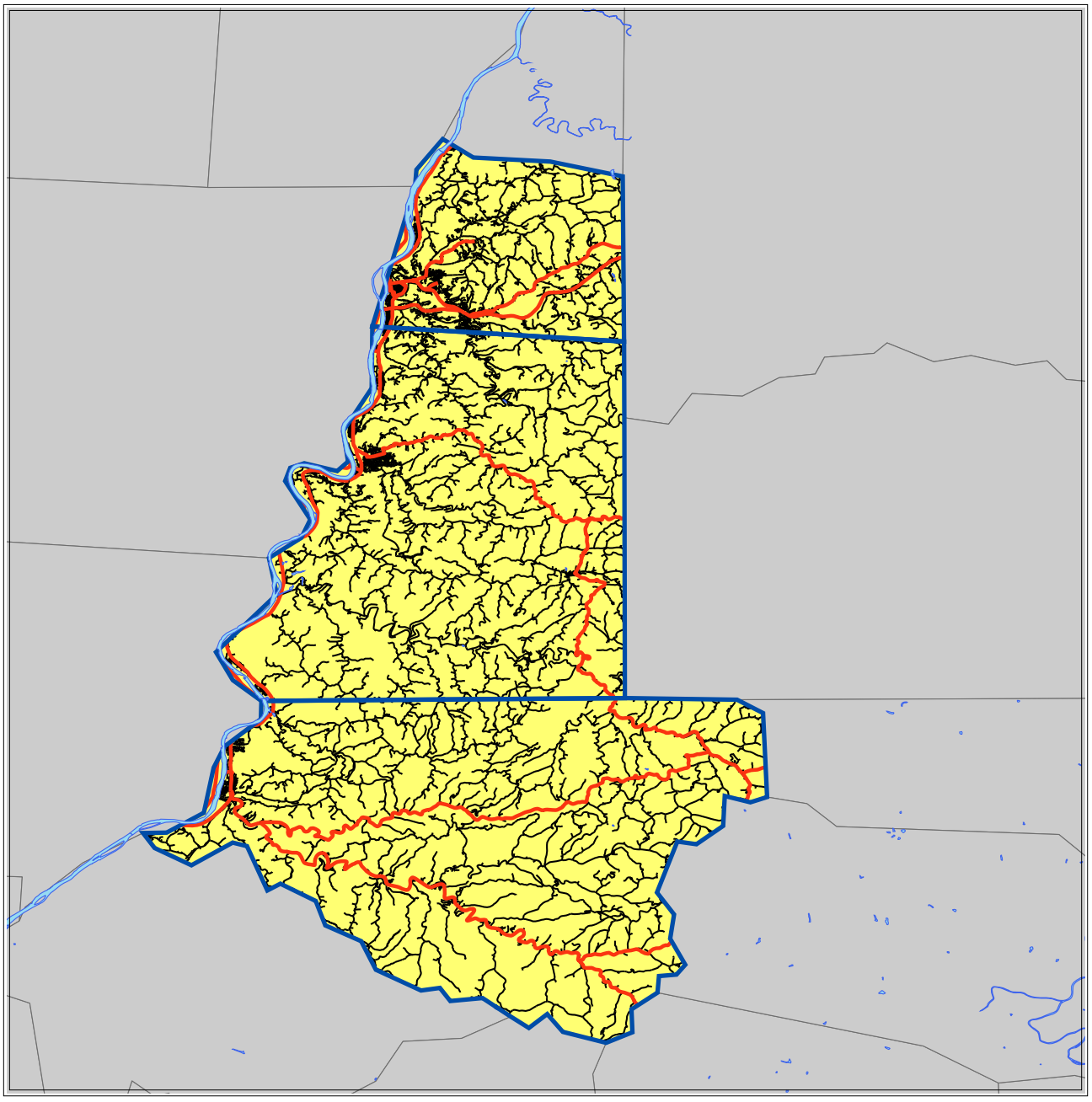
Winter Storms Throughout Region 4		
County	*Number of Storms*	*Reported Damage*
Marshall	25	$47,869,108
Ohio	23	$792,000
Wetzel	27	$72,265,019
TOTALS	**75**	**$120,926,127**

At least three (3) deaths have resulting from winter storms have been reported in the counties. Over ten (10) injuries have been reported.

A winter storm is another hazard that can be said to affect the entire planning area equally (i.e., all structures in the area are at risk). One must realize, though, that the cascading hazards resulting from winter storms (e.g., slick roadways, drifts covering roadways, communities being isolated as a result of snow, etc.) can vary within the area as a whole – even within a single county – due to factors such as topography. Further, winter storms are often considered "just a way of life"; many residents do not report the losses from these storms. Such an attitude is likely shaped by the frequency with which residents face these events.

LOSS ESTIMATES

As part of the loss estimates completed by the individual counties, the average county-level Worst-Case Scenario (WCS) event could total $213,370,241 in losses. An area-wide WCS event, again according to the county's individual loss estimates, could total as much as $640,110,723.



Vulnerability to Winter Storm

Moderate Susceptibility

2.3 REGIONAL IMPLICATIONS

The hazard profiles above present, in a general sense, a "regional" hazard risk. This risk, though, is based off of individual county assessments of how risk *individual counties*. This section discusses how area-wide risks are realized.

Flooding, as one of the primary hazards addressed by this plan, does pose a risk across the entire planning area. Even flash flooding, which is widely considered to be a site-specific hazard, can contribute to an area-wide flooding impact. For example, heavy rains throughout all three (3) counties may result in the flash flooding of small creeks and streams. All of this water, though, during and after the flash flooding recedes, will likely flow (ultimately) to the Ohio River, which could result in a riverine flooding event. It is significant to note that rainwater from other counties in the area would be contributing to the ultimate riverine risk.

Riverine flooding can also be manifested in the same way. Obviously, as the Ohio River flows south, flooding would be realized first in Ohio County, then Marshall, then Wetzel. All three (3) counties have demonstrated a capability to communicate river levels if flooding is expected.

Flooding can be caused by a dam failure, which is another hazard that would have major regional implications should it occur. Failures of large impoundments would create effects similar to those of flash flooding. A failure of a lock and dam facility on an Ohio River lock would have effects downstream as well. This is most applicable to a failure of the Pike Island facility.

The hazardous material risk also bears a regional implication, primarily in the planning function. Hazmat incidents are widely considered to be site-specific hazards, and this document would concur with such an assumption. The risk, though, is shared; risk areas can be predicted in one county based on facts and figures from a neighboring county. For instance, emergency preparedness officials in Marshall County can assume that materials observed on SR 2 in Ohio and Wetzel Counties would pass through their county on the same route. In other instances, commodity flow data can serve as quality control check or supplemental data from one county to another.

Additionally, the covered facility risk could become regional in scope. A catastrophic release at either the Bayer Material Science of PPG facilities in Marshall County could have major effects in Wetzel County as well as Monroe County, Ohio. Further, an incident at Ormet in Monroe County could affect Wetzel and Marshall

Counties.

As Local Emergency Planning Committees (LEPCs) educate communities on the hazardous material risk, these efforts should extend beyond county lines. Such an approach is default in much of the planning area, as Marshall and Wetzel Counties share an LEPC. Further, the training and exercising often used to strengthen response agency capabilities can be coordinated throughout the planning area to strengthen the overall area's response capability.

SECTION 3.0

MITIGATION STRATEGY

Section 3.0 uses the risk assessment information from Section 2.0 to generate a list of action items that participating jurisdictions can consider to greatly lessen potential hazard losses. This section lists and prioritizes them.

It is significant to note that though this is the first version of the regional Hazard Mitigation Plan (HMP), member governments have maintained lists of projects since approximately 2003. The status indicators discussed below factor this time period into account. Further, some jurisdictions have identified goals, objectives, and strategies for hazards that are not listed in the above risk assessment. These participating jurisdictions feel strongly that such projects should remain in the HMP to show the integration of risk assessment, mitigation, and emergency preparedness as a whole. The addition of these projects also brings a number of other partner agencies into the mix, which supports the relationships that participating jurisdictions have worked so hard to build. In order to satisfy state and federal HMP requirements, at least one (1) project has been identified for each of the 12 hazards listed by Section 2.0 above.

3.1 GOALS, OBJECTIVES, AND STRATEGIES

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

This section analyzes goals and objectives, but also strategies as projects and discusses how they should be implemented. (*NOTE: “Strategies” are considered mitigation “projects”.) Each strategy is listed along with an affected jurisdiction, timeframe, coordinating agency, and a potential funding source (and cost estimate). A simple status statement is also listed for each project. Projects can be classified as: New, Completed, Deleted, Deferred, Unchanged, or On-Going. Strategies are also categorized by six (6) different types of mitigation projects:

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

It is important to note that the cost estimates are tentative and meant as a starting point for research on project feasibility. More specifically, these cost estimates are only ranges of probable project costs; *all figures are approximations*. At the time the implementation of any strategy is considered, a full cost estimate should be sought prior to securing funding.

MARSHALL COUNTY

Goal 1A: Reduce the negative effects of flooding in Marshall County.

Objective 1A.1: Minimize future flood damage throughout Marshall County by increasing control over development in the floodplain.

Project 1A.1.1: Attempt to instate a countywide permitting process through the planning commission and assessor's office, which will require residents and/or developers to file a permit with the county before beginning any new construction in the floodplain.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Code enforcement costs are already built into the county budget.)
Coordinating Agency: Marshall County Floodplain Coordinator (in coordination with Marshall County Planning Commission and Marshall County Assessor)
Status: On-going
Mitigation Type: Prevention

Project 1A.1.2: Review additional permitting processes used in other counties to determine if wording regarding the use of certain building materials is appropriate in the county floodplain ordinance.

Affected Jurisdictions: Marshall County
Timeframe: 5 years

Funding Source (*Cost Estimate*): N/A (Review should require little to no additional funding.)
Coordinating Agency: Marshall County Planning Commission
Status: New
Mitigation Type: Prevention

Objective 1A.2: Coordinate with other federal, state, and county agencies to facilitate flood mitigation activities.

Project 1A.2.1: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.

Affected Jurisdictions: Marshall County
City of Cameron
City of Glen Dale
City of McMechen
Timeframe: On-going
Funding Source (*Cost Estimate*): NRCS (Studies are completed as part of the NRCS' regular operating budget.)
Coordinating Agency: NRCS
Status: On-going
Mitigation Type: Natural Resource Protection

Project 1A.2.2: Continue to undertake stream cleaning and stream bank restoration projects throughout the county as a means of lessening flood damage to personal property and roadways.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): NRCS (Projects are completed as part of the NRCS' regular operating budget.)
Coordinating Agency: NRCS
Grave Creek Watershed Authority
Status: New
Mitigation Type: Prevention

Project 1A.2.3: Form a community watershed group to look at stream bank

restoration in the Cameron area.

Affected Jurisdictions: City of Cameron
Timeframe: 5 years
Funding Source (*Cost Estimate*): N/A (The formation of a group should require little to no additional funding.)
Coordinating Agency: City of Cameron
NRCS
Status: New
Mitigation Type: Natural Resource Protection

Project 1A.2.4: Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.

Affected Jurisdictions: City of McMechen
Timeframe: 5 years
Funding Source (*Cost Estimate*): N/A (The formation of a group should require little to no additional funding.)
Coordinating Agency: City of McMechen
NRCS
Status: New
Mitigation Type: Natural Resource Protection

Project 1A.2.5: Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.

Affected Jurisdictions: City of Glen Dale
Timeframe: 5 years
Funding Source (*Cost Estimate*): N/A (The formation of a group should require little to no additional funding.)
Coordinating Agency: City of Glen Dale
NRCS
Status: New
Mitigation Type: Natural Resource Protection

Project 1A.2.6: As funds are available, undertake acquisition or elevation projects of repetitive loss and other flood-prone properties.

Affected Jurisdictions: Marshall County
Timeframe: As funds are available
Funding Source (*Cost Estimate*): HMGP (Up to $62,600 per structure)
Coordinating Agency: Marshall County Commission
Status: New
Mitigation Type: Structural Projects

Objective 1A.3: Participate in the Community Rating System (CRS) to help monitor hazard mitigation efforts and to improve the affordability of flood insurance for citizens.

Project 1A.3.1: Coordinate county efforts to meet the requirements of becoming a participant in the CRS.

Affected Jurisdictions: Marshall County
Timeframe: 3 years
Funding Source (*Cost Estimate*): N/A (Meeting the requirements requires little to no additional funding.)
Coordinating Agency: Marshall County Commission
Status: On-going
Mitigation Type: Public Education and Awareness

Objective 1A.4: Minimize future flood damage in Marshall County through effective structural projects.

Project 1A.4.1: Continue projects to upgrade the floodwall in the City of Benwood.

Affected Jurisdictions: City of Benwood
Timeframe: 5 years
Funding Source (*Cost Estimate*): USACE, WVDEP (Up to $1,000,000 depending on the scope of the project)
Coordinating Agency: City of Benwood
USACE
WVDEP
Status: On-going
Mitigation Type: Structural Projects

Goal 2A: Reduce the effects of severe winter storms in Marshall County.

Objective 2A.1: Upgrade warning capabilities so that residents are aware of impending severe weather events.

Project 2A.1.1: Develop early warning and public notification capabilities through the use of such items as "Reverse 911" and AM radio stations.

Affected Jurisdictions: Marshall County
Timeframe: 3 years
Funding Source (*Cost Estimate*): SHSP, EMPG, Local funding (Up to $100,000 contingent upon the type of program)
Coordinating Agency: Marshall County Office of Emergency Management (MCOEM)
Status: New
Mitigation Type: Public Education and Awareness

Goal 3A: Reduce damage from severe thunderstorms in Marshall County.

Objective 3A.1: Increase public awareness that a severe thunderstorm is imminent.

Project 3A.1.1: Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: Marshall County 9-1-1
MCOEM
National Weather Service
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 4A: Lessen hail damage in Marshall County.

Objective: 4A.1: Provide local residents with more advance warning of impending hailstorms.

Project 4A.1.1: Continue coordinating efforts with local media to post advance warnings of hailstorms.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: Marshall County 9-1-1
MCOEM
National Weather Service
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 5A: Reduce damage from severe wind and tornadoes in Marshall County.

Objective 5A.1: Increase public awareness that severe wind or a tornado is imminent.

Project 5A.1.1: Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: Marshall County 9-1-1
MCOEM
National Weather Service
Status: On-going
Mitigation Type: Public Education and Awareness

Objective 5A.2: Increase public knowledge of what steps to take after a severe windstorm or tornado has occurred.

Project 5A.2.1: Ensure inclusion of wind hazards in public information campaigns.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, PDM (Up to $2,500 depending on cost of materials)
Coordinating Agency: MCOEM
Status: New
Mitigation Type: Public Education and Awareness

Goal 6A: Reduce the effects of land subsidence in Marshall County.

Objective 6A.1: Minimize potential subsidence throughout Marshall County by monitoring development.

Project 6A.1.1: In coordination with monitoring floodplain development, continue to encourage the general public to use materials that can withstand moderate land subsidence during construction.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Code enforcement costs are already built into the county budget.)
Coordinating Agency: Marshall County Planning Commission (in coordination with the county floodplain coordinator and Marshall County 9-1-1)
Status: New
Mitigation Type: Prevention

Goal 7A: Reduce the potential effects of earthquakes in Marshall County.

Objective 7A.1: Educate the public as to the potential for earthquakes in West Virginia, specifically Marshall County.

Project 7A.1.1: Educate the public as to the earthquake risk in West Virginia. Dissemination of information can be via elementary school distribution.

Affected Jurisdictions: Marshall County

Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, PDM (Up to $2,500 depending on the cost of materials)
Coordinating Agency: MCOEM
Marshall County Schools
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 8A: Reduce the negative effects of drought in Marshall County.

Objective: 8A.1: Increase public awareness as to the agricultural effects of drought, as well as the ramifications of drought to the public water supply.

Project 8A.1.1: Distribute informational brochures developed by the NRCS to local farmers and residents.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): WVU (Up to $2,500 depending on cost of materials)
Coordinating Agency: WVU Extension Service
Farm Bureau
Status: On-going
Mitigation Type: Public Education and Awareness

Project 8A.1.2: Educate local residents on the benefits of conserving water.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, PDM (Up to $2,500 depending on cost of materials)
Coordinating Agency: Local Water Providers
Marshall County Health Department
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 9A: Protect Marshall County populations and forests from fires.

Objective 9A.1: Educate the public on wildfire safety.

Project 9A.1.1: Distribute information concerning the leading causes of wildfires, steps the general public can take to avoid starting wildfires, and instructions for controlled burns.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): WVDF (Up to $2,500 depending on cost of materials)
Coordinating Agency: WV Division of Forestry
Marshall County 9-1-1
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 10A: Protect Marshall County's populations from an epidemic.

Objective 10A.1: Increase knowledge of and capabilities for epidemics and pandemics.

Project 10A.1.1: Produce public awareness campaigns through local media.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, PDM, WVDHHR (Up to $2,500 depending on cost of materials)
Coordinating Agency: Marshall County Health Department
Reynolds Memorial Hospital
MCOEM
Status: On-going
Mitigation Type: Public Education and Awareness

Project 10A.1.2: Continue pandemic flu planning efforts.

Affected Jurisdictions: Marshall County

Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, WVDHHR (Up to $5,000 per planning project if contractors are used)
Coordinating Agency: Marshall County Health Department
Status: New
Mitigation Type: Emergency Services

Goal 11A: Protect vulnerable utilities in Marshall County.

Objective: 11A.1: Upgrade the communications infrastructure.

Project 11A.1.1: Strengthen existing landline communications networks.

Affected Jurisdictions: Marshall County
Timeframe: 5 years
Funding Source (*Cost Estimate*): Communications Providers (Up to $1,000,000 depending on scope of project)
Coordinating Agency: Communications Providers
Verizon
Marshall County 9-1-1
MCOEM
Status: New
Mitigation Type: Prevention

Project 11A.1.2: Continue efforts to construct towers to facilitate better cellular and wireless communications.

Affected Jurisdictions: Marshall County
Timeframe: 5 years
Funding Source (*Cost Estimate*): Communications Providers (Up to $1,000,000 depending on scope of project)
Coordinating Agency: Communications Providers
Marshall County 9-1-1

MCOEM

Status: New

Mitigation Type: Structural Projects

Project 11A.1.3: Once towers are constructed, negotiate with owners to use towers during emergency situations.

Affected Jurisdictions: Marshall County

Timeframe: 5 years

Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding)

Coordinating Agency: Marshall County 9-1-1

MCOEM

Status: New

Mitigation Type: Emergency Services

Objective 11A.2: Undertake public education projects aimed at lessening confusion during utility failures.

Project 11A.2.1: Undertake a public education campaign regarding proper generator usage.

Affected Jurisdictions: Marshall County

Timeframe: On-going

Funding Source (*Cost Estimate*): Local funding, PDM (Up to $2,500 depending on cost of materials)

Coordinating Agency: MCOEM

AEP

Status: New

Mitigation Type: Public Education and Awareness

Project 11A.2.2: Encourage local gas companies to undertake a public education campaign regarding resident and company rights surrounding gas-line rights-of-way.

Affected Jurisdictions: Marshall County

Timeframe: On-going

Funding Source (*Cost Estimate*): N/A (Coordination requires little to no

additional funding)

Coordinating Agency: Mountaineer Gas

Status: New

Mitigation Type: Public Education and Awareness

Objective 11A.3: Work with community partners to increase emergency capabilities during utility failures.

Project 11A.3.1: Work with sheltering agencies to ensure that those facilities identified as shelters have back-up power capabilities.

Affected Jurisdictions: Marshall County

Timeframe: On-going

Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding)

Coordinating Agency: MCOEM
American Red Cross

Status: New

Mitigation Type: Emergency Services

Project 11A.3.2: Coordinate with AEP to ensure adequate coverage for emergency call-outs in the event of a downed electric line.

Affected Jurisdictions: Marshall County

Timeframe: On-going

Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding)

Coordinating Agency: MCOEM
AEP

Status: On-going

Mitigation Type: Emergency Services

Goal 12A: Protect the general public in Marshall County from civil disturbances.

Objective 12A.1: Protect residents and visitors during large gatherings.

Project 12A.1.1: Coordinate with law enforcement providers and appropriate

event organizers to ensure that adequate security is available during large or high-profile events.

Affected Jurisdictions: Marshall County
City of Moundsville
Timeframe: As needed
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: Local Law Enforcement
Marshall County Fair
Event Organizers
Status: On-going
Mitigation Type: Emergency Services

Goal 13A: Protect the general public in Marshall County from hazardous material incidents.

Objective 13A.1: Study and evaluate transportation systems for problems that could lead to hazard materials spills and other incidents.

Project 13A.1.1: Update the commodity flow study for Marshall County.

Affected Jurisdictions: Marshall County
Timeframe: 1 year
Funding Source (*Cost Estimate*): SERC (Up to $5,000 if contractors are used.)
Coordinating Agency: Marshall-Wetzel LEPC
Status: Completed
Mitigation Type: Emergency Services

Project 13A.1.2: Continue to assess the feasibility of cleaning up busy intersections.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Projects should be included in regular operating budgets.)
Coordinating Agency: WVDOH

Municipal Road Crews

Status: Completed

Mitigation Type: Prevention

Objective 13A.2: Increase public education and awareness regarding hazardous material incidents.

Project 13A.2.1: Ensure measures and tips for evacuations are included in on-going public education efforts.

Affected Jurisdictions: Marshall County

Timeframe: On-going

Funding Source (*Cost Estimate*): Local funding, PDM, SERC (Up to $2,500 depending on cost of materials)

Coordinating Agency: MCOEM
Marshall-Wetzel LEPC

Status: On-going

Mitigation Type: Public Education and Awareness

Project 13A.2.2: Facilitate the creation of safe zones as places where residents can go in the event of a hazardous materials incident. Further, publicize the location and access to these safe zones.

Affected Jurisdictions: Marshall County

Timeframe: On-going

Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)

Coordinating Agency: Marshall Wetzel LEPC

Status: On-going

Mitigation Type: Emergency Services

Goal 14A: Protect the general public in Marshall County from potential terrorist attacks.

Objective 14A.1: Increase countywide preparedness for terrorist attacks.

Project 14A.1.1: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.

Affected Jurisdictions: Marshall County
City of Cameron
City of McMechen
City of Moundsville
Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, EMPG, SHSP (Up to $5,000 if contractors are used.)
Coordinating Agency: MCOEM
Marshall-Wetzel LEPC
Local Law Enforcement
Local Fire Departments
Marshall County Health Department
Marshall County 9-1-1
City Councils
Status: On-going
Mitigation Type: Emergency Services

Project 14A.1.2: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, EMPG, SHSP (Up to $5,000 if contractors are used.)
Coordinating Agency: MCOEM
Local Law Enforcement
Local Fire Departments
Marshall County Health Department
Status: On-going
Mitigation Type: Public Education and Awareness

Project 14A.1.3: Coordinate with local media to alert the public as to current threat status.

Affected Jurisdictions: Marshall County

Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: MCOEM
Marshall-Wetzel LEPC
Local Law Enforcement
Local Fire Departments
Marshall County Health Department
Marshall County 9-1-1
Status: On-going
Mitigation Type: Public Education and Awareness

Objective 14A.2: Enact response programs to cope with terrorist attacks should they occur.

Project 14A.2.1: Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: MCOEM
Reynolds Memorial Hospital
American Red Cross
Status: On-going
Mitigation Type: Emergency Services

Project 14A.2.2: Coordinate with first responders for interagency cooperation to assist in collaborative planning.

Affected Jurisdictions: Marshall County
City of Benwood
City of Cameron
City of Glen Dale
City of McMechen
City of Moundsville

Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: MCOEM
Local Law Enforcement
Local Fire Departments
Marshall County Health Department
Marshall County 9-1-1
Status: On-going
Mitigation Type: Emergency Services

Project 14A.2.3: Continue education and training efforts of first responders and emergency personnel.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): Local funding, EMPG, SHSP, WVDHHR (Up to $2,500 depending on cost of materials and instructors)
Coordinating Agency: MCOEM
Marshall County Health Department
Status: On-going
Mitigation Type: Emergency Services

Project 14A.2.4: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.

Affected Jurisdictions: Marshall County
City of Benwood
City of Cameron
City of Glen Dale
City of McMechen
City of Moundsville
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Support requires little to no additional funding.)

Coordinating Agency: Marshall County Health Department
Status: New
Mitigation Type: Emergency Services

Objective 14A.3: Protect students and faculty members at county schools from bomb threats and bomb explosions.

Project 14A.3.1: Continue to encourage schools to update procedural and evacuation plans in the event of a bomb threat.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: Marshall County Schools
MCOEM
Status: On-going
Mitigation Type: Emergency Services

Objective 14A.4: Protect employees and other individuals at the county's structural assets from bomb threats and bomb explosions.

Project 14A.4.1: Encourage county assets to create and/or update procedural and evacuation plans in the event of a bomb threat.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding.)
Coordinating Agency: MCOEM
Status: On-going
Mitigation Type: Property Protection

Goal 15A: Reduce potential hazards resulting from dam failures in Marshall County.

Objective 15A.1: Assess and monitor the risk of dam failures.

Project 15A.1.1: Evaluate dams and locks that play an integral role in water

transportation and/or flood control.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Projects are included in regular operating budgets.)
Coordinating Agency: USACE
NRCS
Status: New
Mitigation Type: Prevention

Goal 16A: Mitigate miscellaneous hazards as necessary.

Objective 16.1: Work with community partners to educate residents about general public safety issues.

Project 16.1.1: Encourage drilling companies to educate the general public about natural gas safety, community outreach efforts, etc.

Affected Jurisdictions: Marshall County
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (Coordination requires little to no additional funding)
Coordinating Agency: MCOEM
Drilling Companies
Status: New
Mitigation Type: Public Education and Awareness

OHIO COUNTY

Goal 1B: Improve upon the protection of the citizens of Ohio County from all natural and man-made hazards.

Objective 1B.1: Develop and distribute public awareness materials about natural hazard risks, preparedness, and mitigation.

Project 1B.1.1: Create displays for use at public events (health fair, public

awareness day, county fair).

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): WVU (*Most are already created*)
Coordinating Agency: WOCEMA
WVU Extension Service
Status: Completed
Mitigation Type: Public Education and Awareness

Project 1B.1.2: Create materials that are targeted towards tourist population.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): PDM (*Up to $2,500 per project for creation and distribution*)
Coordinating Agency: Wheeling Area Chamber of Commerce
Status: On-going
Mitigation Type: Public Education and Awareness

Project 1B.1.3: Utilize the media for the distribution and publication of hazard information.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: Ohio County Commission
Wheeling City Manager
Status: On-going
Mitigation Type: Public Education and Awareness

Project 1B.1.4: Create a public speaking series on hazard related topics.

Affected Jurisdictions: Ohio County

	City of Wheeling
Timeframe:	On-going
Funding Source (*Cost Estimate*):	Creation of speeches should require little to no additional funding. (*N/A*)
Coordinating Agency:	WOCEMA
Status:	Completed
Mitigation Type:	Public Education and Awareness

Project 1B.1.5: Ensure that the Red Cross citizens' disaster course is held on a frequent basis.

Affected Jurisdictions:	Ohio County
	City of Wheeling
Timeframe:	On-going
Funding Source (*Cost Estimate*):	Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency:	American Red Cross
Status:	On-going
Mitigation Type:	Emergency Services

Project 1B.1.6: Update the WOCEMA website to provide hazard related information that is easily accessible.

Affected Jurisdictions:	Ohio County
	City of Wheeling
Timeframe:	1 year
Funding Source (*Cost Estimate*):	Maintenance of the website is an on-going process; an update should require no significant additional funding. (*N/A*)
Coordinating Agency:	WOCEMA
Status:	Completed
Mitigation Type:	Public Education and Awareness

Project 1B.1.7: Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: WOCEMA
Wheeling Fire Department
Ohio County Schools
Status: On-going
Mitigation Type: Public Education and Awareness

Project 1B.1.8: Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: WOCEMA
Status: On-going
Mitigation Type: Public Education and Awareness

Project 1B.1.9: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
City of Wheeling
Timeframe: 5 years
Funding Source (*Cost Estimate*): Lattamus Communications (*Up to $1,000,000, contingent on the project*)
Coordinating Agency: WOCEMA
Wheeling-Ohio County 911
Status: Completed

Mitigation Type: Public Education and Awareness

Objective 1B.2: Target owners of properties within identified hazard areas for additional outreach regarding mitigation and disaster preparedness.

Project 1B.2.1: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): PDM (*Up to $5,000 for dissemination of information*)
Coordinating Agency: Ohio County Development
Status: On-going
Mitigation Type: Public Education and Awareness

Project 1B.2.2: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: 5 years
Funding Source (*Cost Estimate*): PDM (*Up to $500 per center for the creation of information*)
Coordinating Agency: Ohio County Commission
Wheeling City Manager
Triadelphia Town Council
Status: On-going
Mitigation Type: Public Education and Awareness

Project 1B.2.3: Continue to hold local course on National Flood Insurance

Program (NFIP) for realtors, bankers, and insurers.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): WVDHSEM (*Courses provided by state at no charge locally*)
Coordinating Agency: WVDHSEM
Status: On-going
Mitigation Type: Emergency Services

Objective 1B.3: Evaluate existing shelters to determine adequacy for current and future populations.

Project 1B.3.1: Ensure that all shelters have adequate emergency power resources.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: American Red Cross
Status: On-going
Mitigation Type: Emergency Services

Project 1B.3.2: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: 1 year
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)

Coordinating Agency: American Red Cross
WOCEMA
Status: On-going
Mitigation Type: Emergency Services

Project 1B.3.3: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): N/A (*N/A*)
Coordinating Agency: Ohio County Animal Control
Ohio County Society for the Prevention of Cruelty to Animals
WVU Extension Service
Status: On-going
Mitigation Type: Emergency Services

Objective 1B.4: Ensure adequate training and resources for emergency organizations and personnel.

Project 1B.4.1: Teach Community Emergency Response Team (CERT) classes in Ohio County.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Citizen Corps (*Up to $2,500 per course for purchase of backpacks and other materials*)
Coordinating Agency: WOCEMA
Status: On-going

Mitigation Type: Emergency Services

Project 1B.4.2: Increase the number of trained citizen emergency responders.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Citizen Corps (*Increasing volunteers would require no additional funding*)
Coordinating Agency: American Red Cross
Status: On-going
Mitigation Type: Emergency Services

Project 1B.4.3: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: 5 years
Funding Source (*Cost Estimate*): HMEP, EMPG (*Up to $5,000 apiece*)
Coordinating Agency: WOCEMA
Status: On-going
Mitigation Type: Emergency Services

Project 1B.4.4: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)

Coordinating Agency: National Weather Service
Status: On-going
Mitigation Type: Emergency Services

Project 1B.4.5: Continue to conduct National Weather Service Storm Spotter classes.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: National Weather Service
Status: On-going
Mitigation Type: Emergency Services

Goal 2B: Reduce the current and future risks from hazards in Ohio County.

Objective 2B.1: Evaluate and update existing floodplain ordinances to meet or exceed the NFIP standards.

Project 2B.1.1: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: WOCEMA
WVDHSEM
Status: On-going

Mitigation Type: Prevention

Objective 2B.2: Improve the enforcement of existing floodplain regulations.

Project 2B.2.1: Provide additional training to county and municipal development officials on NFIP requirements.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: WVDHSEM
Status: On-going
Mitigation Type: Prevention

Goal 3B: Improve emergency preparedness in Ohio County and its incorporated municipalities.

Objective 3B.1: Update emergency operations plan (EOP).

Project 3B.1.1: Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the *Ohio County Hazard Mitigation Plan*.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): PDM (*Up to $5,000*)
Coordinating Agency: WOCEMA
Status: On-going
Mitigation Type: Emergency Services

Project 3B.1.2: Ensure that the county and all municipalities adopt the revised EOP.

Affected Jurisdictions: Ohio County
Village of Bethlehem

Village of Clearview
Town of Triadelphia
Village of Valley Grove
Town of West Liberty
City of Wheeling

Timeframe: On-going

Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)

Coordinating Agency: WOCEMA

Status: On-going

Mitigation Type: Emergency Services

Objective 3B.2: Improve coordination and communication among disaster response organizations, local, and county governments.

Project 3B.2.1: Expand the mission and membership of the Wheeling - Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.

Affected Jurisdictions: Ohio County
City of Wheeling

Timeframe: 3 years

Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)

Coordinating Agency: WOCEMA
Wheeling-Ohio County LEPC

Status: Completed

Mitigation Type: Emergency Services

Objective 3B.3: Update equipment at the E911 Communications Center.

Project 3B.3.1: Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).

Affected Jurisdictions: Ohio County
City of Wheeling

Timeframe: 1 year

Funding Source (*Cost Estimate*): Local Funding (*Funding already budgeted per addressing and 911 tasks*)
Coordinating Agency: WOCEMA
Ohio County Assessor's Office
Wheeling Police Department
Wheeling-Ohio County 911
Status: Completed
Mitigation Type: Emergency Services

Goal 4B: Reduce the potential impact of natural and man-made disasters on private property.

Objective 4B.1: Encourage participation in the National Flood Insurance Program.

Project 4B.1.1: Conduct outreach efforts to educate municipalities about the NFIP and its requirements.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): WVDHSEM, FEMA (*Up to $2,500 for the creation and distribution of materials*)
Coordinating Agency: WOCEMA
Status: On-going
Mitigation Type: Prevention

Project 4B.1.2: Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Information already exists; obtaining it should not require additional funding. (*N/A*)

Coordinating Agency: WOCEMA
WVDHSEM
Status: On-going
Mitigation Type: Prevention

Objective 4B.2: Identify all repetitive loss structures throughout the county.

Project 4B.2.1: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.

Affected Jurisdictions: Ohio County
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Information already exists; obtaining it should not require additional funding. (*N/A*)
Coordinating Agency: WOCEMA
Status: Completed
Mitigation Type: Prevention

Project 4B.2.2: Develop a database of information on all repetitive loss properties including maps.

Affected Jurisdictions: Ohio County
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: 1 year
Funding Source (*Cost Estimate*): Information already exists; obtaining it should not require additional funding. (*N/A*)
Coordinating Agency: WOCEMA
Status: On-going
Mitigation Type: Prevention

Project 4B.2.3: Identify owners of repetitive loss properties that may be willing to

participate in future property acquisition and relocation projects.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Town of Triadelphia
City of Wheeling

Timeframe: On-going

Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)

Coordinating Agency: WVDHSEM

Status: On-going

Mitigation Type: Structural Projects

Goal 5B: Reduce the potential impact of natural and man-made disasters on the county's historic treasures.

Objective 5B.1: Improve coordination of mitigation efforts with the Wheeling Historical Society.

Project 5B.1.1: Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.

Affected Jurisdictions: Ohio County
City of Wheeling

Timeframe: On-going

Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)

Coordinating Agency: WOCEMA

Status: On-going

Mitigation Type: Emergency Services

Objective 5B.2: Identify and protect other historic structures throughout the county that are at risk from hazards.

Project 5B.2.1: Conduct a survey of all historic sites that are located in hazard areas.

Affected Jurisdictions: Ohio County

City of Wheeling

Timeframe: On-going

Funding Source (*Cost Estimate*): National Historical Grants (*Up to $10,000 contingent on the use of consultants*)

Coordinating Agency: Wheeling Historical Society

Status: On-going

Mitigation Type: Prevention

Project 5B.2.2: Develop mitigation strategies to protect any at-risk historic properties.

Affected Jurisdictions: Ohio County
City of Wheeling

Timeframe: On-going

Funding Source (*Cost Estimate*): National Historical Grants (*Funding would only be necessary should projects be implemented*)

Coordinating Agency: Wheeling Historical Society
WOCEMA

Status: On-going

Mitigation Type: Prevention

Goal 6B: Develop better hazard data for Ohio County and the municipalities.

Objective 6B.1: Update flood hazard mapping.

Project 6B.1.1: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.

Affected Jurisdictions: Ohio County
City of Wheeling

Timeframe: 5 years

Funding Source (*Cost Estimate*): FEMA (*Up to $1,000,000 for complete project*)

Coordinating Agency: WOCEMA

Status: Completed

Mitigation Type: Prevention

Objective 6B.2: Assess vulnerability of transportation systems and assets located in hazard areas.

Project 6B.2.1: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): WVDOH (*Projects could cost up to $1,000,000*)
Coordinating Agency: WOCEMA
WVDOH
Status: On-going
Mitigation Type: Structural Projects

Project 6B.2.2: Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.

Affected Jurisdictions: Ohio County
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): Coordination should require little to no additional funding. (*N/A*)
Coordinating Agency: WOCEMA
Status: Completed
Mitigation Type: Emergency Services

Objective 6B.3: Conduct a Hazardous Materials Survey to better understand the nature and extent of hazardous materials risks throughout the county.

Project 6B.3.1: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.

Affected Jurisdictions: Ohio County
Village of Bethlehem
Village of Clearview
Town of Triadelphia
City of Wheeling
Timeframe: On-going
Funding Source (*Cost Estimate*): HMEP (*Up to $5,000*)
Coordinating Agency: Wheeling-Ohio County LEPC
Status: On-going
Mitigation Type: Emergency Services

WETZEL COUNTY

Goal 1C: Reduce the negative effects of flooding in Wetzel County.

Objective 1C.1: Minimize future flood damage in municipal areas through effective storm water management.

Project 1C.1.1: Update the plan to monitor and clean storm water drainage systems within municipalities.

Affected Jurisdictions: City of New Martinsville
Timeframe: 1-3 years
Cost Estimate (*Funding Source*): Plan development should not require additional funds. (N/A)
Coordinating Agency: New Martinsville Floodplain Coordinator
Status: On-going
Mitigation Type: Prevention

Project 1C.1.2: Construct floodwalls in flood prone areas and where feasible.

Affected Jurisdictions: City of New Martinsville
City of Paden City
Timeframe: 5 years
Cost Estimate (*Funding Source*): Cost will vary depending individual project scope. (CDBG, NRCS, WVDEP)
Coordinating Agency: WVDEP

USDA

Status: Deferred

Mitigation Type: Structural Projects

Project 1C.1.3: Create flood control dams in flood prone areas.

Affected Jurisdictions: City of New Martinsville
City of Paden City

Timeframe: 5 years

Cost Estimate (*Funding Source*): Cost will vary depending individual project scope. (CDBG, NRCS, WVDEP)

Coordinating Agency: WVDEP
USDA

Status: Deferred

Mitigation Type: Structural Projects

Objective 1C.2: Decrease future flood damage in municipal areas through periodic culvert inspections.

Project 1C.2.1: Coordinate with the WVDOH to conduct culvert inspections throughout the county.

Affected Jurisdictions: Wetzel County

Timeframe: 1 year

Cost Estimate (*Funding Source*): Inspections should not require additional funds. (WVDOH)

Coordinating Agency: WVDOH

Status: On-going

Mitigation Type: Prevention

Objective 1C.3: Determine which areas of the county receive the most rainfall and are the more prone to flooding.

Project 1C.3.1: Strategically place several rain gauges throughout Wetzel County. Periodically check gauges and report results to county representatives.

Affected Jurisdictions: Wetzel County

Timeframe: 1 year

Cost Estimate (*Funding Source*): Unknown. (TBD)

Coordinating Agency: Wetzel County Office of Emergency Services (WCOES)
Watershed Organizations
Status: On-going
Mitigation Type: Emergency Services

Objective 1C.4: Minimize flood damage throughout Wetzel County by increasing control over development in the floodplain.

Project 1C.4.1: Instate a countywide permitting process which will require residents and/or developers. To file a permit with the county before beginning any new construction as a means of regulating floodplain development.

Affected Jurisdictions: Wetzel County
Timeframe: 1 year
Cost Estimate (*Funding Source*): Permitting process should not require additional funds. (N/A)
Coordinating Agency: Wetzel County Commission
Status: Deferred
Mitigation Type: Prevention

Project 1C.4.2: Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain.

Affected Jurisdictions: Wetzel County
Timeframe: 1 year
Cost Estimate (*Funding Source*): Should not require additional funds. (N/A)
Coordinating Agency: Wetzel County Commission
Status: Deferred
Mitigation Type: Prevention

Project 1C.4.3: Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.

Affected Jurisdictions: City of New Martinsville
City of Paden City
Timeframe: On-going

Cost Estimate (*Funding Source*): Should not require additional funds. (N/A)
Coordinating Agency: Municipal Floodplain Coordinators
WCOES
Status: On-going
Mitigation Type: Structural Projects

Project 1C.4.4: Continue to apply for funding for projects that will increase the county's CRS.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): Should not require additional funds. (N/A)
Coordinating Agency: Wetzel County Commission
WCOES
Status: On-going
Mitigation Type: Prevention

Objective 1C.5: Establish emergency routes of travel through municipal areas for flood evacuation.

Project 1C.5.1: Coordinate with local fire departments to designate alternative routes with signage.

Affected Jurisdictions: Town of Hundred
City of New Martinsville
City of Paden City
Town of Pine Grove
Town of Smithfield
Timeframe: 1 year
Cost Estimate (*Funding Source*): Cost will depend on signage. (Local funds, PDM)
Coordinating Agency: WCOES
Local Fire Departments
Status: On-going
Mitigation Type: Emergency Services

Goal 2C: Reduce the negative effects of severe winter storms in Wetzel County.

Objective 2C.1: Upgrade and increase snow removal capabilities throughout Wetzel County.

Project 2C.1.1: Coordinate with the West Virginia DOH to create more contracts for emergency snow removal.

Affected Jurisdictions: Wetzel County
Timeframe: 1 year
Cost Estimate (*Funding Source*): Cost will vary with amount and scope of contracts. (WVDOH)
Coordinating Agency: WVDOH
WCOES
Status: On-going
Mitigation Type: Emergency Services

Project 2C.1.2: Increase the amount of snow removal equipment on county routes to speed up snow removal process.

Affected Jurisdictions: Wetzel County
Timeframe: 1 year
Cost Estimate (*Funding Source*): Cost will vary with amount and scope of contracts. (WVDOH)
Coordinating Agency: WVDOH
Private Contactors
Status: On-going
Mitigation Type: Emergency Services

Goal 3C: Reduce the negative effects of severe thunderstorms in Wetzel County.

Objective: 3C.1: Continue public information distributions to raise awareness as to the safety procedures to follow in the event of a severe thunderstorm.

Project 3C.1.1: Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.

Affected Jurisdictions: Town of Smithfield

Timeframe: 3 months
Cost Estimate (*Funding Source*): $1,500-4,000. (Local funds)
Coordinating Agency: WCOES
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 4C: Lessen hail damage in Wetzel County.

Objective: 4C.1: Provide local residents with more advance warning of impending hailstorms.

Project 4C.1.1: Coordinate efforts with local media to provide earlier warning to county residents of impending hailstorms.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): Warnings should not require additional funds. (N/A)
Coordinating Agency: WCOES
Local Media Outlets
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 5C: Reduce damage from severe wind and tornadoes in Wetzel County.

Objective 5C.1: Increase public awareness that severe wind or a tornado is imminent.

Project 5C.1.1: Coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe wind or tornado conditions.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): No additional funding is necessary. (N/A)
Coordinating Agency: WCOES
National Weather Service
Status: On-going

Mitigation Type: Public Education and Awareness

Objective 5C.2: Continue to promote building construction techniques to minimize future damage from severe wind or tornadoes.

Project 5C.2.1: Enforce county-wide building codes that model the statewide 90-mph wind load rating.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): No additional funds required. (N/A)
Coordinating Agency: WCOES
Wetzel County Commission
Wetzel County Planning Office
Status: Deferred
Mitigation Type: Prevention

Goal 6C: Lessen the effects of landslides in Wetzel County.

Objective 6C.1: Minimize future damage from landslides throughout Marshall County by increasing control over construction activities.

Project 6C.1.1: Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed.

Affected Jurisdictions: Wetzel County
Timeframe: 1 year
Cost Estimate (*Funding Source*): No additional funding necessary; however, administrative costs may be associated with code enforcement. (N/A)
Coordinating Agency: Wetzel County Commission
Status: Deferred
Mitigation Type: Prevention

Project 6C.1.2: Reduce the amount of landslides occurrences in Wetzel County by monitoring clear cutting operations.

Affected Jurisdictions: Town of Hundred

Timeframe: 6 months

Cost Estimate (*Funding Source*): No additional funding necessary; however, administrative costs may be associated with code enforcement. (N/A)

Coordinating Agency: Municipal Council
WVDNR
Timbering Industry

Status: On-going

Mitigation Type: Prevention

Goal 7C: Reduce the potential effects of earthquakes in Wetzel County.

Objective 7C.1: Educate the public as to the potential for earthquakes in West Virginia, specifically Marshall County.

Project 7C.1.1: Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes.

Affected Jurisdiction: Wetzel County

Timeframe: 6 months

Cost Estimate (*Funding Source*): $1,500-3,000. (PDM)

Coordinating Agency: WCOES
WVDHSEM

Status: On-going

Mitigation Type: Public Education and Awareness

Goal 8C: Reduce the negative effects of drought in Wetzel County.

Objective: 8C.1: Decrease the effects of drought in rural areas through infrastructure extensions and upgrades.

Project 8C.1.1: Coordinate with local public service districts to expand system capabilities.

Affected Jurisdictions: Town of Pine Grove
Timeframe: 5 years
Cost Estimate (*Funding Source*): Cost will vary depending on project scope. (CDBG, WVIJDC, USDA RD)
Coordinating Agency: Municipal Council
Status: On-going
Mitigation Type: Structural Projects

Objective: 8C.2: Increase public awareness as to the agricultural effects of drought, as well as the ramifications of drought to the public water supply.

Project 8C.2.1: Develop an informational brochure to distribute to local farmers and residents.

Affected Jurisdictions: Wetzel County
Timeframe: 6 months
Cost Estimate (*Funding Source*): $1,500-3,000. (USDA)
Coordinating Agency: Farm Bureau
West Virginia University
Natural Resource Conservation Service
Status: On-going
Mitigation Type: Public Education and Awareness

Project 8C.2.2: Publicize locations where residents can obtain water during severe drought conditions.

Affected Jurisdictions: Wetzel County
Timeframe: 6 months
Cost Estimate (*Funding Source*): $500-2,500. (USDA)
Coordinating Agency: WCOES
PSDs
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 9C: Protect Wetzel County populations and forests from wildfires.

Objective 9C.1: Educate the public on how to avoid starting wildfires.

Project 9C.1.1: Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.

Affected Jurisdictions: Wetzel County
Timeframe: 1 year
Cost Estimate (*Funding Source*): $1,500-3,000. (WVDNR, State Parks Commission)
Coordinating Agency: WVDNR
State Parks Commission
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 10C: Protect Wetzel County's population from utility failure.

Objective 10C.1: Reduce future occurrences of utility failures through effective maintenance of existing electric power lines.

Project 10C.1.1: Coordinate with the power company to clear trees and other debris from electric lines throughout the county.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): No additional funding required from the county. (N/A)
Coordinating Agency: Allegheny Power
Wetzel County Commission
Status: On-going
Mitigation Type: Prevention

Goal 11C: Protect Wetzel County's population from terrorist activities.

Objective: 11C.1: Increase countywide preparedness for terrorist attacks.

Project 11C.1.1: Update terrorist annexes in county Emergency Operations Plans (EOPs).

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): No additional funding required. (N/A)
Coordinating Agency: WCOES
Wetzel County Commission
Status: Completed
Mitigation Type: Emergency Services

Objective: 11C.2: Increase public knowledge and awareness as to the policies and procedures to be conducted in the event of a bomb threat.

Project 11C.2.1: Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): Little to no additional funds needed. (N/A)
Coordinating Agency: WCOES
Wetzel County Commission
Status: On-going
Mitigation Type: Public Education and Awareness

Goal 12C: Protect the general public in Wetzel County from hazardous materials incidents.

Objective 12C.1: Study and evaluate transportation systems for problems that could lead to hazard materials spills and other incidents.

Project 12C.1.1: Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): 2,500-5,000. (HMGP, SERC, PDM)
Coordinating Agency: Marshall-Wetzel LEPC
Status: Completed
Mitigation Type: Emergency Services

Project 12C.1.2: Increase public education and awareness regarding hazardous materials (HAZMAT) incidents.

Affected Jurisdictions: Wetzel County
Timeframe: On-going
Cost Estimate (*Funding Source*): 2,500-5,000. (HMGP, SERC, PDM)
Coordinating Agency: WCOES
Status: On-going
Mitigation Type: Public Education and Awareness

3.2 IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

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

This portion of the plan identifies specific mitigation actions for each participating jurisdiction. It takes the "master county lists" presented in Section 3.1 above and lists projects jurisdiction-by-jurisdiction. It is significant to note that the same project may be listed for multiple jurisdictions.

BENWOOD, CITY OF

- *Project 1A.4.1*: Continue projects to upgrade the floodwall in the City of Benwood.
- *Project 14A.2.2*: Coordinate with first responders for interagency cooperation to assist in collaborative planning.
- *Project 14A.2.4*: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.

BETHLEHEM, VILLAGE OF

- *Project 1B.1.9*: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.
- *Project 1B.3.2*: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.
- *Project 1B.4.1*: Teach Community Emergency Response Team (CERT) classes in Ohio County.
- *Project 1B.4.2*: Increase the number of trained citizen emergency responders.
- *Project 1B.4.5*: Continue to conduct National Weather Service Storm Spotter classes.
- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.
- *Project 4B.2.3*: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.

- *Project 6B.2.1*: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.
- *Project 6B.3.1*: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.

CAMERON, CITY OF

- *Project 1A.2.1*: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.
- *Project 1A.2.3*: For a community watershed group to look at stream bank restoration in the Cameron area.
- *Project 14A.1.1*: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.
- *Project 14A.2.2*: Coordinate with first responders for interagency cooperation to assist in collaborative planning.
- *Project 14A.2.4*: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.

CLEARVIEW, VILLAGE OF

- *Project 1B.1.9*: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.
- *Project 1B.3.2*: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.
- *Project 1B.4.1*: Teach Community Emergency Response Team (CERT) classes in Ohio County.
- *Project 1B.4.2*: Increase the number of trained citizen emergency responders.
- *Project 1B.4.5*: Continue to conduct National Weather Service Storm Spotter classes.
- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.
- *Project 4B.2.2*: Develop a database of information on all repetitive loss properties including maps.
- *Project 6B.2.1*: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.

- *Project 6B.3.1*: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.

GLEN DALE, CITY OF

- *Project 1A.2.1*: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.
- *Project 1A.2.5*: Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.
- *Project 14A.2.2*: Coordinate with first responders for interagency cooperation to assist in collaborative planning.
- *Project 14A.2.4*: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.

HUNDRED, TOWN OF

- *Project 1C.5.1*: Coordinate with local fire departments to designate alternative routes with signage.
- *Project 6C.1.2*: Reduce the amount of landslides occurrences in Wetzel County by monitoring clear cutting operations.

MARSHALL COUNTY

- *Project 1A.1.1*: Attempt to instate a countywide permitting process through the planning commission and assessor's office, which will require residents and/or developers to file a permit with the county before beginning any new construction in the floodplain.
- *Project 1A.1.2*: Review additional permitting processes used in other counties to determine if wording regarding the use of certain building materials is appropriate in the county floodplain ordinance.
- *Project 1A.2.1*: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.
- *Project 1A.2.2*: Continue to undertake stream cleaning and stream bank restoration projects throughout the county as a means of lessening flood damage to personal property and roadways.
- *Project 1A.2.6*: As funds are available, undertake acquisition or elevation projects of repetitive loss and other flood-prone properties.

- *Project 1A.3.1*: Coordinate county efforts to meet the requirements of becoming a participant in the CRS.
- *Project 2A.1.1*: Develop early warning and public notification capabilities through the use of such items as “Reverse 911” and AM radio stations.
- *Project 3A.1.1*: Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.
- *Project 4A.1.1*: Continue coordinating efforts with local media to post advance warnings of hailstorms.
- *Project 5A.1.1*: Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.
- *Project 5A.2.1*: Ensure inclusion of wind hazards in public information campaigns.
- *Project 6A.1.1*: In coordination with monitoring floodplain development, continue to encourage the general public to use materials that can withstand moderate land subsidence during construction.
- *Project 7A.1.1*: Educate the public as to the earthquake risk in West Virginia. Dissemination of information can be via elementary school distribution.
- *Project 8A.1.1*: Distribute informational brochures developed by the NRCS to local farmers and residents.
- *Project 8A.1.2*: Educate local residents on the benefits of conserving water.
- *Project 9A.1.1*: Distribute information concerning the leading causes of wildfires, steps the general public can take to avoid starting wildfires, and instructions for controlled burns.
- *Project 10A.1.1*: Produce public awareness campaigns through local media.
- *Project 10A.1.2*: Continue pandemic flu planning efforts.
- *Project 11A.1.1*: Strengthen existing landline communications networks.
- *Project 11A.1.2*: Continue efforts to construct towers to facilitate better cellular and wireless communications.
- *Project 11A.1.3*: Once towers are constructed, negotiate with owners to use towers during emergency situations.
- *Project 11A.2.1*: Undertake a public education campaign regarding proper

generator usage.

- *Project 11A.2.2*: Encourage local gas companies to undertake a public education campaign regarding resident and company rights surrounding gas-line rights-of-way.
- *Project 11A.3.1*: Work with sheltering agencies to ensure that those facilities identified as shelters have back-up power capabilities.
- *Project 11A.3.2*: Coordinate with AEP to ensure adequate coverage for emergency call-outs in the event of a downed electric line.
- *Project 12A.1.1*: Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large or high-profile events.
- *Project 13A.1.1*: Update the commodity flow study for Marshall County.
- *Project 13A.1.2*: Continue to assess the feasibility of cleaning up busy intersections.
- *Project 13A.2.1*: Ensure measures and tips for evacuations are included in on-going public education efforts.
- *Project 13A.2.2*: Facilitate the creation of safe zones as places where residents can go in the event of a hazardous materials incident. Further, publicize the location and access to these safe zones.
- *Project 14A.1.1*: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.
- *Project 14A.1.2*: Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.
- *Project 14A.1.3*: Coordinate with local media to alert the public as to current threat status.
- *Project 14A.2.1*: Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.
- *Project 14A.2.2*: Coordinate with first responders for interagency cooperation to assist in collaborative planning.
- *Project 14A.2.3*: Continue education and training efforts of first responders and emergency personnel.
- *Project 14A.2.4*: Support health department planning for Strategic National

Stockpile (SNS) distributions during bioterrorism or other incidents.

- *Project 14A.3.1*: Continue to encourage schools to update procedural and evacuation plans in the event of a bomb threat.
- *Project 14A.4.1*: Encourage county assets to create and/or update procedural and evacuation plans in the event of a bomb threat.
- *Project 15A.1.1*: Evaluate dams and locks that play an integral role in water transportation and/or flood control.
- *Project 16.1.1*: Encourage drilling companies to educate the general public about natural gas safety, community outreach efforts, etc.

McMECHEN, CITY OF

- *Project 1A.2.1*: Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.
- *Project 1A.2.4*: Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.
- *Project 14A.1.1*: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.
- *Project 14A.2.2*: Coordinate with first responders for interagency cooperation to assist in collaborative planning.
- *Project 14A.2.4*: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.

MOUNDSVILLE, CITY OF

- *Project 12A.1.1*: Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large or high-profile events.
- *Project 14A.1.1*: Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.
- *Project 14A.2.2*: Coordinate with first responders for interagency cooperation to assist in collaborative planning.
- *Project 14A.2.4*: Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.

NEW MARTINSVILLE, CITY OF

- *Project 1C.1.1*: Update the plan to monitor and clean storm water drainage systems within municipalities.
- *Project 1C.1.2:* Construct floodwalls in flood prone areas and where feasible.
- *Project 1C.1.3*: Create flood control dams in flood prone areas.
- *Project 1C.4.3*: Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.
- *Project 1C.5.1*: Coordinate with local fire departments to designate alternative routes with signage.

OHIO COUNTY

- *Project 1B.1.1*: Create displays for use at public events (health fair, public awareness day, county fair).
- *Project 1B.1.2*: Create materials that are targeted towards tourist population.
- *Project 1B.1.3*: Utilize the media for the distribution and publication of hazard information.
- *Project 1B.1.4*: Create a public speaking series on hazard related topics.
- *Project 1B.1.5*: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.
- *Project 1B.1.6*: Update the WOCEMA website to provide hazard related information that is easily accessible.
- *Project 1B.1.7*: Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.
- *Project 1B.1.8*: Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.
- *Project 1B.1.9*: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.
- *Project 1B.2.1*: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).
- *Project 1B.2.2*: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information

on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.

- *Project 1B.2.3*: Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.
- *Project 1B.3.1*: Ensure that all shelters have adequate emergency power resources.
- *Project 1B.3.2*: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.
- *Project 1B.3.3*: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).
- *Project 1B.4.1*: Teach Community Emergency Response Team (CERT) classes in Ohio County.
- *Project 1B.4.2*: Increase the number of trained citizen emergency responders.
- *Project 1B.4.3*: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.
- *Project 1B.4.4*: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.
- *Project 1B.4.5*: Continue to conduct National Weather Service Storm Spotter classes.
- *Project 2B.1.1*: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.
- *Project 2B.2.1*: Provide additional training to county and municipal development officials on NFIP requirements.
- *Project 3B.1.1*: Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the *Ohio County Hazard Mitigation Plan*.
- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.
- *Project 3B.2.1*: Expand the mission and membership of the Wheeling - Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.

- *Project 3B.3.1*: Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).
- *Project 4B.1.1*: Conduct outreach efforts to educate municipalities about the NFIP and its requirements.
- *Project 4B.1.2*: Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.
- *Project 4B.2.1*: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
- *Project 4B.2.2*: Develop a database of information on all repetitive loss properties including maps.
- *Project 4B.2.3*: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.
- *Project 5B.1.1*: Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.
- *Project 5B.2.1*: Conduct a survey of all historic sites that are located in hazard areas.
- *Project 5B.2.2*: Develop mitigation strategies to protect any at-risk historic properties.
- *Project 6B.1.1*: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.
- *Project 6B.2.1*: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.
- *Project 6B.2.2*: Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.
- *Project 6B.3.1*: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.

PADEN CITY, CITY OF

- *Project 1C.1.2:* Construct floodwalls in flood prone areas and where feasible.
- *Project 1C.1.3*: Create flood control dams in flood prone areas.
- *Project 1C.4.3*: Continue to apply for Federal funding to raise or move at risk

structures (both RL and non-RL properties) within floodplains.

- *Project 1C.5.1*: Coordinate with local fire departments to designate alternative routes with signage.

PINE GROVE, TOWN OF

- *Project 1C.5.1*: Coordinate with local fire departments to designate alternative routes with signage.
- *Project 8C.1.1*: Coordinate with local public service districts to expand system capabilities.

SMITHFIELD, TOWN OF

- *Project 1C.5.1*: Coordinate with local fire departments to designate alternative routes with signage.
- *Project 3C.1.1*: Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.

TRIADELPHIA, TOWN OF

- *Project 1B.2.1*: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).
- *Project 1B.2.2*: Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.
- *Project 1B.2.3*: Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.
- *Project 1B.3.2*: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.
- *Project 1B.3.3*: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).
- *Project 1B.4.1*: Teach Community Emergency Response Team (CERT) classes in Ohio County.
- *Project 1B.4.2*: Increase the number of trained citizen emergency responders.

- *Project 1B.4.5*: Continue to conduct National Weather Service Storm Spotter classes.
- *Project 2B.1.1*: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.
- *Project 2B.2.1*: Provide additional training to county and municipal development officials on NFIP requirements.
- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.
- *Project 4B.1.1*: Conduct outreach efforts to educate municipalities about the NFIP and its requirements.
- *Project 4B.1.2*: Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.
- *Project 4B.2.1*: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
- *Project 4B.2.2*: Develop a database of information on all repetitive loss properties including maps.
- *Project 4B.2.3*: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.
- *Project 6B.2.1*: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.
- *Project 6B.3.1*: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.

VALLEY GROVE, VILLAGE OF

- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.

WEST LIBERTY, TOWN OF

- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.

WETZEL COUNTY

- *Project 1C.2.1*: Coordinate with the WVDOH to conduct culvert inspections

throughout the county.

- *Project 1C.3.1*: Strategically place several rain gauges throughout Wetzel County. Periodically check gauges and report results to county representatives.
- *Project 1C.4.1*: Instate a countywide permitting process which will require residents and/or developers. To file a permit with the county before beginning any new construction as a means of regulating floodplain development.
- *Project 1C.4.2*: Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain.
- *Project 1C.4.4*: Continue to apply for funding for projects that will increase the county's CRS.
- *Project 2C.1.1*: Coordinate with the West Virginia DOH to create more contracts for emergency snow removal.
- *Project 2C.1.2*: Increase the amount of snow removal equipment on county routes to speed up snow removal process.
- *Project 4C.1.1*: Coordinate efforts with local media to provide earlier warning to county residents of impending hailstorms.
- *Project 5C.1.1*: Coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe wind or tornado conditions.
- *Project 5C.2.1:* Enforce county-wide building codes that model the statewide 90-mph wind load rating.
- *Project 6C.1.1*: Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed.
- *Project 7C.1.1*: Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes.
- *Project 8C.2.1*: Develop an informational brochure to distribute to local farmers and residents.
- *Project 8C.2.2*: Publicize locations where residents can obtain water during severe drought conditions.
- *Project 9C.1.1*: Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.

- *Project 10C.1.1*: Coordinate with the power company to clear trees and other debris from electric lines throughout the county.
- *Project 11C.1.1*: Update terrorist annexes in county Emergency Operations Plans (EOPs).
- *Project 11C.2.1*: Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat.
- *Project 12C.1.1*: Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county.
- *Project 12C.1.2*: Increase public education and awareness regarding hazardous materials (HAZMAT) incidents.

WHEELING, CITY OF

- *Project 1B.1.1*: Create displays for use at public events (health fair, public awareness day, county fair).
- *Project 1B.1.2*: Create materials that are targeted towards tourist population.
- *Project 1B.1.3*: Utilize the media for the distribution and publication of hazard information.
- *Project 1B.1.4*: Create a public speaking series on hazard related topics.
- *Project 1B.1.5*: Ensure that the Red Cross citizen's disaster course is held on a frequent basis.
- *Project 1B.1.6*: Update the WOCEMA website to provide hazard related information that is easily accessible.
- *Project 1B.1.7*: Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum.
- *Project 1B.1.8*: Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.
- *Project 1B.1.9*: Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.
- *Project 1B.2.1*: Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).
- *Project 1B.2.2*: Establish all-hazard resource centers to be located in the main

office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.

- *Project 1B.2.3*: Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.
- *Project 1B.3.1*: Ensure that all shelters have adequate emergency power resources.
- *Project 1B.3.2*: Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.
- *Project 1B.3.3*: Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).
- *Project 1B.4.1*: Teach Community Emergency Response Team (CERT) classes in Ohio County.
- *Project 1B.4.2*: Increase the number of trained citizen emergency responders.
- *Project 1B.4.3*: Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.
- *Project 1B.4.4*: Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.
- *Project 1B.4.5*: Continue to conduct National Weather Service Storm Spotter classes.
- *Project 2B.1.1*: Work with the municipalities to update all floodplain ordinances adopted prior to 1987.
- *Project 2B.2.1*: Provide additional training to county and municipal development officials on NFIP requirements.
- *Project 3B.1.1*: Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the *Ohio County Hazard Mitigation Plan*.
- *Project 3B.1.2*: Ensure that the county and all municipalities adopt the revised EOP.
- *Project 3B.2.1*: Expand the mission and membership of the Wheeling - Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide

disaster task force.

- *Project 3B.3.1*: Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).
- *Project 4B.1.1*: Conduct outreach efforts to educate municipalities about the NFIP and its requirements.
- *Project 4B.1.2*: Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.
- *Project 4B.2.1*: Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
- *Project 4B.2.2*: Develop a database of information on all repetitive loss properties including maps.
- *Project 4B.2.3*: Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.
- *Project 5B.1.1*: Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.
- *Project 5B.2.1*: Conduct a survey of all historic sites that are located in hazard areas.
- *Project 5B.2.2*: Develop mitigation strategies to protect any at-risk historic properties.
- *Project 6B.1.1*: Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.
- *Project 6B.2.1*: Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.
- *Project 6B.2.2*: Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.
- *Project 6B.3.1*: Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.

3.3 IMPLEMENTATION OF MITIGATION ACTIONS

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

This section identifies the priority for implementing the projects identified in Sections 3.1 and 3.2. Each current project is listed with a "coordinating agency" in Section 3.1 that should be responsible for the overall implementation of the project.

Project (i.e., strategy) prioritization occurred in two (2) phases. First, the emergency managers ranked the 12 hazards considered by this plan, with "1" being the one to which they felt the region (or their county) was most vulnerable and "12" being the hazard to which they felt the county to be least vulnerable. The hazard priorities are as follows:

1. Flooding,
2. Winter storms,
3. Hazardous material incident,
4. Dam failure,
5. Thunderstorms,
6. Wind,
7. Land subsidence,
8. Wildfires,
9. Terrorism,
10. Drought,
11. Hailstorms, and
12. Earthquake.

Second, planning committees in each county ranked the projects for their jurisdiction. Projects receiving a rank of "1" were considered to be the highest priority project for that particular hazard. The following criteria (roughly corresponding to the STAPLEE method) were used as considerations when prioritizing projects.

- **Social Impacts:** Consider whether the public would support implementation of the project. If so, priority likely rises.

- **Technical Feasibility:** Consider whether the project can be done and if it will yield the intended outcomes. If yes, priority would likely rise.
- **Administrative Requirements:** Consider the staffing, funding, and maintenance requirements of the project. If current capabilities can successfully manage and sustain the project, priority would be strengthened.
- **Political Impacts:** Consider the acceptability of the project from the political frame. If it is likely to cause political upheaval, it would receive a lower priority.
- **Legal Ramifications:** Consider whether the project can be lawfully implemented. If not, the project cannot be listed.
- **Environmental Impacts:** Consider whether there would be negative consequences to environmental assets should the project be implemented. If assets are impact, priority would be likely to fall.
- **Economic Impacts/Cost Benefit:** A brief "benefit cost review" per Federal Emergency Management Agency (FEMA) Publication 386-5: Using Benefit Cost Review in Mitigation Planning was conducted for each project to determine the "pros" and "cons" of each project as it related to project prioritization. Maximizing the use of available funds would positively affect a project's priority.

BENWOOD, CITY OF

Project Number	Mitigation Project	Priority
1A.4.1	Continue projects to upgrade the floodwall in the City of Benwood.	**1**
14A.2.2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	**3**
14A.2.4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	**2**

BETHLEHEM, VILLAGE OF

Project Number	Mitigation Project	Priority
1B.1.9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	**1**

1B.3.2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	**3**
1B.4.1	Teach Community Emergency Response Team (CERT) classes in Ohio County.	**1**
1B.4.2	Increase the number of trained citizen emergency responders.	**2**
1B.4.5	Continue to conduct National Weather Service Storm Spotter classes.	**1**
3B.1.1	Ensure that the county and all municipalities adopt the revised EOP.	**1**
4B.2.3	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	**4**
6B.2.1	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	**3**
6B.3.1	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	**3**

CAMERON, CITY OF

Project Number	Mitigation Project	Priority
1A.2.1	Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	**3**
1A.2.3	For a community watershed group to look at stream bank restoration in the Cameron area.	**1**
14A.1.1	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	**2**
14A.2.2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	**5**
14A.2.4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	**4**

CLEARVIEW, VILLAGE OF

Project Number	Mitigation Project	Priority
1B.1.9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	**1**
1B.3.2	Establish a protocol for the sharing of annual shelter survey	**3**

	information between the local Red Cross chapter and the WOCEMA.	
1B.4.1	Teach Community Emergency Response Team (CERT) classes in Ohio County.	**1**
1B.4.2	Increase the number of trained citizen emergency responders.	**2**
1B.4.5	Continue to conduct National Weather Service Storm Spotter classes.	**1**
3B.1.2	Ensure that the county and all municipalities adopt the revised EOP.	**1**
4B.2.2	Develop a database of information on all repetitive loss properties including maps.	**3**
6B.2.1	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	**3**
6B.3.1	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	**3**

GLEN DALE, CITY OF

Project Number	Mitigation Project	Priority
1A.2.1	Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	**2**
1A.2.5	Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed.	**1**
14A.2.2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	**4**
14A.2.4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	**3**

HUNDRED, TOWN OF

Project Number	Mitigation Project	Priority
1C.5.1	Coordinate with local fire departments to designate alternative routes with signage.	**1**
6C.1.2	Reduce the amount of landslides occurrences in Wetzel County by monitoring clear cutting operations.	**2**

MARSHALL COUNTY

Project Number	Mitigation Project	Priority
1A.1.1	Attempt to instate a countywide permitting process through the planning commission and assessor's office, which will require residents and/or developers to file a permit with the county before beginning any new construction in the floodplain.	**7**
1A.1.2	Review additional permitting processes used in other counties to determine if wording regarding the use of certain building materials is appropriate in the county floodplain ordinance.	**7**
1A.2.1	Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	**2**
1A.2.2	Continue to undertake stream cleaning and stream bank restoration projects throughout the county as a means of lessening flood damage to personal property and roadways.	**1**
1A.2.3	For a community watershed group to look at stream bank restoration in the Cameron area.	**3**
1A.2.4	Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	**3**
1A.2.5	Form a community watershed group to look at stream bank restoration in the Little Grave Creek Watershed	**3**
1A.2.6	As funds are available, undertake acquisition or elevation projects of repetitive loss and other flood-prone properties.	**6**
1A.3.1	Coordinate county efforts to meet the requirements of becoming a participant in the CRS.	**1**
1A.4.1	Continue projects to upgrade the floodwall in the City of Benwood.	**1**
2A.1.1	Develop early warning and public notification capabilities through the use of such items as "Reverse 911" and AM radio stations.	**2**
3A.1.1	Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.	**5**
4A.1.1	Continue coordinating efforts with local media to post advance warnings of hailstorms.	**8**
5A.1.1	Continue to coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe thunderstorm conditions.	**5**
5A.2.1	Ensure inclusion of wind hazards in public information campaigns.	**8**
6A.1.1	In coordination with monitoring floodplain development, continue to encourage the general public to use materials that can withstand moderate land subsidence during construction.	**7**
7A.1.1	Educate the public as to the earthquake risk in West Virginia. Dissemination of information can be via elementary school distribution.	**8**

8A.1.1	Distribute informational brochures developed by the NRCS to local farmers and residents.	**8**
8A.1.2	Educate local residents on the benefits of conserving water.	**8**
9A.1.1	Distribute information concerning the leading causes of wildfires, steps the general public can take to avoid starting wildfires, and instructions for controlled burns.	**8**
10A.1.1	Produce public awareness campaigns through local media.	**8**
10A.1.2	Continue pandemic flu planning efforts.	**4**
11A.1.1	Strengthen existing landline communications networks.	**5**
11A.1.2	Continue efforts to construct towers to facilitate better cellular and wireless communications.	**5**
11A.1.3	Once towers are constructed, negotiate with owners to use towers during emergency situations.	**5**
11A.2.1	Undertake a public education campaign regarding proper generator usage.	**8**
11A.2.2	Encourage local gas companies to undertake a public education campaign regarding resident and company rights surrounding gas-line rights-of-way.	**5**
11A.3.1	Work with sheltering agencies to ensure that those facilities identified as shelters have back-up power capabilities.	**5**
11A.3.2	Coordinate with AEP to ensure adequate coverage for emergency call-outs in the event of a downed electric line.	**5**
12A.1.1	Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large or high-profile events.	**5**
13A.1.1	Update the commodity flow study for Marshall County.	**2**
13A.1.2	Continue to assess the feasibility of cleaning up busy intersections.	**4**
13A.2.1	Ensure measures and tips for evacuations are included in on-going public education efforts.	**8**
13A.2.2	Facilitate the creation of safe zones as places where residents can go in the event of a hazardous materials incident. Further, publicize the location and access to these safe zones.	**4**
14A.1.1	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	**2**
14A.1.2	Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.	**8**
14A.1.3	Coordinate with local media to alert the public as to current threat status.	**5**
14A.2.1	Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event.	**4**
14A.2.2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	**5**

14A.2.3	Continue education and training efforts of first responders and emergency personnel.	**8**
14A.2.4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	**4**
14A.3.1	Continue to encourage schools to update procedural and evacuation plans in the event of a bomb threat.	**4**
14A.4.1	Encourage county assets to create and/or update procedural and evacuation plans in the event of a bomb threat.	**2**
15A.1.1	Evaluate dams and locks that play an integral role in water transportation and/or flood control.	**4**
16A.1.1	Encourage drilling companies to educate the general public about natural gas safety, community outreach efforts, etc.	**5**

McMECHEN, CITY OF

Project Number	Mitigation Project	Priority
1A.2.1	Continue to work with the Natural Resource Conservation Service (NRCS) to facilitate studies in repeatedly flooded areas.	**3**
1A.2.4	Form a community watershed group to look at stream bank restoration in the Jims Run area of McMechen.	**1**
14A.1.1	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	**2**
14A.2.2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	**5**
14A.2.4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	**4**

MOUNDSVILLE, CITY OF

Project Number	Mitigation Project	Priority
12A.1.1	Coordinate with law enforcement providers and appropriate event organizers to ensure that adequate security is available during large or high-profile events.	**3**
14A.1.1	Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs); develop Continuity of Operations (COOP) plans.	**1**

14A.2.2	Coordinate with first responders for interagency cooperation to assist in collaborative planning.	**4**
14A.2.4	Support health department planning for Strategic National Stockpile (SNS) distributions during bioterrorism or other incidents.	**2**

NEW MARTINSVILLE, CITY OF

Project Number	Mitigation Project	Priority
1C.1.1	Update the plan to monitor and clean storm water drainage systems within municipalities.	**2**
1C.1.2	Construct floodwalls in flood prone areas and where feasible.	**4**
1C.1.3	Create flood control dams in flood prone areas.	**5**
1C.4.3	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	**1**
1C.5.1	Coordinate with local fire departments to designate alternative routes with signage.	**3**

OHIO COUNTY

Project Number	Mitigation Project	Priority
1B.1.1	Create displays for use at public events (health fair, public awareness day, county fair).	**5**
1B.1.2	Create materials that are targeted towards tourist population.	**5**
1B.1.3	Utilize the media for the distribution and publication of hazard information.	**3**
1B.1.4	Create a public speaking series on hazard related topics.	**5**
1B.1.5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	**3**
1B.1.6	Update the WOCEMA website to provide hazard related information that is easily accessible.	**3**
1B.1.7	Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum	**3**
1B.1.8	Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	**5**
1B.1.9	Develop a telephone information line for residents to obtain	**1**

	emergency preparedness information and current disaster information.	
1B.2.1	Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	**6**
1B.2.2	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	**1**
1B.2.3	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	**4**
1B.3.1	Ensure that all shelters have adequate emergency power resources.	**2**
1B.3.2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	**3**
1B.3.3	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	**3**
1B.4.1	Teach Community Emergency Response Team (CERT) classes in Ohio County.	**1**
1B.4.2	Increase the number of trained citizen emergency responders.	**2**
1B.4.3	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	**3**
1B.4.4	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	**2**
1B.4.5	Continue to conduct National Weather Service Storm Spotter classes.	**3**
2B.1.1	Work with the municipalities to update all floodplain ordinances adopted prior to 1987.	**5**
2B.2.1	Provide additional training to county and municipal development officials on NFIP requirements.	**1**
3B.1.1	Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the *Ohio County Hazard Mitigation Plan*.	**1**
3B.1.2	Ensure that the county and all municipalities adopt the revised EOP.	**1**
3B.2.1	Expand the mission and membership of the Wheeling - Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	**1**
3B.3.1	Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	**3**
4B.1.1	Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	**3**
4B.1.2	Obtain updated information on the number of NFIP	**3**

	policyholders in Ohio County and its municipalities.	
4B.2.1	Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	**3**
4B.2.2	Develop a database of information on all repetitive loss properties including maps.	**3**
4B.2.3	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	**3**
5B.1.1	Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	**4**
5B.2.1	Conduct a survey of all historic sites that are located in hazard areas.	**3**
5B.2.2	Develop mitigation strategies to protect any at-risk historic properties.	**5**
6B.1.1	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	**3**
6B.2.1	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	**5**
6B.2.2	Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.	**3**
6B.3.1	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	**3**

PADEN CITY, CITY OF

Project Number	Mitigation Project	Priority
1C.1.2	Construct floodwalls in flood prone areas and where feasible.	**3**
1C.1.3	Create flood control dams in flood prone areas.	**4**
1C.4.3	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	**1**
1C5.1	Coordinate with local fire departments to designate alternative routes with signage.	**2**

PINE GROVE, TOWN OF

Project Number	Mitigation Project	Priority
1C.5.1	Coordinate with local fire departments to designate alternative routes with signage.	**1**

8C.1.1	Coordinate with local public service districts to expand system capabilities.	**2**

SMITHFIELD, TOWN OF

Project Number	Mitigation Project	Priority
1C.5.1	Coordinate with local fire departments to designate alternative routes with signage.	**1**
3C.1.1	Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	**2**

TRIADELPHIA, TOWN OF

Project Number	Mitigation Project	Priority
1B.2.1	Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	**6**
1B.2.2	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	**1**
1B.2.3	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	**5**
1B.3.2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	**3**
1B.3.3	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	**3**
1B.4.1	Teach Community Emergency Response Team (CERT) classes in Ohio County.	**1**
1B.4.2	Increase the number of trained citizen emergency responders.	**2**
1B.4.5	Continue to conduct National Weather Service Storm Spotter classes.	**1**
2B.1.1	Work with the municipalities to update all floodplain ordinances adopted prior to 1987.	**3**
2B.2.1	Provide additional training to county and municipal development officials on NFIP requirements.	**5**
3B.1.2	Ensure that the county and all municipalities adopt the revised EOP.	**1**
4B.1.1	Conduct outreach efforts to educate municipalities about the	**3**

	NFIP and its requirements.	
4B.1.2	Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.	**3**
4B.2.1	Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	**3**
4B.2.2	Develop a database of information on all repetitive loss properties including maps.	**3**
4B.2.3	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	**4**
6B.2.1	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	**3**
6B.3.1	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	**3**

VALLEY GROVE, VILLAGE OF

Project Number	Mitigation Project	Priority
3B.1.2	Ensure that the county and all municipalities adopt the revised EOP.	**1**

WEST LIBERTY, TOWN OF

Project Number	Mitigation Project	Priority
3B.1.2	Ensure that the county and all municipalities adopt the revised EOP.	**1**

WETZEL COUNTY

Project Number	Mitigation Project	Priority
1C.1.1	Update the plan to monitor and clean storm water drainage systems within municipalities.	**2**
1C.1.2	Construct floodwalls in flood prone areas and where feasible.	**1**
1C.1.3	Create flood control dams in flood prone areas.	**1**
1C.2.1	Coordinate with the WVDOH to conduct culvert inspections throughout the county.	**1**
1C.3.1	Strategically place several rain gauges throughout Wetzel	**2**

	County. Periodically check gauges and report results to county representatives.	
1C.4.1	Instate a countywide permitting process which will require residents and/or developers. To file a permit with the county before beginning any new construction as a means of regulating floodplain development.	**3**
1C.4.2	Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed in a floodplain.	**3**
1C.4.3	Continue to apply for Federal funding to raise or move at risk structures (both RL and non-RL properties) within floodplains.	**1**
1C.4.4	Continue to apply for funding for projects that will increase the county's CRS.	**1**
1C.5.1	Coordinate with local fire departments to designate alternative routes with signage.	**3**
2C.1.1	Coordinate with the West Virginia DOH to create more contracts for emergency snow removal	**3**
2C.1.2	Increase the amount of snow removal equipment on county routes to speed up snow removal process.	**4**
3C.1.1	Update and distribute an informational brochure describing the proper safety procedures to carry out during a severe thunderstorm.	**5**
4C.1.1	Coordinate efforts with local media to provide earlier warning to county residents of impending hailstorms.	**5**
5C.1.1	Coordinate with the National Weather Service in Pittsburgh, Pennsylvania to warn residents of impending severe wind or tornado conditions.	**5**
5C.2.1	Enforce county-wide building codes that model the statewide 90-mph wind load rating.	**5**
6C.1.1	Instate countywide building codes, which will regulate the number of buildings and the materials used in buildings that are constructed.	**5**
6C.1.2	Reduce the amount of landslides occurrences in Wetzel County by monitoring clear cutting operations.	**4**
7C.1.1	Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information on measures to take to safe-proof homes and other structures from the potential effects of earthquakes.	**5**
8C.1.1	Coordinate with local public service districts to expand system capabilities.	**3**
8C.2.1	Develop an informational brochure to distribute to local farmers and residents.	**3**
8C.2.2	Publicize locations where residents can obtain water during severe drought conditions.	**3**
9C.1.1	Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.	**3**
10C.1.1	Coordinate with the power company to clear trees and other	**4**

	debris from electric lines throughout the county.	
11C.1.1	Update terrorist annexes in county Emergency Operations Plans (EOPs).	**2**
11C.2.1	Make the public aware of how to prepare for a bomb threat and who to contact if there is a threat.	**4**
12C.1.1	Perform commodity flow studies to further assess when, where, and what hazardous materials can pass through and into the county.	**2**
12C.1.2	Increase public education and awareness regarding hazardous materials (HAZMAT) incidents.	**3**

WHEELING, CITY OF

Project Number	Mitigation Project	Priority
1B.1.1	Create displays for use at public events (health fair, public awareness day, county fair).	**5**
1B.1.2	Create materials that are targeted towards tourist population.	**5**
1B.1.3	Utilize the media for the distribution and publication of hazard information.	**3**
1B.1.4	Create a public speaking series on hazard related topics.	**5**
1B.1.5	Ensure that the Red Cross citizen's disaster course is held on a frequent basis.	**3**
1B.1.6	Update the WOCEMA website to provide hazard related information that is easily accessible.	**3**
1B.1.7	Continue to work with the Ohio County school system to promote hazard mitigation education and awareness and discuss ways to better integrate mitigation into the curriculum	**3**
1B.1.8	Continue to work with non-governmental organizations (youth, service, professional, religious) to promote mitigation education and awareness.	**5**
1B.1.9	Develop a telephone information line for residents to obtain emergency preparedness information and current disaster information.	**1**
1B.2.1	Distribute letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).	**6**
1B.2.2	Establish all-hazard resource centers to be located in the main office of the county and cities. The centers will act as a repository for information on local hazard identification, preparedness, and mitigation strategies for use by citizens, realtors, and lenders.	**1**
1B.2.3	Continue to hold local course on National Flood Insurance Program (NFIP) for realtors, bankers, and insurers.	**4**
1B.3.1	Ensure that all shelters have adequate emergency power	**2**

	resources.	
1B.3.2	Establish a protocol for the sharing of annual shelter survey information between the local Red Cross chapter and the WOCEMA.	**3**
1B.3.3	Develop adequate emergency shelter and evacuation plans for animals (domestic pets, livestock, and wildlife).	**3**
1B.4.1	Teach Community Emergency Response Team (CERT) classes in Ohio County.	**1**
1B.4.2	Increase the number of trained citizen emergency responders.	**2**
1B.4.3	Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, city and county officials, and other disaster response agencies.	**3**
1B.4.4	Provide information about local, regional, state, and federal training opportunities to fire departments, EMS, ambulance services, and other emergency responders.	**2**
1B.4.5	Continue to conduct National Weather Service Storm Spotter classes.	**3**
2B.1.1	Work with the municipalities to update all floodplain ordinances adopted prior to 1987.	**5**
2B.2.1	Provide additional training to county and municipal development officials on NFIP requirements.	**1**
3B.1.1	Review the existing Wheeling-Ohio County EOP and update where necessary based on the recommendations of the *Ohio County Hazard Mitigation Plan*.	**1**
3B.1.2	Ensure that the county and all municipalities adopt the revised EOP.	**1**
3B.2.1	Expand the mission and membership of the Wheeling - Ohio County Local Emergency Planning Committee (LEPC) to act as a countywide disaster task force.	**1**
3B.3.1	Assist in the development of the Ohio Co. Enterprise Geographical Information System (GIS) and assist with the implementation of the E911 Center's Computer Aided Dispatch system (CAD).	**3**
4B.1.1	Conduct outreach efforts to educate municipalities about the NFIP and its requirements.	**3**
4B.1.2	Obtain updated information on the number of NFIP policyholders in Ohio County and its municipalities.	**3**
4B.2.1	Collect updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.	**3**
4B.2.2	Develop a database of information on all repetitive loss properties including maps.	**3**
4B.2.3	Identify owners of repetitive loss properties that may be willing to participate in future property acquisition and relocation projects.	**3**
5B.1.1	Establish a formal process for the city and the county to coordinate disaster related efforts, which will include defining boundaries and establishing responsibilities.	**4**
5B.2.1	Conduct a survey of all historic sites that are located in	**3**

	hazard areas.	
5B.2.2	Develop mitigation strategies to protect any at-risk historic properties.	**5**
6B.1.1	Work with FEMA and WVDHSEM on the Map Modernization Program to improve FIRMS.	**3**
6B.2.1	Work with WV Department of Highways to identify areas of frequent roadway flooding and develop mitigation strategies.	**5**
6B.2.2	Contact commercial and commuter rail lines to ensure that measures are being taken to address hazard risks.	**3**
6B.3.1	Identify strategies to mitigate risks from the transportation and/or storage of hazardous materials in Ohio County.	**3**

3.4 REGIONAL IMPLICATIONS

In most cases, the individual implementation of the projects listed in Sections 3.1 through 3.3 would not have a large impact on the region as a whole. There should, however, be significant coordination among the participating governments as these projects are implemented. The Northern Panhandle counties in West Virginia have demonstrated a superior ability to work together throughout the past several years; coordinating mitigation activities would simply be an extension of this coordination.

Some projects, such as public education and awareness efforts, could be accomplished through partnerships with neighboring jurisdictions. As such, individual jurisdictions could share costs and reduce duplication of effort. As can be seen by the above risk assessment, all of the counties are susceptible to the same types of hazards. Such a process is done on a "micro" level. For example, Marshall and Wetzel County share a Local Emergency Planning Committee (LEPC); as such, public outreach for hazardous material preparedness is done on a joint basis. Further, all three counties participate in the Northern Ohio River Industrial and Manufacturing Assistance Compact (NORIMAC) in partnership with the many industrial facilities along the northern Ohio River. Through this process, information and the burden for outreach and overall preparedness for industrial emergencies is shared.

Other examples of shared public education and project administration include the efforts of Marshall, Ohio, and Wetzel Counties through participation with West Virginia Homeland Security Region 2. This regional affiliation allows the counties to identify both mitigation and preparedness projects that can be maximized through a regional implementation. Through the purchase of such equipment items as generators and planning projects such as "special populations" response planning, all three (3) counties have utilized the regional arrangement effectively.

Finally, the three (3) counties work with the US Coast Guard and the US Army Corps of Engineers (USACE) through various port security programs on such topics as maritime security and flooding. These cooperative efforts could significantly benefit mitigation in the lower Northern Panhandle.

Though this document is a plan, it calls for a number of other planning initiatives to be completed. Those initiatives should keep this process as a part of the overall planning process. In other words, community leaders should not plan for the sake of planning. This document can provide evidence as to the hazards most likely faced by the

communities and planning should strengthen capabilities to lessen the effects of these types of emergencies. Further, communities should not plan in a vacuum. For example, several municipal jurisdictions (e.g., New Martinsville, Benwood, McMechen, Wheeling, etc.) are close to county lines and may frequently provide emergency response assistance to the neighboring jurisdiction. In the case of Wheeling and Ohio County, for example, it would be helpful for the plans maintained by Marshall and Ohio Counties to be consistent regarding the types of assistance each indicates it would seek from the other.

Finally, community leaders should remember that large structural projects could change the topography enough to affect neighboring jurisdictions, primarily with respect to the flooding hazard. For example, Benwood has indicated that its highest priority project is the repair of its floodwall. While this is a worthy project, it should be planned and implemented while keeping in mind the project's impacts downstream. Other projects, not related to mitigation, could have the same effect. For example, the construction of a shopping plaza with large parking lots could cause run-off to back up in unexpected places, many of which had not previously been susceptible to flooding. As with planning projects, local leaders would be encouraged to share their intentions (of implementing mitigation projects) with their neighbors.

There are a number of projects that were very similar in nature identified by each county. These strategies are sometimes not "true" mitigation projects (i.e., they do not remove people, facilities, etc. from hazard areas), but they do reduce losses by better preparing affected jurisdictions. Additionally, these types of projects lend themselves well to collaborative implementation.

- FLOODING
  - **Objective:** Coordinate with various partner agencies to maximize flood mitigation efforts.
    - **Project:** Coordinate with the WVDOH to identify frequently-flooded roadways and identify appropriate mitigation strategies to lessen the occurrences of flooding along these roadways.
      - **Timeframe:** On-going
      - **Cost Estimate (*Funding*):** Coordination and identification of strategies should require no additional funding. Any identified projects could be included on future WVDOH maintenance/project lists. (N/A)
      - **Coordinating Agency:** County Emergency Managers

- **Support Agencies:** WVDOH, Local Government
- **Mitigation Type:** Prevention

- MISCELLANEOUS
  - **Objective:** Provide local residents with more advance warning of impending severe weather, to include hailstorms, thunderstorms, wind storms, and winter storms.
    - **Project:** Coordinate with the appropriate NWS office to obtain advance warnings of severe weather.
      - **Timeframe:** On-going
      - **Cost Estimate (*Funding*):** The NWS already provides this information; revising the frequency with which it is transmitted should not require additional funding. (N/A)
      - **Coordinating Agency:** County Emergency Managers
      - **Support Agencies:** NWS
      - **Mitigation Type:** Public Education and Awareness

    - **Project:** Develop relationships with local medical providers to ensure quick dissemination of severe weather announcements.
      - **Timeframe:** On-going
      - **Cost Estimate (*Funding*):** Developing relationships should require no additional funding, assuming the media's continued cooperation in disseminating emergency messages.
      - **Coordinating Agency:** County Emergency Managers
      - **Support Agencies:** Local Media Providers
      - **Mitigation Type:** Public Education and Awareness

  - **Objective:** Educate the public on hazard mitigation and preparedness.
    - **Project:** Prepare public information campaigns regarding risks and family preparedness for such hazards as thunderstorms, high winds, hailstorms, earthquakes, and winter storms.
      - **Timeframe:** On-going
      - **Cost Estimate (*Funding*):** Up to $2,500 per campaign. (Pre-Disaster

Mitigation [PDM], Emergency Management Performance Grant [EMPG], Hazardous Materials Emergency Planning [HMEP] Grant, State Emergency Response Commission [SERC], Local Funding)

- **Coordinating Agency:** County Emergency Managers
- **Support Agencies:** LEPCs, Local Government
- **Mitigation Type:** Public Education and Awareness

SECTION 4.0

PLAN MAINTENANCE PROCESS

As with any plan, this document must be actively maintained in order to be a viable mitigation tool for participating jurisdictions. Section 4.0 outlines the general process that will be used to maintain this document.

4.0 PLAN MAINTENANCE PROCESS

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

The long-term success of this document depends in large part on monitoring, evaluating, and updating so that it will remain a valid tool for the participating communities to use. Also critical to the overall success of this strategy is the continued implementation of the local-level multi-jurisdictional mitigation efforts in accordance with this document.

Formal Plan Adoption

A total of 19 local governments in the Northern Panhandle of West Virginia have participated in the hazard mitigation planning process. Municipal jurisdictions were given ample opportunity to review and approve their sections of this document. Counties coordinated that process as well as participated in this process through their designated emergency managers.

This regional document has been designed to illustrate the impacts of hazards across the three (3)-county region and to highlight the benefits of a coordinated approach to hazard mitigation. Each of the jurisdictions affected by this document formally adopted it by a resolution of their governing board.

The adoption process included the delivery of a copy of this document to the local jurisdiction, along with a sample adopting resolution. County emergency managers coordinated this delivery. The emergency managers explained to

municipal and county leaders that this document serves as updates to the local-level mitigation plans they had adopted between 2004 and early 2009. Adopting resolutions were collected by the emergency managers to be maintained locally. Copies of all resolutions were scanned upon receipt and included alphabetically in Appendix 4 of this document.

The document was submitted to the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM) and the Federal Emergency Management Agency (FEMA) Region III prior to the adoption process to ensure that all federal and state planning regulations had been met. Doing so prior to adoption meant two (2) things: first, the plan was initially issued an "Approved Pending Adoption" status, and secondly, the adoption process was ultimately more efficient (because re-adoptions following revisions were not necessary).

Implementation

The implementation of this plan will likely prove to be more difficult than its adoption. As a regional document, there had been some question as to whether a jurisdiction not affected by a large-scale emergency could be funded for a high-priority mitigation project if its project ranked higher on the regional priority list than the highest-priority project of an affected jurisdiction. This plan, consequently, was designed with this issue in mind; as such, high priority actions have been included *for each participating jurisdiction* so each jurisdiction can pursue high-priority actions independently. Secondly, many of the jurisdictions in the planning area represent economically distressed areas, meaning that funding for large scale projects such as those advocated by this plan is often an issue. To ensure that mitigation efforts get underway, this document includes several low or no-cost recommendations.

An example of a low-cost, high-priority recommendation would be to pursue the education efforts necessary for elected officials and the general public as they relate to continued participation in the National Flood Insurance Program (NFIP). In other cases, jurisdictions may considering updating and/or revising their local floodplain ordinances and assisting state and federal authorities as they update flood mapping in their communities. With a number of "river communities" throughout the planning area, these types of "simple" mitigation projects could have a significant impact.

Another example of a low-cost project would be to integrate mitigation

awareness into the many other pre-emergency public information campaigns that the county emergency managers distribute on a routine basis. As an example, a variety of information on preparedness for hazardous material emergencies is frequently disseminated by the Local Emergency Planning Committees (LEPCs) serving the planning area. Those efforts could be integrated into overall mitigation strategies. Other public education efforts during such events as winter weather awareness week, etc. could equip the public with the knowledge necessary to "mitigate for themselves", which supports the concept of implementing mitigation at the lowest level possible.

Additionally, it should be noted that county emergency managers work with their counterparts in community and economic development planning to ensure that mitigation and emergency preparedness are integrated into other planning efforts, such as:

- Comprehensive planning,
- Capital improvement planning, and
- Economic development goals and incentives.

These emergency managers make risk information available to their local economic development agencies. In return, the communities and their emergency managers have been able to further overall preparedness as a part of these economic/community development projects. For example, Marshall County has created alternate facilities for the operation of county government at Grand Vue Park. The Wheeling-Ohio County Emergency Management Agency (WOCEMA) has implemented warning (e.g., AM radio station) and communications projects (e.g., radio towers) at The Highlands in western Ohio County.

The guiding principle under the implementation of this plan is that mitigation should be incorporated as much as possible into the daily actions of the coordinating agencies responsible for project implementation. During the development of the individual county plans in 2004 and 2008, county mitigation planning committees attempted to align as many existing programs as possible with mitigation efforts. Such an approach was also incorporated into this document. This approach ensures that mitigation efforts occur by default. While ensuring these efforts occur certainly helps show progress when this document is updated, it also builds buy-in for the strengthening of the community by not asking certain coordinating agencies to

shoulder an entirely list of new responsibilities.

It is also important to continually monitor funding opportunities that can be utilized to implement some of the larger mitigation recommendations in this document. County commissions, municipal councils, floodplain coordinators, and county-level emergency managers are often the Points of Contact (POCs) for such communication. Fortunately, emergency managers throughout the planning area (and West Virginia) frequently share these opportunities with colleagues. As such, a repository of funding options should be easy to maintain. Funding opportunities often present themselves in the aftermath of large-scale disasters, but they can also be present on a rotating cycle. The communities participating in this process have been cognizant of ranking both high and low-cost projects as "high priority" so that they can be in a position to take advantage of whatever funding opportunities arise.

By adopting this plan, communities in Marshall, Ohio, and Wetzel Counties commit to the following:

- Pursuing the implementation of high-priority, low/no cost recommended actions,
- Keeping the concept of mitigation in the forefront of community decision-making by identifying and stressing the recommendations of the hazard mitigation plan when other community goals, plans, and activities are discussed, and
- Maintaining a constant monitoring of multi-objective, cost-share opportunities to assist the participating communities in implementing the recommended actions of this plan for which no current funding or support exists.

Integration into Existing Planning Mechanisms

As the custodial agencies of this Hazard Mitigation Plan (HMP), county emergency managers should ensure that mitigation planning is incorporated, as appropriate, into other planning mechanisms. Such a statement is not meant to say that mitigation planning should inhibit other types of planning, such as community and economic development efforts. The statement should also not imply that emergency managers should be tasked with coordinating any other type of planning initiative. Ensuring compatibility between these effots, rather, should provide an opportunity for all types of planners to understand the interplay between risk, development, and future vulnerabilities. Integration can open a dialogue between

planners about how to responsibly plan the future of the communities throughout the planning area.

Also, the emergency managers will actively integrate the information contained in this risk assessment into other planning initiatives, such as the maintenance of their jurisdiction-specific Emergency Operations Plans (EOPs). These documents should support the strengthening of capabilities to respond to the hazards identified by the risk assessment. As mitigation projects are implemented and risk is thus reduced, the emergency services community may need to "re-plan" its response to address what has become (thanks to the mitigation project) a more critical risk.

Further, Economic Development Authorities (EDAs) have shown an ability to actively integrate risk assessment into their existing planning efforts. As mitigation projects are implemented, risks could be reduced to the point that additional areas may be targeted for development (e.g., a buyout project could create green space for a walking trail or park).

Mitigation has also been integrated into a number of existing planning/operating efforts on a county-specific basis. For example, representatives from the local Natural Resource Conservation Service (NRCS) and the WV Division of Highways (WVDOH) participated in the updating of the Marshall County sections of this plan. Those individuals made stakeholders aware of programs administered by their agencies, such as stream bank restoration and highway maintenance schedules. Some of these programs can significantly benefit mitigation efforts. As such, these programs have been listed appropriately in the list of local mitigation goals. In Ohio County, the county's Geographic Information System (GIS) mapper participated, integrating risk and vulnerability mapping into the county assessor's property mapping efforts (which are also shared with such entities as chambers of commerce, economic development authorities, private developers, etc. in the Wheeling-Ohio County area).

In general, local policies have not hindered hazard mitigation efforts. The jurisdictions participating in this planning process have used a variety of funding to complete mitigation projects in the past, including the Hazard Mitigation Grant Program (HMGP), Homeland Security Grant Program (HSGP), Emergency Management Performance Grant (EMPG), Community Development Block Grant (CDBG), Soil Conservation Service (SCS), and local funding. Local government

policies and programs have supported the use of this funding and, thus, the implementation of mitigation projects. Further, all participating government jurisdictions have demonstrated a capability to successfully implement and administer mitigation projects.

Maintenance

Plan maintenance requires an ongoing effort to monitor and evaluate the implementation of the plan, and to update the plan as progress, roadblocks, or changing circumstances are recognized. All three (3) counties in the planning area identified their county-level emergency management office as the coordinator of local reviews. Local reviews are to occur at no less than five (5)-year intervals. The counties also indicated that they may facilitate reviews following major disasters.

Each county identified several elements that can guide a review of this document. One is the use of Worksheet #4 from the FEMA "how-to series" (i.e., *State and Local Mitigation Planning How-To Guide: Developing the Mitigation Plan*). *NOTE: See below for a blank copy of the worksheet. Other, more conceptual, elements are as follows:

- **Ease of Implementation:** How smoothly has implementing the project (or similar types of projects) been? Have programs been readily available to assist in funding the implementation of the project (or similar types of projects)?
- **Cost Effectiveness:** Have sufficient funding sources been available to implement the project at a cost manageable by the local government? Have the costs of implementing the project been significantly less than the cumulative future costs potentially incurred by an un-corrected situation?
- **Social Impacts:** Has the public perceived that the project has positively lessened hazard-related losses? Has implementing the project adversely affected any segment of the population?
- **Political Impacts:** Has implementing a particular project (or type of project) been delayed due to the political consequences of its implementation?
- **Economic Impacts:** Has the cost/benefit ratio of implementing the project been acceptable? Has implementing a project adversely affected a particular segment of the local economy?

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

After each county convenes for a review, emergency managers should coordinate to ensure that this document is updated appropriately. Public participation should be assured as the plan is updated. The emergency managers can ensure that a public review process *for the entire regional document* is undertaken at least once per five (5)-year period by making sure that this document is the one that is reviewed rather than putting any locally-specific information out for a mitigation review.

This public review will include three (3) initiatives, including publishing an advertisement in the primary newspaper in all three (3) counties that invites the public to review the existing document with a list of proposed updates (i.e., the public comment form in Appendix 4 can be used to document these comments even during future updates), and holding properly-advertised public meetings in each county to solicit comments planning process and document. Finally, all three (3) county emergency managers indicated effective working relationships with a variety of civic organizations in their county and indicated that notice to review this document could be disseminated through those organizations (via presentations at group meetings).

This plan should be updated in written form at least once during the five (5)-year cycle. Such updates should be resubmitted to the WVDHSEM and FEMA Region III for approval. Upon approval, participating jurisdictions should re-adopt the plan by resolution. It is significant to note that while the organization of this document will likely remain similar to this version, additional appendices or language in the narrative may be added that address specifics in certain jurisdictions. As a “new” document (i.e., all jurisdictions had been participating in county-level mitigation planning efforts), it may take some time for all necessary, locally-specific information to be appropriately integrated. Fortunately, a frequent review process (such as the required five [5]-year review, can more quickly facilitate this familiarity.

Worksheet #4 Evaluate Alternative Mitigation Actions step 2

1. *Fill in the goal and its corresponding objective. Use a separate worksheet for each objective. The considerations under each criterion are suggested ones to use; you can revise these to reflect your own considerations (see Table 2-1).*
2. *Fill in the alternative actions that address the specific objectives the planning team identified in Worksheet #1.*
3. ***Scoring:** For each consideration, indicate a plus (+) for favorable, and a negative (-) for less favorable.*

When you complete the scoring, negatives will indicate gaps or shortcomings in the particular action, which can be noted in the Comments section. For considerations that do not apply, fill in N/A for not applicable. Only leave a blank if you do not know an answer. In this case, make a note in the Comments section of the "expert" or source to consult to help you evaluate the criterion.

Goal: _____

Objective: _____

STAPLEE Criteria	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Considerations → for Alternative Actions ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/ Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws

Alternative Actions	Comments

APPENDIX 1

HAZUS FLOOD REPORTS FOR ALL PARTICIPATING COUNTIES

West Virginia Statewide HAZUS Level I Flood Analysis Project

10 Year Flood Event Loss Estimation

Marshall County

WEST VIRGINIA

BETHLEHEM
WHEELING
TRIADELPHIA
OHIO COUNTY
BENWOOD
MOUNDSVILLE
OHIO
CAMERON
WETZEL COUNTY

MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

10 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1.5 3 6
Miles

N

DISCLAIMER

5/14/2010

UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

25 Year Flood Event Loss Estimation

Marshall County

WEST VIRGINIA

BETHLEHEM
WHEELING
TRIADELPHIA
OHIO COUNTY
BENWOOD
MOUNDSVILLE
OHIO
CAMERON
WETZEL COUNTY

MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

25 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1.5 3 6
Miles

N

DISCLAIMER

Baker

5/14/2010

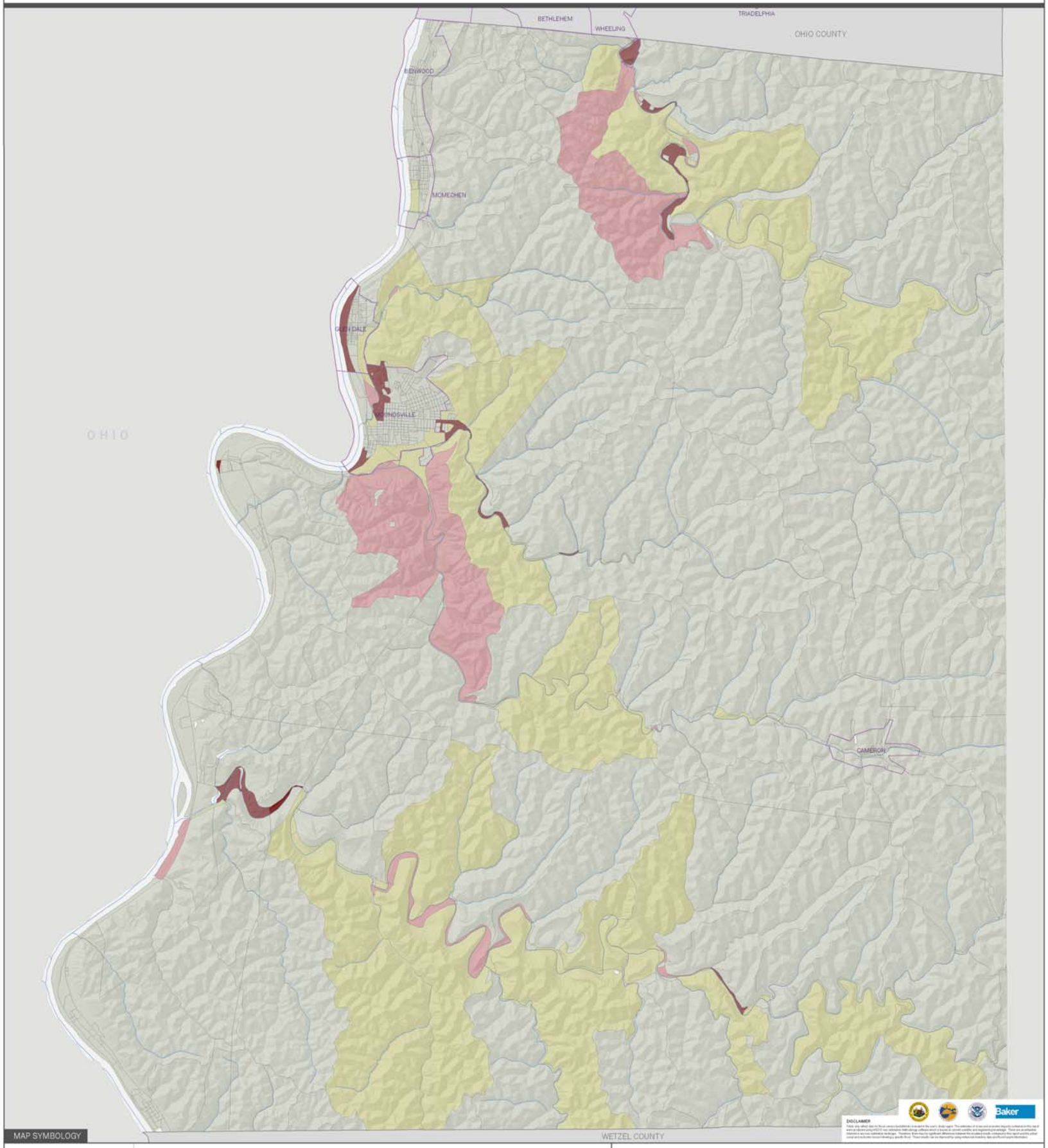
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

50 Year Flood Event Loss Estimation

Marshall County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

50 Year Return Period

BUILDING LOSS

by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1.5 3 6

Miles

DISCLAIMER

Baker

5/14/2010

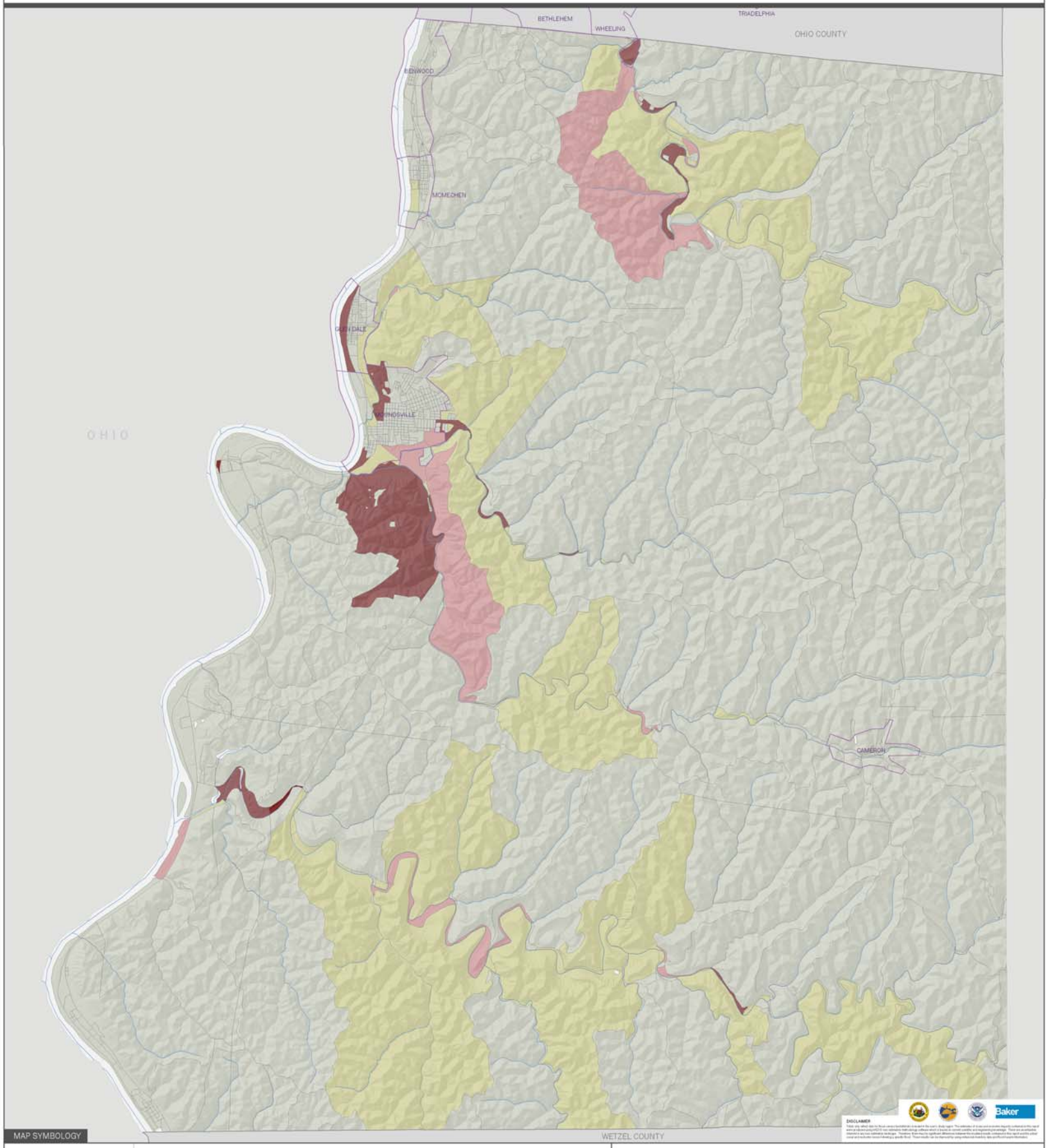
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

100 Year Flood Event Loss Estimation

Marshall County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

100 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1.5 3 6
Miles

N

DISCLAIMER

5/14/2010

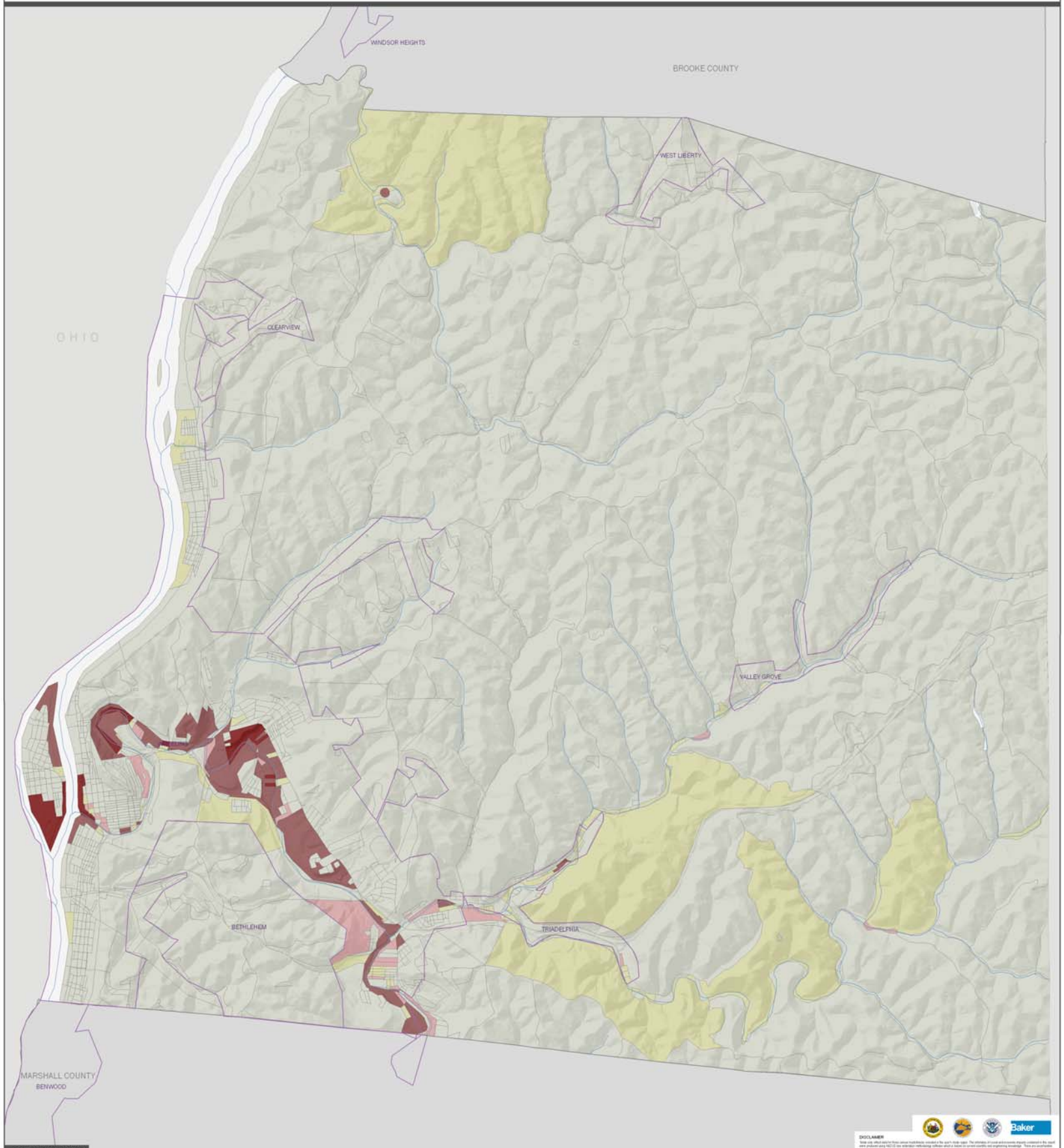
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

10 Year Flood Event Loss Estimation

Ohio County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside

10 Year Return Period

BUILDING LOSS

by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1 2 4

Miles

N

DISCLAIMER

12/24/2009

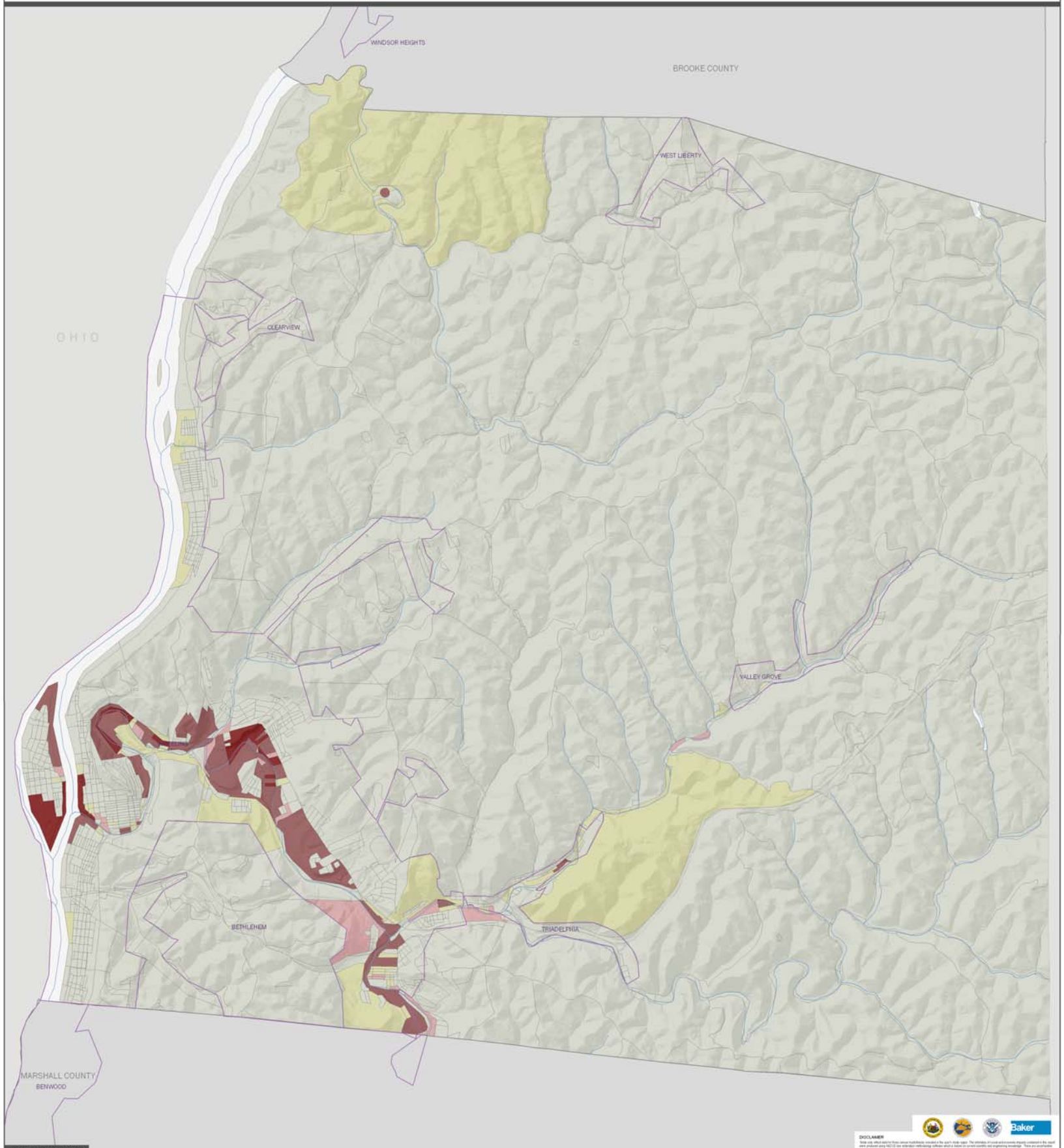
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

25 Year Flood Event Loss Estimation

Ohio County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside

25 Year Return Period

BUILDING LOSS

by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1 2 4

Miles

N

DISCLAIMER

Baker

12/24/2009

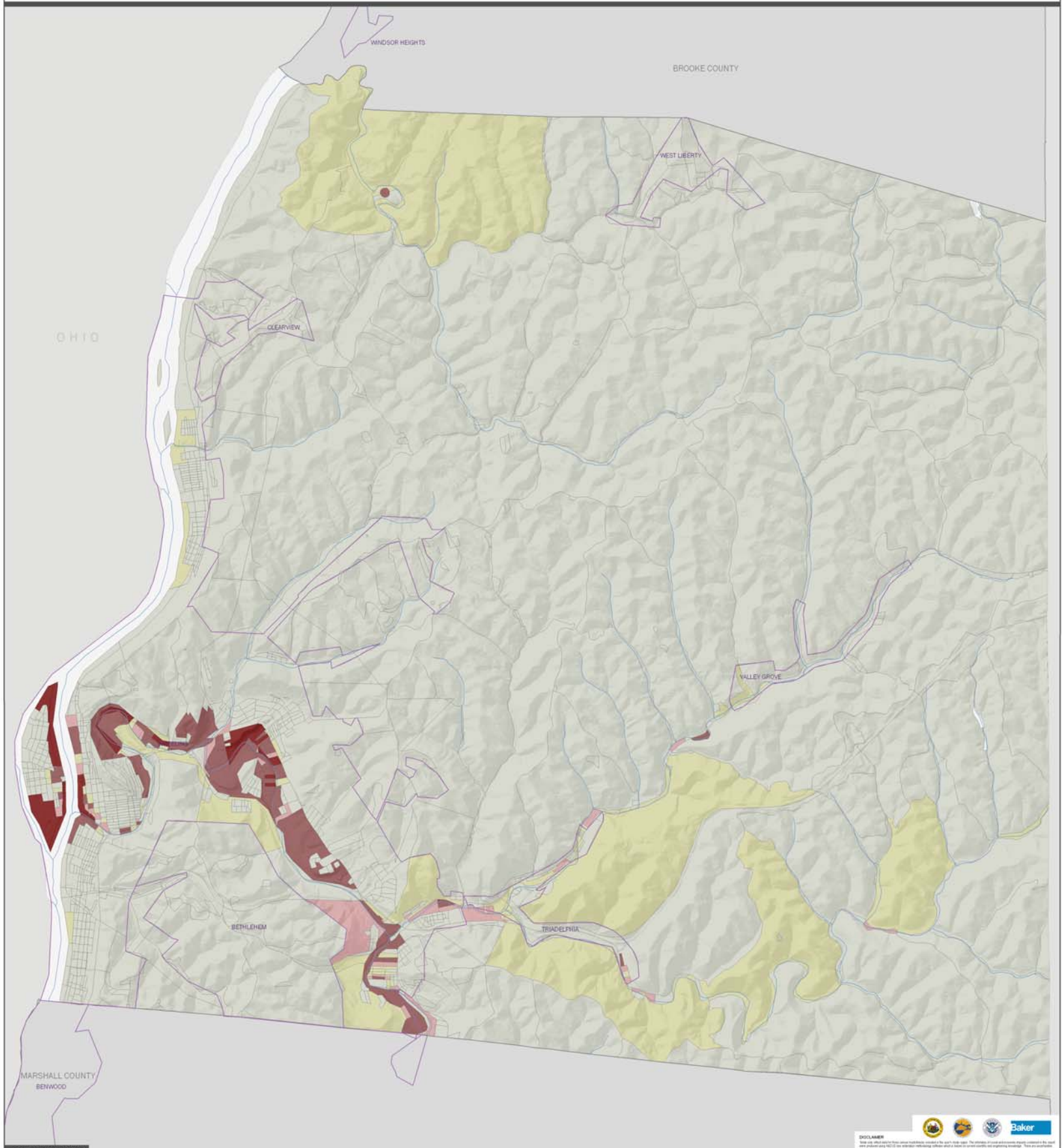
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

50 Year Flood Event Loss Estimation

Ohio County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside

50 Year Return Period

BUILDING LOSS

by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1 2 4

Miles

N

DISCLAIMER

Baker

12/24/2009

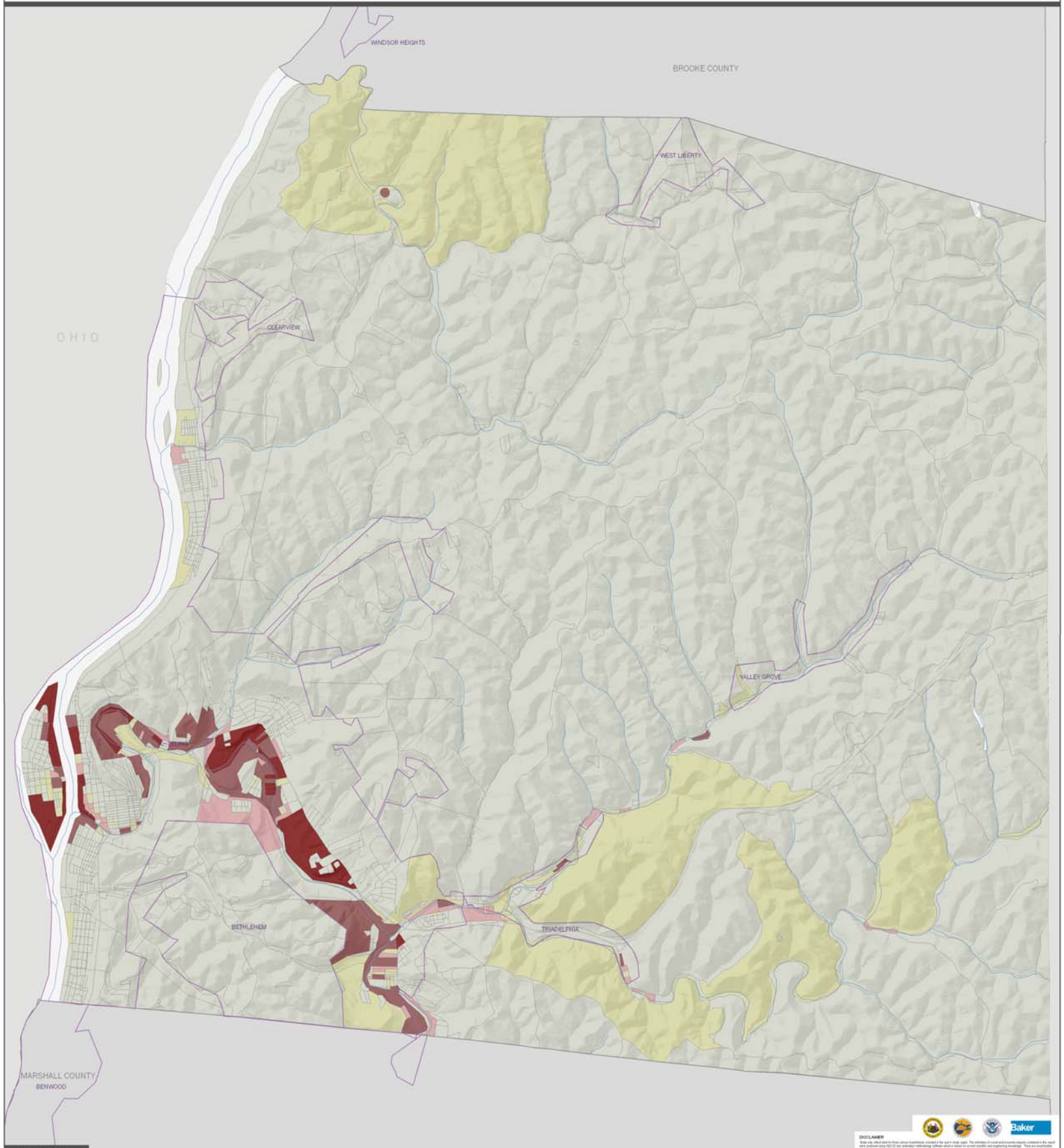
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

100 Year Flood Event Loss Estimation

Ohio County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside

100 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 1 2 4
Miles

N

DISCLAIMER

12/24/2009

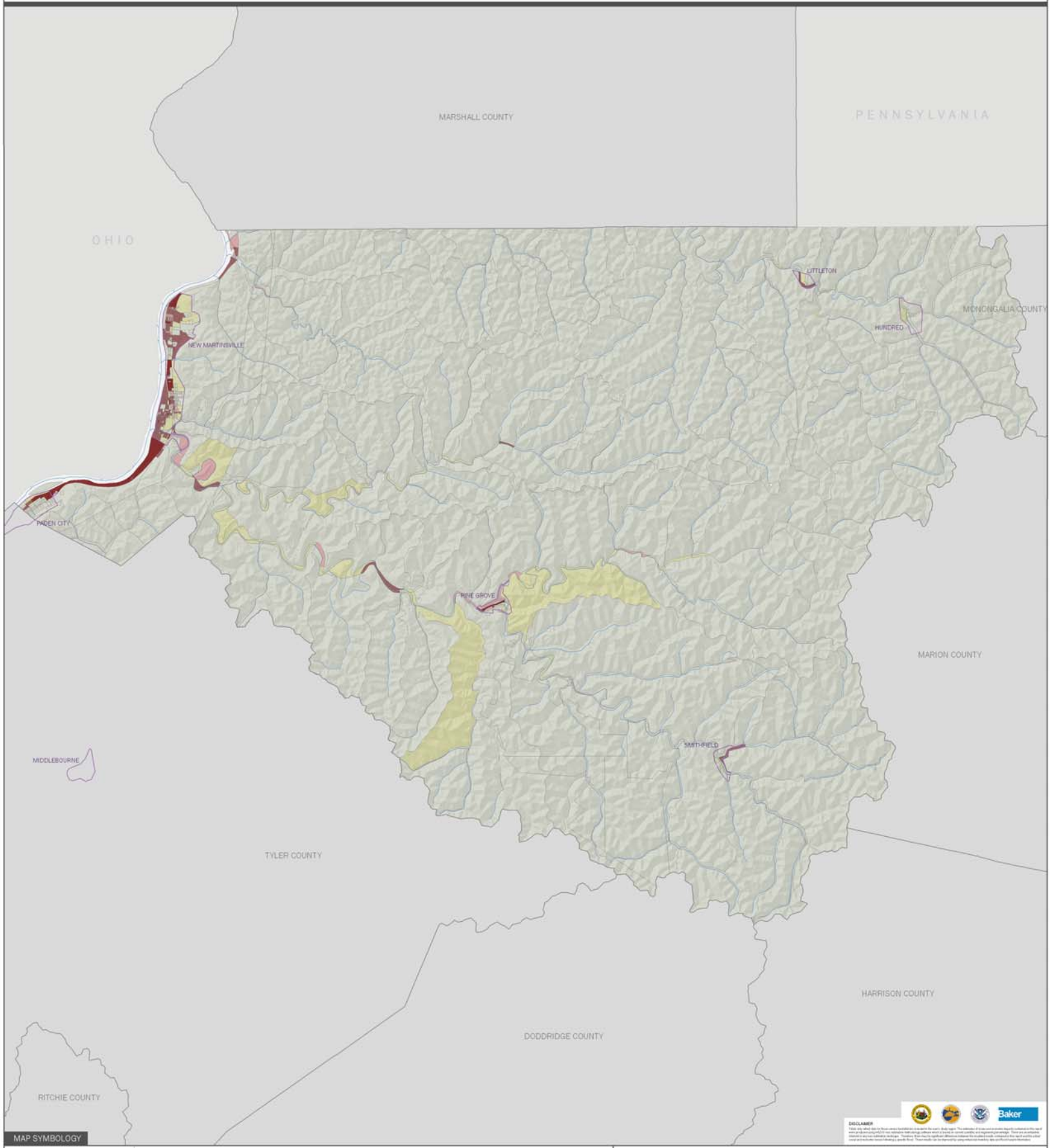
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

10 Year Flood Event Loss Estimation

Wetzel County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

10 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49 | 100 - 499 | 500 - 999 | 1,000 - 4,999 | ≥ 5,000

0 2 4 8
Miles

N

DISCLAIMER

Baker

5/24/2010

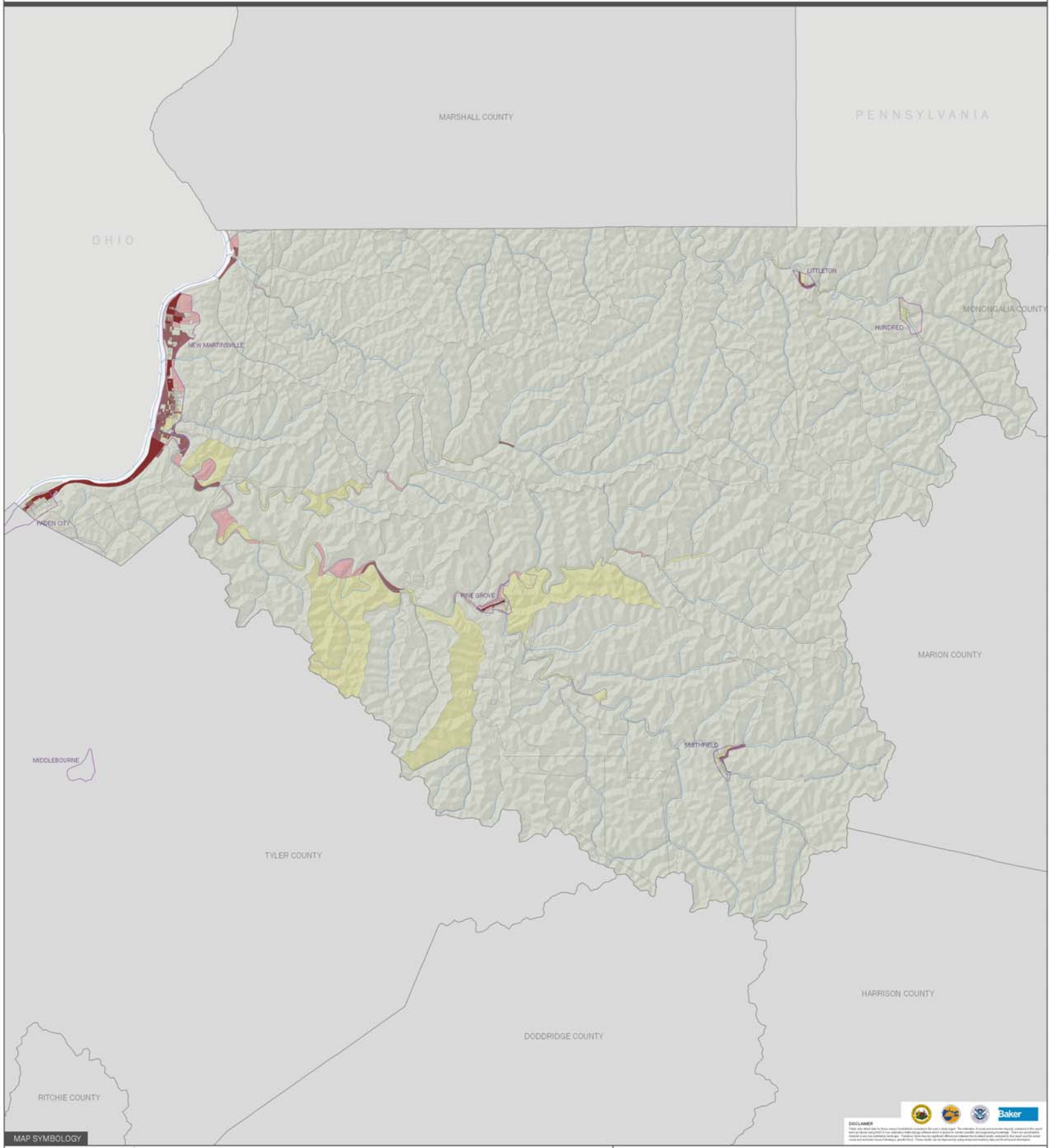
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

25 Year Flood Event Loss Estimation

Wetzel County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

25 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49 | 100 - 499 | 500 - 999 | 1,000 - 4,999 | ≥ 5,000

0 2 4 8
Miles

N

DISCLAIMER

Baker

5/24/2010

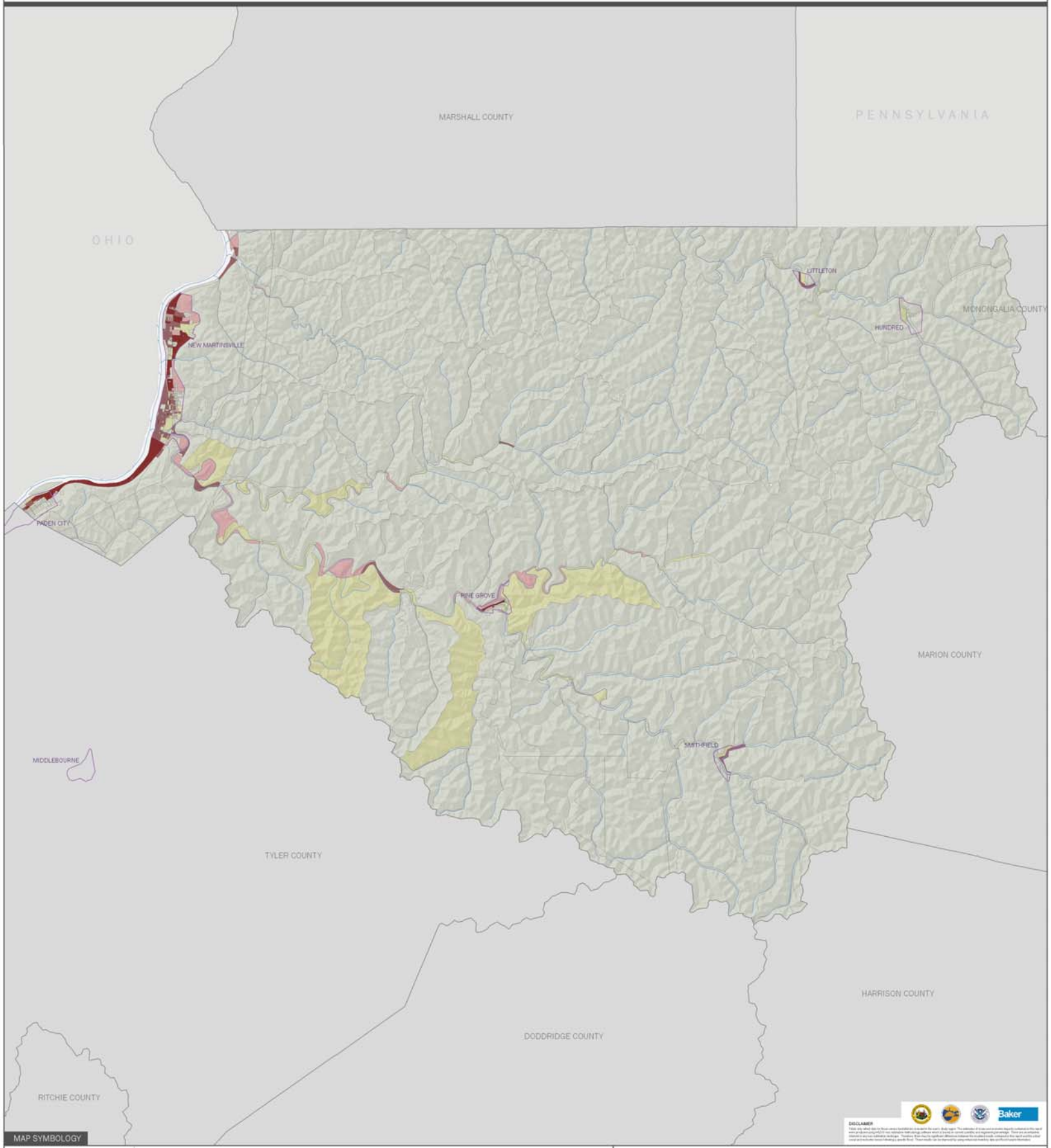
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

50 Year Flood Event Loss Estimation

Wetzel County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

50 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49
100 - 499
500 - 999
1,000 - 4,999
≥ 5,000

0 2 4 8
Miles

N

DISCLAIMER

Baker

5/24/2010

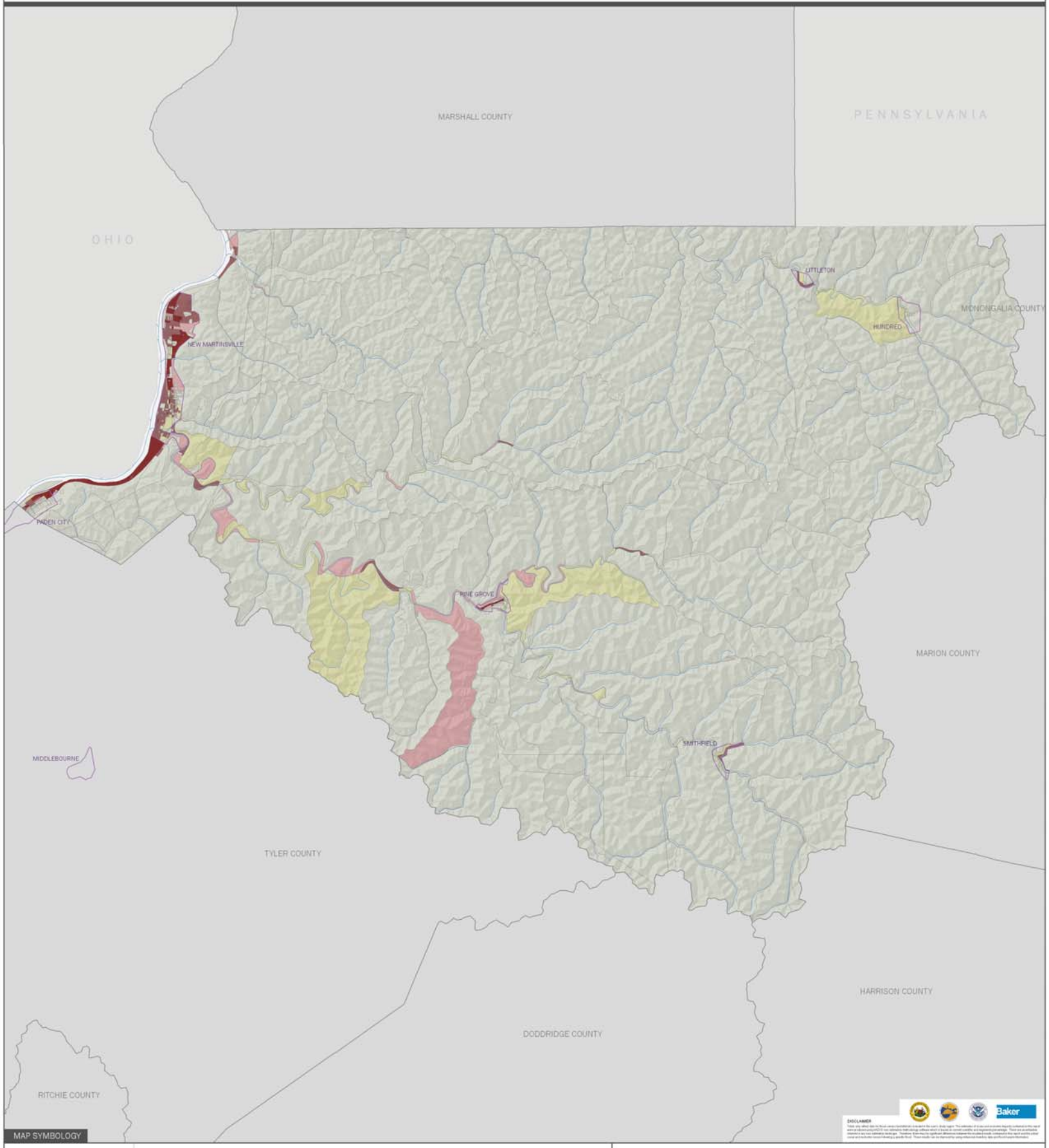
UTM Zone 17 North | North American Datum 1983

West Virginia Statewide HAZUS Level I Flood Analysis Project

100 Year Flood Event Loss Estimation

Wetzel County

WEST VIRGINIA



MAP SYMBOLOGY

Census Block
Community
Stream
Outside County

100 Year Return Period
BUILDING LOSS
by census block (per $1,000)

1 - 49 | 100 - 499 | 500 - 999 | 1,000 - 4,999 | ≥ 5,000

0 2 4 8
Miles

N

DISCLAIMER

Baker

5/24/2010

UTM Zone 17 North | North American Datum 1983

APPENDIX 2

LOSS ESTIMATE WORKSHEETS FOR PARTICIPATING COUNTIES

MARSHALL COUNTY

Hazard: Civil Disturbance

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	5,614	35%	$1,004,104,000	$351,436,400	35%	32,766	11,550	35%
Commercial	397	151	38%	$85,355,000	$32,434,900	38%	4,693	1,800	38%
Industrial	130	35	27%	$65,000,000	$17,550,000	27%	3,708	1,000	27%
Agricultural	752	0	0%	$1,504,000	$0	0%	1,135	0	0%
Religious/Non-Profit	100	0	0%	$25,500,000	$0	0%	100	0	0%
Government	56	49	87%	$26,040,000	$22,654,800	87%	2,010	1,750	87%
Education	24	24	100%	$83,510,200	$83,510,200	100%	682	682	100%
Utilities	8	0	0%	$1,800,000	$0	0%	401	0	0%
Total	17,507	5,873	34%	$1,292,813,200	$507,586,300	39%	45,495	16,782	37%

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

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	10,000	62%	$1,004,104,000	$622,544,480	62%	32,766	20,315	62%
Commercial	397	250	63%	$85,355,000	$53,773,650	63%	4,693	2,957	63%
Industrial	130	30	23%	$65,000,000	$14,950,000	23%	3,708	853	23%
Agricultural	752	300	40%	$1,504,000	$150,400	10%	1,135	114	10%
Religious/Non-Profit	100	55	55%	$25,500,000	$14,025,000	55%	100	55	55%
Government	56	35	63%	$26,040,000	$16,405,200	63%	2,010	1,266	63%
Education	24	20	83%	$83,510,200	$69,313,466	83%	682	566	83%
Utilities	8	5	63%	$1,800,000	$1,134,000	63%	401	253	63%
Total	17,507	10,695	61%	$1,292,813,200	$792,296,196	61%	45,495	26,378	58%

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

Hazard: Dam Failure - Benwood

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	811	650	80%	$50,768,600	$40,614,880	80%	1,585	1,268	80%
Commercial	20	10	50%	$4,315,642	$2,157,821	50%	227	114	50%
Industrial	7	3	46%	$3,286,471	$1,511,777	46%	179	83	46%
Agricultural	38	5	13%	$76,044	$9,886	13%	55	7	13%
Religious/Non-Profit	5	2	40%	$1,289,308	$515,723	40%	5	2	40%
Government	3	1	35%	$1,316,611	$460,814	35%	97	34	35%
Education	1	0	0%	$4,222,367	$0	0%	33	0	0%
Utilities	0	0	0%	$91,010	$0	0%	19	0	0%
Total	885	671	76%	$65,366,054	$45,270,901	6926%	2,201	1,507	6848%

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

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$0	0%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$0	0%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$0	0%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$0	0%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$0	0%	100	100	100%
Government	56	56	100%	$26,040,000	$0	0%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$0	0%	682	682	100%
Utilities	8	8	100%	$1,800,000	$0	0%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$0	0%	45,495	45,495	100%

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

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$0	0%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$0	0%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$0	0%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$0	0%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$0	0%	100	100	100%
Government	56	56	100%	$26,040,000	$0	0%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$0	0%	682	682	100%
Utilities	8	8	100%	$1,800,000	$0	0%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$0	0%	45,495	45,495	100%

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

Hazard: Epidemic

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	0	0%	$1,004,104,000	$0	0%	32,766	32,766	100%
Commercial	397	0	0%	$85,355,000	$0	0%	4,693	4,693	100%
Industrial	130	0	0%	$65,000,000	$0	0%	3,708	3,708	100%
Agricultural	752	0	0%	$1,504,000	$0	0%	1,135	1,135	100%
Religious/Non-Profit	100	0	0%	$25,500,000	$0	0%	100	100	100%
Government	56	0	0%	$26,040,000	$0	0%	2,010	2,010	100%
Education	24	0	0%	$83,510,200	$0	0%	682	682	100%
Utilities	8	0	0%	$1,800,000	$0	0%	401	401	100%
Total	17,507	0	0%	$1,292,813,200	$0	0%	45,495	45,495	100%

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

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	4,275	27%	$1,004,104,000	$271,108,080	27%	32,766	8,847	27%
Commercial	397	107	27%	$85,355,000	$23,045,850	27%	4,693	1,267	27%
Industrial	130	35	27%	$65,000,000	$17,550,000	27%	3,708	1,001	27%
Agricultural	752	0	0%	$1,504,000	$0	0%	1,135	0	0%
Religious/Non-Profit	100	27	27%	$25,500,000	$6,885,000	27%	100	27	27%
Government	56	15	27%	$26,040,000	$7,030,800	27%	2,010	543	27%
Education	24	6	25%	$83,510,200	$20,877,550	25%	682	171	25%
Utilities	8	2	25%	$1,800,000	$450,000	25%	401	100	25%
Total	17,507	4,467	26%	$1,292,813,200	$346,947,280	27%	45,495	11,956	26%

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

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$100,410	0.01%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$8,536	0.01%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$6,500	0.01%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$150	0.01%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$2,550	0.01%	100	100	100%
Government	56	56	100%	$26,040,000	$2,604	0.01%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$8,351	0.01%	682	682	100%
Utilities	8	8	100%	$1,800,000	$180	0.01%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$129,281	0.01%	45,495	45,495	100%

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

Hazard: Hazardous Material Incident

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	10,000	62%	$1,004,104,000	$622,544,480	62%	32,766	20,315	62%
Commercial	397	300	76%	$85,355,000	$64,869,800	76%	4,693	3,567	76%
Industrial	130	110	85%	$65,000,000	$55,250,000	85%	3,708	3,152	85%
Agricultural	752	100	13%	$1,504,000	$195,520	13%	1,135	148	13%
Religious/Non-Profit	100	12	12%	$25,500,000	$3,060,000	12%	100	12	12%
Government	56	20	36%	$26,040,000	$9,374,400	36%	2,010	724	36%
Education	24	8	33%	$83,510,200	$27,558,366	33%	682	225	33%
Utilities	8	5	63%	$1,800,000	$1,134,000	63%	401	253	63%
Total	17,507	10,555	60%	$1,292,813,200	$783,986,566	61%	45,495	28,394	62%

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

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	4,561	28%	$1,004,104,000	$281,149,120	28%	32,766	9,174	28%
Commercial	397	175	44%	$85,355,000	$37,556,200	44%	4,693	2,065	44%
Industrial	130	36	28%	$65,000,000	$18,200,000	28%	3,708	1,038	28%
Agricultural	752	350	47%	$1,504,000	$706,880	47%	1,135	533	47%
Religious/Non-Profit	100	30	30%	$25,500,000	$7,650,000	30%	100	30	30%
Government	56	16	29%	$26,040,000	$7,551,600	29%	2,010	583	29%
Education	24	7	29%	$83,510,200	$24,217,958	29%	682	198	29%
Utilities	8	2	25%	$1,800,000	$450,000	25%	401	100	25%
Total	17,507	5,177	30%	$1,292,813,200	$377,481,758	29%	45,495	13,722	30%

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

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	5,000	31%	$1,004,104,000	$311,272,240	31%	32,766	10,157	31%
Commercial	397	300	76%	$85,355,000	$64,869,800	76%	4,693	3,567	76%
Industrial	130	130	100%	$65,000,000	$65,000,000	100%	3,708	3,708	100%
Agricultural	752	100	13%	$1,504,000	$195,520	13%	1,135	148	13%
Religious/Non-Profit	100	20	20%	$25,500,000	$5,100,000	20%	100	20	20%
Government	56	56	100%	$26,040,000	$26,040,000	100%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$83,510,200	100%	682	682	100%
Utilities	8	8	100%	$1,800,000	$1,800,000	100%	401	401	100%
Total	17,507	5,638	32%	$1,292,813,200	$557,787,760	43%	45,495	20,693	45%

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

Hazard: Terrorism - Moundsville

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	4,461	3,500	78%	$279,258,600	$217,821,708	78%	9,998	7,798	78%
Commercial	110	100	91%	$23,738,694	$21,602,212	91%	1,432	1,303	91%
Industrial	36	36	100%	$18,077,618	$18,077,618	100%	1,131	1,131	100%
Agricultural	209	10	5%	$418,288	$20,914	5%	346	17	5%
Religious/Non-Profit	28	5	18%	$7,091,989	$1,276,558	18%	31	5	18%
Government	16	16	100%	$7,242,172	$7,242,172	100%	613	613	100%
Education	7	7	100%	$23,225,624	$23,225,624	100%	208	208	100%
Utilities	2	2	100%	$500,611	$500,611	100%	122	122	100%
Total	4,869	3,676	75%	$359,553,596	$289,767,417	81%	13,882	11,200	81%

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

Hazard: Thunderstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$10,041,040	1%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$853,550	1%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$650,000	1%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$15,040	1%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$255,000	1%	100	100	100%
Government	56	56	100%	$26,040,000	$260,400	1%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$835,102	1%	682	682	100%
Utilities	8	8	100%	$1,800,000	$18,000	1%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$12,928,132	1%	45,495	45,495	100%

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

Hazard: Urban Fire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	7,515	47%	$1,004,104,000	$471,928,880	47%	32,766	15,400	47%
Commercial	397	275	69%	$85,355,000	$58,894,950	69%	4,693	3,238	69%
Industrial	130	75	58%	$65,000,000	$37,700,000	58%	3,708	2,151	58%
Agricultural	752	50	7%	$1,504,000	$105,280	7%	1,135	79	7%
Religious/Non-Profit	100	60	60%	$25,500,000	$15,300,000	60%	100	60	60%
Government	56	50	89%	$26,040,000	$23,175,600	89%	2,010	1,789	89%
Education	24	15	63%	$83,510,200	$52,611,426	63%	682	430	63%
Utilities	8	4	50%	$1,800,000	$900,000	50%	401	201	50%
Total	17,507	8,044	46%	$1,292,813,200	$660,616,136	51%	45,495	23,347	51%

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

Hazard: Utility Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$5,020,520	0.5%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$426,775	0.5%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$325,000	0.5%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$7,520	0.5%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$127,500	0.5%	100	100	100%
Government	56	56	100%	$26,040,000	$130,200	0.5%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$417,551	0.5%	682	682	100%
Utilities	8	8	100%	$1,800,000	$9,000	0.5%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$6,464,066	0.5%	45,495	45,495	100%

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

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	8,525	53%	$1,004,104,000	$532,175,120	53%	32,766	17,366	53%
Commercial	397	122	31%	$85,355,000	$26,460,050	31%	4,693	1,455	31%
Industrial	130	55	42%	$65,000,000	$27,300,000	42%	3,708	1,557	42%
Agricultural	752	702	93%	$1,504,000	$1,398,720	93%	1,135	1,056	93%
Religious/Non-Profit	100	40	40%	$25,500,000	$10,200,000	40%	100	40	40%
Government	56	6	11%	$26,040,000	$2,864,400	11%	2,010	221	11%
Education	24	9	38%	$83,510,200	$31,733,876	38%	682	259	38%
Utilities	8	4	50%	$1,800,000	$900,000	50%	401	201	50%
Total	17,507	9,463	54%	$1,292,813,200	$633,032,166	49%	45,495	22,154	49%

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

Hazard: Wind

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$20,082,080	2%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$1,707,100	2%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$1,300,000	2%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$30,080	2%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$510,000	2%	100	100	100%
Government	56	56	100%	$26,040,000	$520,800	2%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$1,670,204	2%	682	682	100%
Utilities	8	8	100%	$1,800,000	$36,000	2%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$25,856,264	2%	45,495	45,495	100%

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

Hazard: Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	16,040	16,040	100%	$1,004,104,000	$15,061,560	1.5%	32,766	32,766	100%
Commercial	397	397	100%	$85,355,000	$1,280,325	1.5%	4,693	4,693	100%
Industrial	130	130	100%	$65,000,000	$975,000	1.5%	3,708	3,708	100%
Agricultural	752	752	100%	$1,504,000	$22,560	1.5%	1,135	1,135	100%
Religious/Non-Profit	100	100	100%	$25,500,000	$382,500	1.5%	100	100	100%
Government	56	56	100%	$26,040,000	$390,600	1.5%	2,010	2,010	100%
Education	24	24	100%	$83,510,200	$1,252,653	1.5%	682	682	100%
Utilities	8	8	100%	$1,800,000	$27,000	1.5%	401	401	100%
Total	17,507	17,507	100%	$1,292,813,200	$19,392,198	1.5%	45,495	45,495	100%

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

OHIO COUNTY

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	1,112	5	$1,587,936,000	$79,396,800	5	44,015	2,201	5
Commercial	1,493	30	2	$362,340,649	$7,246,813	2	15,485	310	2
Industrial	100	10	10	$36,839,400	$3,683,940	10	2,477	248	10
Agricultural	241	0	0	$2,453,000	$0	0	241	0	0
Religious/Non-Profit	84	4	5	$12,600,000	$630,000	5	4,200	210	5
Government	18	0	0	$41,102,946	$0	0	3,922	0	0
Education	40	0	1	$84,830,200	$848,302	1	6,686	67	1
Utilities	15	2	10	$63,418,215	$6,341,822	10	1,439	144	10
Total	24,231	1,158	5	$2,191,520,410	$98,147,676	4	78,465	3,179	4

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

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	22,240	100	$1,587,936,000	$0	0	44,015	44,015	100
Commercial	1,493	1,493	100	$362,340,649	$0	0	15,485	15,485	100
Industrial	100	100	100	$36,839,400	$0	0	2,477	2,477	100
Agricultural	241	241	100	$2,453,000	$0	0	241	241	100
Religious/Non-Profit	84	84	100	$12,600,000	$0	0	4,200	4,200	100
Government	18	18	100	$41,102,946	$0	0	3,922	3,922	100
Education	40	40	100	$84,830,200	$0	0	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$0	0	1,439	1,439	100
Total	24,231	24,231	100	$2,191,520,410	$0	0	78,465	78,465	100

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

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	22,240	100	$1,587,936,000	$0	0	44,015	44,015	100
Commercial	1,493	1,493	100	$362,340,649	$0	0	15,485	15,485	100
Industrial	100	100	100	$36,839,400	$0	0	2,477	2,477	100
Agricultural	241	241	100	$2,453,000	$0	0	241	241	100
Religious/Non-Profit	84	84	100	$12,600,000	$0	0	4,200	4,200	100
Government	18	18	100	$41,102,946	$0	0	3,922	3,922	100
Education	40	40	100	$84,830,200	$0	0	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$0	0	1,439	1,439	100
Total	24,231	24,231	100	$2,191,520,410	$0	0	78,465	78,465	100

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

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	1,334	6	$1,587,936,000	$91,820,300	6	44,015	2,641	6
Commercial	1,493	717	48	$362,340,649	$173,492,900	48	15,485	7,433	48
Industrial	100	20	20	$36,839,400	$7,297,700	20	2,477	495	20
Agricultural	241	24	10	$2,453,000	$245,300	10	241	24	10
Religious/Non-Profit	84	8	10	$12,600,000	$1,260,000	10	4,200	420	10
Government	18	0	0	$41,102,946	$0	0	3,922	0	0
Education	40	1	2	$84,830,200	$1,696,604	2	6,686	134	2
Utilities	15	14	90	$63,418,215	$57,076,394	90	1,439	1,295	90
Total	24,231	2,118	9	$2,191,520,410	$332,889,198	15	78,465	12,442	16

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

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	22,240	100	$1,587,936,000	$158,794	0.01	44,015	44,015	100
Commercial	1,493	1,493	100	$362,340,649	$36,234	0.01	15,485	15,485	100
Industrial	100	100	100	$36,839,400	$3,684	0.01	2,477	2,477	100
Agricultural	241	241	100	$2,453,000	$245	0.01	241	241	100
Religious/Non-Profit	84	84	100	$12,600,000	$1,260	0.01	4,200	4,200	100
Government	18	18	100	$41,102,946	$4,110	0.01	3,922	3,922	100
Education	40	40	100	$84,830,200	$8,483	0.01	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$6,342	0.01	1,439	1,439	100
Total	24,231	24,231	100	$2,191,520,410	$219,152	0.01	78,465	78,465	100

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

Hazard: Hazmat Incident

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	2,891	13	$1,587,936,000	$206,431,680	13	44,015	5,722	13
Commercial	1,493	523	35	$362,340,649	$126,819,227	35	15,485	5,420	35
Industrial	100	95	95	$36,839,400	$34,997,430	95	2,477	2,353	95
Agricultural	241	60	25	$2,453,000	$613,250	25	241	60	25
Religious/Non-Profit	84	0	0	$12,600,000	$0	0	4,200	0	0
Government	18	2	10	$41,102,946	$4,110,295	10	3,922	392	10
Education	40	4	10	$84,830,200	$8,483,020	10	6,686	669	10
Utilities	15	13	85	$63,418,215	$53,905,483	85	1,439	1,223	85
Total	24,231	3,588	15	$2,191,520,410	$435,360,385	20	78,465	15,839	20

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

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	4,448	20	$1,587,936,000	$317,587,200	20	44,015	8,803	20
Commercial	1,493	149	10	$362,340,649	$36,234,065	10	15,485	1,549	10
Industrial	100	5	5	$36,839,400	$1,841,970	5	2,477	124	5
Agricultural	241	72	30	$2,453,000	$735,900	30	241	72	30
Religious/Non-Profit	84	17	20	$12,600,000	$2,520,000	20	4,200	840	20
Government	18	1	5	$41,102,946	$2,055,147	5	3,922	196	5
Education	40	2	5	$84,830,200	$4,241,510	5	6,686	334	5
Utilities	15	8	50	$63,418,215	$31,709,108	50	1,439	720	50
Total	24,231	4,702	19	$2,191,520,410	$396,924,900	18	78,465	12,638	16

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

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	17,570	79	$1,587,936,000	$1,254,469,440	79	44,015	34,772	79
Commercial	1,493	1,194	80	$362,340,649	$289,872,519	80	15,485	12,388	80
Industrial	100	90	90	$36,839,400	$33,155,460	90	2,477	2,229	90
Agricultural	241	5	2	$2,453,000	$49,060	2	241	5	2
Religious/Non-Profit	84	13	15	$12,600,000	$1,890,000	15	4,200	630	15
Government	18	18	100	$41,102,946	$41,102,946	100	3,922	3,922	100
Education	40	40	100	$84,830,200	$84,830,200	100	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$63,418,215	100	1,439	1,439	100
Total	24,231	18,944	78	$2,191,520,410	$1,768,787,840	81	78,465	62,071	79

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

Hazard: Thunderstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	22,240	100	$1,587,936,000	$15,879,360	1	44,015	44,015	100
Commercial	1,493	1,493	100	$362,340,649	$3,623,406	1	15,485	15,485	100
Industrial	100	100	100	$36,839,400	$368,394	1	2,477	2,477	100
Agricultural	241	241	100	$2,453,000	$24,530	1	241	241	100
Religious/Non-Profit	84	84	100	$12,600,000	$126,000	1	4,200	4,200	100
Government	18	18	100	$41,102,946	$411,029	1	3,922	3,922	100
Education	40	40	100	$84,830,200	$848,302	1	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$634,182	1	1,439	1,439	100
Total	24,231	24,231	100	$2,191,520,410	$21,915,204	1	78,465	78,465	100

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

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	4,670	21	$1,587,936,000	$333,466,560	21	44,015	9,243	21
Commercial	1,493	224	15	$362,340,649	$54,351,097	15	15,485	2,323	15
Industrial	100	5	5	$36,839,400	$1,841,970	5	2,477	124	5
Agricultural	241	229	95	$2,453,000	$2,330,350	95	241	229	95
Religious/Non-Profit	84	29	35	$12,600,000	$4,410,000	35	4,200	1,470	35
Government	18	0	0	$41,102,946	$0	0	3,922	0	0
Education	40	4	10	$84,830,200	$8,483,020	10	6,686	669	10
Utilities	15	2	10	$63,418,215	$6,341,822	10	1,439	144	10
Total	24,231	5,163	21	$2,191,520,410	$411,224,819	19	78,465	14,201	18

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

Hazard: Wind

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	22,240	100	$1,587,936,000	$31,758,720	2	44,015	44,015	100
Commercial	1,493	1,493	100	$362,340,649	$7,246,813	2	15,485	15,485	100
Industrial	100	100	100	$36,839,400	$736,788	2	2,477	2,477	100
Agricultural	241	241	100	$2,453,000	$49,060	2	241	241	100
Religious/Non-Profit	84	84	100	$12,600,000	$252,000	2	4,200	4,200	100
Government	18	18	100	$41,102,946	$822,059	2	3,922	3,922	100
Education	40	40	100	$84,830,200	$1,696,604	2	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$1,268,364	2	1,439	1,439	100
Total	24,231	24,231	100	$2,191,520,410	$43,830,408	2	78,465	78,465	100

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

Hazard: Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	22,240	22,240	100	$1,587,936,000	$23,819,040	1.5	44,015	44,015	100
Commercial	1,493	1,493	100	$362,340,649	$5,435,110	1.5	15,485	15,485	100
Industrial	100	100	100	$36,839,400	$552,591	1.5	2,477	2,477	100
Agricultural	241	241	100	$2,453,000	$36,795	1.5	241	241	100
Religious/Non-Profit	84	84	100	$12,600,000	$189,000	1.5	4,200	4,200	100
Government	18	18	100	$41,102,946	$616,544	1.5	3,922	3,922	100
Education	40	40	100	$84,830,200	$1,272,453	1.5	6,686	6,686	100
Utilities	15	15	100	$63,418,215	$951,273	1.5	1,439	1,439	100
Total	24,231	24,231	100	$2,191,520,410	$32,872,806	1.5	78,465	78,465	100

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

WETZEL COUNTY

Hazard: Dam Failure

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	1,087	13	$551,760,000	$71,728,800	13	16,685	2,169	13
Commercial	321	100	31	$86,793,468	$32,981,518	38	2,334	724	31
Industrial	84	8	9	$19,890,170	$0	0	535	48	9
Agricultural	353	11	3	$28,931,156	$0	0	83	2	3
Religious/Non-Profit	69	6	8	$10,350,000	$828,000	8	3,450	276	8
Government	10	2	20	$45,204,931	$5,876,641	13	1,231	246	20
Education	9	1	11	$57,322,708	$11,464,542	20	612	67	11
Utilities	18	3	15	$148,153,698	$48,890,720	33	137	21	15
Total	9,222	1,215	13	$948,406,131	$171,770,221	18	25,067	3,553	14

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

Hazard: Drought

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	251	3	$551,760,000	$16,552,800	3	16,685	501	3
Commercial	321	3	1	$86,793,468	$867,935	1	2,334	23	1
Industrial	84	6	7	$19,890,170	$1,233,357	6	535	37	7
Agricultural	353	353	100	$28,931,156	$28,931,156	100	83	83	100
Religious/Non-Profit	69	3	4	$10,350,000	$414,000	4	3,450	138	4
Government	10	1	11	$45,204,931	$4,972,542	11	1,231	135	11
Education	9	0	0	$57,322,708	$0	0	612	0	0
Utilities	18	5	25	$148,153,698	$37,038,425	25	137	34	25
Total	9,222	621	7	$948,406,131	$90,010,215	9	25,067	952	4

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

Hazard: Earthquake

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	0	0	$551,760,000	$0	0	16,685	0	0
Commercial	321	0	0	$86,793,468	$0	0	2,334	0	0
Industrial	84	0	0	$19,890,170	$0	0	535	0	0
Agricultural	353	0	0	$28,931,156	$0	0	83	0	0
Religious/Non-Profit	69	0	0	$10,350,000	$0	0	3,450	0	0
Government	10	0	0	$45,204,931	$0	0	1,231	0	0
Education	9	0	0	$57,322,708	$0	0	612	0	0
Utilities	18	0	0	$148,153,698	$0	0	137	0	0
Total	9,222	0	0	$948,406,131	$0	0	25,067	0	0

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

Hazard: Flooding

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	919	22	$551,760,000	$66,211,200	12	16,685	1,835	11
Commercial	321	16	1	$86,793,468	$5,784,883	2	2,334	117	5
Industrial	84	13	0	$19,890,170	$8,633,499	7	535	81	2
Agricultural	353	38	0	$28,931,156	$340,000	1	83	9	11
Religious/Non-Profit	69	8	0	$10,350,000	$500,000	5	3,450	414	12
Government	10	0	0	$45,204,931	$1,239,617	1	1,231	37	3
Education	9	4	0	$57,322,708	$13,490,641	1	612	254	42
Utilities	18	2	11	$148,153,698	$3,120,000	2	137	154	112
Total	9,222	1,001	24	$948,406,131	$99,319,840	24	25,067	2,901	12

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

Hazard: Hailstorm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	542	2	$551,760,000	$20,668,219	2	16,685	1,134	2
Commercial	321	28	3	$86,793,468	$8,677,324	3	2,334	285	3
Industrial	84	11	3	$19,890,170	$3,700,071	3	535	122	3
Agricultural	353	2	1	$28,931,156	$895,279	1	83	1	1
Religious/Non-Profit	69	1	1	$10,350,000	$195,000	1	3,450	2,090	1
Government	10	3	5	$45,204,931	$6,198,089	5	1,231	203	5
Education	9	2	9	$57,322,708	$12,141,577	9	612	186	9
Utilities	18	4	10	$148,153,698	$804,480	10	137	87	10
Total	9,222	593	6	$948,406,131	$53,280,039	6	25,067	4,108	16

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

Hazard: Hazardous Materials

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	2,000	24	$551,760,000	$38,623,200	7	16,685	1,168	7
Commercial	321	462	50	$86,793,468	$43,396,734	50	2,334	1,167	50
Industrial	84	337	90	$19,890,170	$111,002,130	558	535	3,645	681
Agricultural	353	24	7	$28,931,156	$4,339,673	15	83	12	15
Religious/Non-Profit	69	10	14	$10,350,000	$828,000	8	3,450	276	8
Government	10	19	190	$45,204,931	$13,109,430	29	1,231	357	29
Education	9	6	67	$57,322,708	$14,903,904	26	612	159	26
Utilities	18	11	61	$148,153,698	$45,927,646	31	137	42	31
Total	9,222	2,869	31	$948,406,131	$272,130,718	29	25,067	6,827	27

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

Hazard: Land Subsidence

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	7,874	94	$551,760,000	$503,936,000	91	16,685	8,755	52
Commercial	321	262	82	$86,793,468	$57,967,430	67	2,334	1,814	78
Industrial	84	0	0	$19,890,170	$18,338,252	92	535	574	107
Agricultural	353	328	93	$28,931,156	$7,919,047	27	83	170	205
Religious/Non-Profit	69	63	91	$10,350,000	$9,450,000	91	3,450	3,150	91
Government	10	15	150	$45,204,931	$26,811,633	59	1,231	839	68
Education	9	5	56	$57,322,708	$8,564,370	15	612	194	32
Utilities	18	6	33	$148,153,698	$46,089,332	31	137	119	87
Total	9,222	8,553	93	$948,406,131	$679,076,064	72	25,067	15,615	62

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

Hazard: Terrorism

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	5,416	65	$551,760,000	$110,352,000	20	16,685	3,337	20
Commercial	321	619	67	$86,793,468	$58,151,624	67	2,334	1,564	67
Industrial	84	131	35	$19,890,170	$6,961,560	35	535	0	0
Agricultural	353	13	4	$28,931,156	$2,314,492	8	83	7	8
Religious/Non-Profit	69	63	91	$10,350,000	$4,968,000	48	3,450	1,656	48
Government	10	35	350	$45,204,931	$23,958,613	53	1,231	652	53
Education	9	9	100	$57,322,708	$22,929,083	40	612	245	40
Utilities	18	18	100	$148,153,698	$74,076,849	50	137	69	50
Total	9,222	6,304	68	$948,406,131	$303,712,221	32	25,067	7,529	30

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

Hazard: Urban Fire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	2,257	27	$551,760,000	$148,975,200	27	16,685	4,505	27
Commercial	321	186	58	$86,793,468	$58,151,624	58	2,334	1,354	58
Industrial	84	180	48	$19,890,170	$59,201,136	48	535	1,944	48
Agricultural	353	7	2	$28,931,156	$2,314,492	2	83	2	2
Religious/Non-Profit	69	38	55	$10,350,000	$4,968,000	55	3,450	1,898	55
Government	10	6	60	$45,204,931	$27,122,959	60	1,231	739	60
Education	9	9	100	$57,322,708	$22,929,083	40	612	245	40
Utilities	18	4	20	$148,153,698	$29,630,740	20	137	27	20
Total	9,222	2,686	29	$948,406,131	$353,293,233	37	25,067	10,713	43

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

Hazard: Thunderstorm/Lightning

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	5,851	20	$551,760,000	$110,352,000	20	16,685	3,337	20
Commercial	321	209	67	$86,793,468	$58,151,624	67	2,334	1,564	67
Industrial	84	131	156	$19,890,170	$6,961,560	35	535	1,418	265
Agricultural	353	28	8	$28,931,156	$2,314,492	8	83	7	8
Religious/Non-Profit	69	33	48	$10,350,000	$4,968,000	48	3,450	1,656	48
Government	10	5	53	$45,204,931	$23,958,613	53	1,231	652	53
Education	9	4	40	$57,322,708	$22,929,083	40	612	245	40
Utilities	18	9	50	$148,153,698	$74,076,849	50	137	69	50
Total	9,222	6,270	68	$948,406,131	$303,712,221	32	25,067	8,947	36

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

Hazard: Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	5,683	68	$551,760,000	$375,196,800	68	16,685	11,346	68
Commercial	321	106	33	$86,793,468	$28,641,844	33	2,334	770	33
Industrial	84	80	21	$19,890,170	$25,900,497	130	535	850	21
Agricultural	353	325	92	$28,931,156	$26,616,664	92	83	76	92
Religious/Non-Profit	69	36	52	$10,350,000	$5,382,000	52	3,450	1,794	52
Government	10	5	47	$45,204,931	$21,246,318	47	1,231	579	47
Education	9	5	60	$57,322,708	$34,393,625	60	612	367	60
Utilities	18	3	17	$148,153,698	$11,852,296	8	137	11	8
Total	9,222	6,243	68	$948,406,131	$529,230,043	56	25,067	15,793	63

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

Hazard: Wind Storm/Tornado

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	5,851	70	$551,760,000	$386,232,000	70	16,685	3,337	20
Commercial	321	209	65	$86,793,468	$56,415,754	65	2,334	1,517	65
Industrial	84	234	62	$19,890,170	$12,331,905	62	535	2,511	469
Agricultural	353	40	11	$28,931,156	$7,232,789	25	83	21	25
Religious/Non-Profit	69	26	37	$10,350,000	$3,829,500	37	3,450	1,277	37
Government	10	5	53	$45,204,931	$23,958,613	53	1,231	652	53
Education	9	4	40	$57,322,708	$22,929,083	40	612	245	40
Utilities	18	9	50	$148,153,698	$74,076,849	50	137	69	50
Total	9,222	6,377	69	$948,406,131	$587,006,494	62	25,067	9,628	38

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

Hazard: Winter Storm

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community or State	# in Hazard Area	% in Hazard Area	$ in Community or State	$ in Hazard Area	% in Hazard Area	# in Community or State	# in Hazard Area	% in Hazard Area
Residential	8,358	6,436	77	$551,760,000	$424,855,200	77	16,685	12,847	77
Commercial	321	135	42	$86,793,468	$36,453,257	42	2,334	980	42
Industrial	84	106	44	$19,890,170	$8,751,675	44	535	1,782	44
Agricultural	353	40	15	$28,931,156	$4,339,673	15	83	12	15
Religious/Non-Profit	69	8	12	$10,350,000	$1,242,000	12	3,450	414	12
Government	10	6	55	$45,204,931	$24,862,712	55	1,231	677	55
Education	9	7	80	$57,322,708	$45,858,166	80	612	490	80
Utilities	18	5	28	$148,153,698	$41,483,035	28	137	38	28
Total	28,221	12417	44	$948,406,131	$587,845,719	44	25,067	17,241	44

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

APPENDIX 3

GLOSSARY

APPENDIX 3

This appendix contains a list of definitions for commonly-used terms in this mitigation plan. It also contains a list of the acronyms that are used throughout.

DEFINITION OF TERMS

10-Year Flood: A flood event with a 10% chance of occurring in any single year.

25-Year Flood: A flood event with a 4% chance of occurring in any single year.

50-Year Flood: A flood event with a 2% chance of occurring in any single year.

100-Year Flood: A flood event with a 1% chance of being equaled or exceeded in any single year.

Asset Inventory: A listing of critical facilities, historical facilities, facilities housing vulnerable populations (e.g., schools, nursing homes, hospitals), large economic assets in the community, and other, community-designated special considerations on which a risk assessment is completed.

Benefit Cost Review: A process by which a community considers both the potential benefits of mitigation projects in comparison with their costs. It is a way to determine if the costs are achievable and feasible based on the benefits that can be realistically anticipated.

Emergency Services Project: Action that protects people and property during and immediately after a disaster or hazard event.

Hazard Risk Assessment: The process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from hazards by assessing the vulnerability of people, buildings, and infrastructure to hazards.

Loss Estimate: A mathematical calculation of the potential damage – structural, contents, and functional – a facility and/or community could occur as a result of a

specific hazard.

Mitigation: Activities providing a critical foundation in the effort to reduce the loss of life and property from natural and/or man-made disasters by avoiding or lessening the impact of a disaster and providing value to the public by creating safer communities. Mitigation seeks to fix the cycle of disaster damage, reconstruction, and repeated damage. These activities or actions, in most cases, will have a long-term sustained effect.

Natural Resource Protection: Action that, in addition to minimizing hazard losses, also preserves or restores the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Prevention: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses.

Property Protection: Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area.

Public Education and Awareness Project: Action to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.

Robert T. Stafford Disaster Relief and Emergency Assistance Act: Section 322 was added as part of the Disaster Mitigation Act (DMA) of 2000 to take a new and revitalized approach to mitigation planning. This new section emphasizes the need for local entities to closely coordinate mitigation planning and implementation efforts. In succinct terms, this is the mandate requiring local communities to compile and adopt a mitigation plan as an eligibility requirement for mitigation funding.

STAPLEE Method: A technique for identifying, evaluating, and prioritizing mitigation actions based on existing local conditions. It advocates an analysis based on the following conditions: social, technical, administrative, political, legal, economic, and environmental.

Structural Project: Action that involves the construction of structures to reduce the impact of a hazard.

DEFINITION OF ACRONYMS

APPENDIX 4

RECORD OF ADOPTION

Marshall, Ohio, and Wetzel Hazard Mitigation Plan
Public Comment Form

The Hazard Mitigation Plan has been developed as per the requirements of Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. As part of that requirement, members of the public must have an opportunity to review and comment on the document. During the preparation of the plan, participating counties held a number of public meetings to allow the public a chance to review the existing county documents and make suggestions regarding improvements. This form is provided to the public to record comments on the updated version of the plan. Following your review of the plan, please use this document to mark any strengths or areas for improvement.

1. List any hazards you feel were not included in the plan but should have been.

_____

_____

1a. Why should these be included?

_____

_____

2. What hazards are in the plan that should be removed?

_____

2a. Why?

_____

3. List any projects you feel should have been included in the plan but were not.

_____

_____

3a. Why?

_____

_____

4. What projects are in the plan that should be removed?

_____

4a. Why?

_____

5. Please list any general comments you have.

_____

_____

_____

6. In what jurisdiction (i.e., city, town, or unincorporated area) do you live?

_____

THANK YOU for completing this form. If you would like to leave your name and other contact information, you may do so on the back of this sheet.

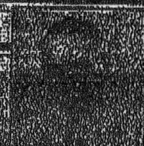
5/3/09

It's Going to Be a Busy Week in M

There will be plenty of events to participate in this week in Marshall County.

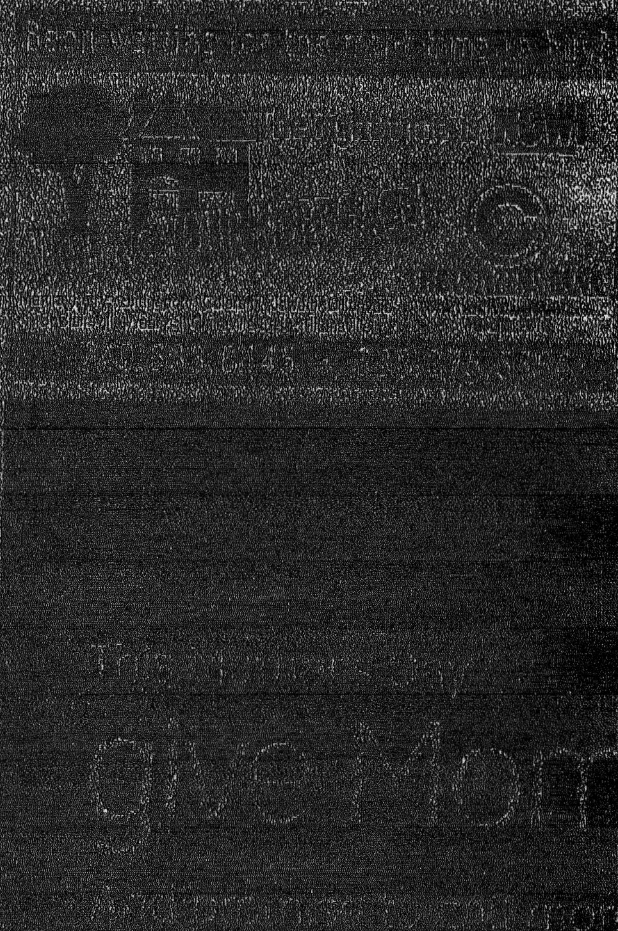
The annual Mock Riot will be taking place through-

Marshall Memo



Resources will be held from 10 a.m. until 2 p.m. ... Training Center at the for- ... West Virginia Penitentiary.

... addition to employers, there will also be representatives from local colleges and other agencies ...



PRESS RELEASE RE: MOCK DISASTER, HMP UPDATE, ETC.

Area hospitals were treating the other victims, including two in fair condition.

The shooting was at the L.A. Fitness Center in Bridgeville, a community of about 5,000 residents not far from downtown Pittsburgh and the Pittsburgh International Airport.

Debi Wozniak, of Dormont, a suburb of Pittsburgh, is a regular at the weekly Latin impact-dance exercise ... [illegible] the instructor, who said that it was apparent that four people were dead and that the gunman had killed himself.

"She told me, 'Debi, I seen everything. Oh, my God, I seen everything. I seen him pull out the guns,'" Wozniak said.

Moffatt said police recovered two guns from the scene. He would not discuss a possible motive for the ... in stable condition.

The fitness center, which opened last year, is in a strip mall called the Great Southern Shopping Center, where a few businesses were destroyed in a 2006 fire.

It said in a statement, "Each of us in the L.A. Fitness family are shocked and saddened by the senseless acts of violence that took place."

Barbara Cerra Died Monday

Barbara Kasunic Cerra, 88, of Wheeling, WV formerly of 8th Street, Glen Dale, WV died Monday, August 3, 2009 in Ohio Valley Medical Center, Wheeling.

She was born July 8, 1921 in Farmington, WV, the daughter of the late Daniel and Frances Kasunic.

She was a retired nurses aide from Ohio Valley Medical Center, a member of St. Jude Catholic Church, and the Italian-American Mother's Club.

In addition to her parents, she was preceded in death by her husband, Victor A. Cerra, and a brother, Marcus Kasunic.

Survivors include a son, Victor (Julie) Cerra of Wheeling; a daughter, Frances Conner of Glen Dale and her fiance Michael Kuca; two brothers, Daniel and Thomas Kasunic, both of Wheeling; three sisters, Mary Rudish of New Brighton, PA, Dolores (Walter) Zien of Wheeling, and Patsy (Fred) Dobson of Tampa, FL; eight grandchildren, thirteen great grandchildren, and a daughter-in-law, Margie Cerra of Wheeling.

Family will receive friends on Thursday from 2-4 and 6-8 p.m. at Grisell Funeral Home & Crematory, 400 Jefferson Avenue, Moundsville where funeral services will be held Friday at 11 a.m. with F. John Gallagher officiating.

Interment in Mt. Calvary Cemetery, Wheeling.

Memorial contributions may be made to Catholic Charities, 145 18th Street, Wheeling, WV 2600[illegible].

Ukrainian Church Summer Festival

Our Lady of Perpetual Help Ukrainian Catholic Church, 4136 Jacob Street, Wheeling will have their annual Summer Festival on August 7-8 from 7-11 p.m. There will be music provided by a DJ. There will be a 50-50 Raffle, a drawing for a $200.00 Kroger gift certificate, bingo, and other games of chance. There will be a baked goods stand. There will be games for the children. Food will include cabbage and noodles, pirohi (pierogi), kielbasa, cabbage rolls, hot sausage, funnel cakes, pizza, and fish on Friday. Food in the inside kitchen will begin being served at 6 p.m. Everyone is welcome.

Big Bucks Wanted For National Hunting, Fishing Days Celebration

The West Virginia Division of Natural Resources (DNR) will again partner with Toyota to present the Big Buck Display at West Virginia's Celebration of National Hunting and Fishing Days (NH&FD) at Stonewall Resort State Park from September 26-27. "DNR is very excited about this partnership because it gives us an opportunity to promote this very popular display at the largest outdoor-oriented event in the state – showcasing hunting, fishing and wildlife appreciation," said DNR Director Frank Jezioro. Stonewall Resort State Park is conveniently located along Interstate 79 (Exit 91) in Roanoke (near Weston), Lewis County.

Hunters wishing to display their trophies at NH&FD must pre-register. Interested hunters should contact Keith Krantz at 304-637-0245 between 9 a.m. and 4 p.m. or e-mail keithkrantz@wvdnr.gov for additional information and a registration form. More information, along with rules and application, can also be found by going to the West Virginia Big Buck Display webpage at www.wvdnr.gov/hunting/wvbigbucks.shtm.

Open House At McNinch Aug. 17

A Community Open House event will be held at McNinch Primary School on Monday, Aug. 17, from 4:00 p.m. to 7:00 p.m. to celebrate the opening of the newly-remodeled school.

McNinch Primary was closed during the 2008-09 school year to allow for extensive renovations, which included conversion of the building from an "open classroom" arrangement to more traditional classrooms, as well as additions to the kitchen area, a new art room and a new area for pre-kindergarten classes.

The Community Open [illegible] event will allow community [illegible] bers, business partners, alumni, former staff members, parents and students to visit the newly-remodeled school. Work was funded through a combination of funds from the School Building Authority of West Virginia and local school bond funds.

Meadowdale Homecoming, Franklin Reunion Set

The Meadowdale Homecoming and Franklin reunion will be held on August 16th at the Yocum Camp at Bannen on Fish Creek. Bring covered dish, beverages and auction items. Dinner will be at 12:30 p.m. Bring your chairs and plan to stay the day. Family and friends welcome.

Class Of 1956 To Meet Aug. 8

The class of 1956 Moundsville High School will have a dutch treat [illegible] on Saturday, August 8th at 9:30 a.m. at the Guest House. Come and enjoy being with old friends and remembering times of 1956. Bring a friend or spouse and enjoy good food and good company.

PUBLISHED 8/5/09

Meeting Set For Mitigation Plan

A public meeting has been scheduled for Thursday, August 6th at 1:30 p.m. in the County Commission Chambers of the Marshall County Courthouse for the proposed revision and update of the Marshall County Multi-Jurisdictional All-Hazards Mitigation Plan.

Moundsville Echo - 8/5/09

Wheeling News Register
8/6/09

Continues

...DICKSON
...elligencer

...erton has been ... the downtown ... look, accord... ls, and the Lee ... the latest addi...

...ment of the community is critical and thanked everyone who assisted the city in the beautification.

He noted the next thing he plans to do is host talks with ArcelorMittal Steel about what the company can do to help the down...

REGIONAL BRIEFS

Watershed meeting today

TRIADELPHIA — The Northern Panhandle ...

Public meeting set at courthouse

...pen Bids ... Dirt Work

MARSHALL COUNTY
OFFICE OF EMERGENCY MANAGEMENT
Thomas D. Hart, Director
Mike Mucheck, Deputy Director

P.O. Box Drawer B
Moundsville, WV 26041
Phone: (304) 843-1130
Fax: (304) 843-1131

Marshall County Multi-Jurisdictional Mitigation Plan, Stakeholders Kick-off Meeting

Wednesday, February 11, 2009

	Name	Agency	E-mail
1.	Noel Clarke	Moundsville Fire	nclarke@moundsville.net
2.	Kenny Rhodes	MARSHALL Co Schools	KRRhodes@ACCESS.K12.WV.US
3.	Mike Mucheck	MARSHALL Co. OEM	MCOES172@OVIS.NET
4.	Earl Shaw	Moundsville	eeshawjr@msn.com
5.	Tom Hart	MARSHALL CO OEM CITY OF CAMERON	mcoes @ ovis.net
6.	Jeffery Harvey	JH Consulting	jhconsultingllc @ verizon.net
7.	Jay Wallace	WV DOT	Jay.R.Wallace @ wv.gov
8.	Betsy Drake Wilson	MCC	bwilson @ ovis net
9.	Howard Caffield	MCC	Howard CF@ comcast.net
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Marshall County Multi-Jurisdictional Mitigation Plan, Stakeholders Meeting

Wednesday, April 29, 2009

	Name	Agency	E-mail
1.	Earl Shaw	City of Moundsville	eeshawjr@msn.com
2.	Jay R Wallace	WVDOT	Jay.R.Wallace@wv.gov
3.	Jeffery Harvey	JH Consulting	jhconsultingllc@verizon.net
4.	LARRY Newell	MCC 911	MCC911@OVIS.NET
5.	Mike Muchieck	MCOEM	MCOES172@ovis.com
6.	Kenny Rhodes	Marshall Co School	KRRhodes@access.k12.wv.us
7.	Howard Coffield	MCC	HCoffield@marshallcountywv.org
8.	Tom Hart	Marshall Co. OEM City of Cameron	MCOES@ovis.net
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SIGN IN SHEET – August 6, 2009

	NAME	ORGANIZATION
1.	James Cochran (James Cochran)	Moundsville Journal
2.	Kenny Rhodes	Marshall County Schools
3.	Tom Wood	Marshall County Schools
4.	Hugh Pinkerton	Mdvd. Daily Echo
5.	Derek Eskew	JH Consulting
6.	Tom Hunt	Marshall County Emergency Management
7.	Mike Mucheck	Marshall County OEM
8.	Howard Coffield	Marshall County Commission
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Name (Optional): Wayland Harris

Agency (Optional): Wheeling- Ohio County HD

To what hazard do you feel Ohio County is *most* vulnerable? Why? Flooding Due to close location of Ohio River and numerous streams and creeks that feed into them.

List one project that you feel would lessen hazard-related loss: Less building in fl plain and removal of dilapatdated buildings in the flood plain.

Name (Optional): Frank Blaskovich

Agency (Optional): Wheeling Water (Plant Manager)

To what hazard do you feel Ohio County is *most* vulnerable? Why?

chlorine leak, Hazard chem spill

List one project that you feel would lessen hazard-related loss:

Name (Optional): Chief Robert Matheny

Agency (Optional): Wheeling Police Dept.

To what hazard do you feel Ohio County is *most* vulnerable? Why? _____

HAZ-Mat release on I-70 or I-470 Due to Heavy truck traffic

List one project that you feel would lessen hazard-related loss: Training

Name (Optional): _____

Agency (Optional): STATE / FEDERAL MANY ROADS IN _____

To what hazard do you feel Ohio County is *most* vulnerable? Why? OHIO COUNTY - BIO- HAZARD ON INTERSTATE / STATE ROUTES FROM TRACTOR TRAILER CRASH / SPILL

List one project that you feel would lessen hazard-related loss: STEPPED UP ENFORCEMENT BY D.O.T. - LOG BOOKS ETC. - SPOT CHECKS -

Name (Optional): MARK GRIFFITH

Agency (Optional): WV DOH

To what hazard do you feel Ohio County is *most* vulnerable? Why?

CHEMICALS PLANTS NORTH & SOUTH OF OUR AREA WITH WATER WAY, OHIO RIVER

List one project that you feel would lessen hazard-related loss: HAZMAT CHEMICAL DRILLS

Name (Optional): MICK DAVIS

Agency (Optional): WV DOH.

To what hazard do you feel Ohio County is *most* vulnerable? Why?

CHEMICAL PLANTS / MASS CASUALTIES

List one project that you feel would lessen hazard-related loss:

Name (Optional): Dianna Vargo

Agency (Optional): Ohio County Schools

To what hazard do you feel Ohio County is *most* vulnerable? Why?

Pandemic Flu – Flooding

List one project that you feel would lessen hazard-related loss:

Evacuations – Shelter in place

Name (Optional): John Sebring, Safety Director

Agency (Optional): Wheeling Hospital

To what hazard do you feel Ohio County is *most* vulnerable? Why? _____

Flooding, Weather Related

List one project that you feel would lessen hazard-related loss: _____

Mass Evacuation Shelter.

Name (Optional): Brad Simms

Agency (Optional): ONMC

To what hazard do you feel Ohio County is *most* vulnerable? Why? _____

HAZMAT RELEASE DUE TO CLOSE PROXIMITY TO INTERSTATE TRUCK TRAFFIC

List one project that you feel would lessen hazard-related loss: _____

TRAFFIC CONTROL MEASURES

OHIO COUNTY ALL HAZARD MITIGATION PLAN UPDATE

Stakeholders and Public Meeting

September 20, 2010 ~ 1:00 p.m.
Sign In Sheet

	Name	Agency	Email
1.	MICK DAVIS	WV DOH	MICK.M.DAVIS@WV.G
2.	MARK GRIFFITH	WV DOH	MARK.D.GRIFFITH@WV.GO
3.	PAT BUTLER	OHIO CO. SHERIFFS	PBUTLER@OHCOSD.COM
4.	Chief Robert Matheny	Wheeling PD	ChiefMatheny@wheelingpd.c
5.	John SEBRENG	Wheeling Hospital	JSEBRENG@wheelinghospital.c
6.	Frank Blaskovich	Wheeling Water	frankb@wheelingwater.com
7.	Theron Rissell	Wtg 911	Wtg911@Stratuswave.net
8.	David Weaver	Ohio Co Comm GIS	ohiocountygis@aol.com
9.	BRAD SIMMS	OVMC	DSIMMS@OVMH.ORG
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Name (Optional): Ray Gawthrop

Agency (Optional): Councilman Town of Pine Grove

To what hazard do you feel Wetzel County is *most* vulnerable? Why? ____

Raising water

List one project that you feel would lessen hazard-related loss: _____

dredge the creeks in this area

Name (Optional): Bonnie Shannon

Agency (Optional): City of New Martinsville

To what hazard do you feel Wetzel County is *most* vulnerable? Why? ____

Floods

List one project that you feel would lessen hazard-related loss: _____

Planning - Land Slides -

Name (Optional): Lucille Blum

Agency (Optional): New Martinsville Govt.

To what hazard do you feel Wetzel County is *most* vulnerable? Why? ____

Flooding; we have experienced flooding numerous time.

List one project that you feel would lessen hazard-related loss: _____

Planning for persons on low income property AND/or land lords have monies available to repair damage?

over

rather than allow property to be in a state of disrepair for future use.

Name (Optional): JOE HANNAH

Agency (Optional): N.M. BUILDING INSPETION

To what hazard do you feel Wetzel County is *most* vulnerable? Why? ____

BUILDING CONSTRUCTION / CODE COMPLIANCE

List one project that you feel would lessen hazard-related loss: COUNTY WIDE BUILDING CODE ENFORCEMENT.

Notice of Public Meeting

The Wetzel County Office of Emergency Services, as part of the Wetzel County Hazard Mitigation Planning Committee, will hold public meetings on Thursday, October 23rd at the following locations and times:

- **Wetzel County Commission Meeting Room, New Martinsville - 10 am**
- **Byrd Center - Pine Grove 1 pm**

The purpose of the meeting is to review updates to the county's hazard mitigation plan. Members of the public will be given the opportunity to comment on the natural and man-made hazards most affecting them.

The Wetzel County Multi-Jurisdictional Hazard Mitigation Plan was developed in 2003 per federal requirements in Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000.

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WETZEL COUNTY HAZARD MITIGATION PLAN

Hazard Mitigation Committee Meeting

October 23, 2008 ~ 1:00 p.m. Pine Grove
Sign In Sheet

	Name	Agency	Contact
1.	Roy L. Justice	Town of Pine Grove	
2.	Edgar L. Sapp	Wetzel Co. OES	304-455-8200
3.	Kimberly Bates	Town of Pine Grove	304-889-3351
4.	Derek Ellis	JH Consulting	473-1009
5.	Jeff Harvey	JH Consulting	473-1009
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WETZEL COUNTY HAZARD MITIGATION PLAN

Hazard Mitigation Committee Meeting

October 23, 2008 ~ 10:00 a.m. New Martinsville
Sign In Sheet

	Name	Agency	Contact
1.	Lucille Blum	- City of New Mart.	
2.	Bizzie Shannon	- City Recorder	304-455-9122
3.	Joseph C. Harris	- City of New Mart.	304-455-9130
4.	Stephanie Kapp	Wetzel Co. OEM	304-455-8200
5.	Jeff Harvey	IH Consulting, LLC	304-473-1009
6.	Derek R Ebl	"	"
7.	Norma Ritz	Wetzel Co OEM	304.455-8200
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