MEETING NOTES

Meeting	State of West Virginia Hazard Mitigation Plan (HMP) State Planning Team (SPT) Risk Assessment Meeting		
Date	January 4, 2023	**Time**	9:00 a.m. – 12:50 p.m.
Location	West Virginia Emergency Management Division (WVEMD) 2403 Fairlawn Avenue, Dunbar, WV 25064 and Microsoft Teams webinar		
Attendees	Ginger Barnett, Chief of Mitigation and Recovery, WVEMD		
	Tim Keaton, State National Flood Insurance Program (NFIP)/Cooperating Technical Partner (CTP) Coordinator, WVEMD		
	Casey Garnett, West Virginia Hazard Mitigation Community Planner, Federal Emergency Management Agency (FEMA)		
	Ed Martin, Deputy Director, West Virginia State Resiliency Office (WV SRO)		
	Tony Edwards, Warning Coordination Meteorologist, National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)		
	Jeremy Jones, Assistant State Forester, West Virginia Division of Forestry (WV DOF)		
	Ray Perry, Floodplain Administrator, Logan County; Chair, West Virginia Floodplain Management Association		
	Robert "Bob" Martin, Director, WV SRO		
	Dionne Allen, Planner, Region 7 Planning and Development Council (PDC) (remote)		
	Timothy Priddy, Director, WV Center for Threat Preparedness (remote)		
	Hunter Roberts, Grants Management Specialist, FEMA (remote)		
	Jamie Baker, Project Assistant, Region 4 Planning and Development Council (remote)		
	Ryan Halsey, Community Development Block Grant (CDBG) Infrastructure Project Manager, WV Community Advancement and Development		
	Kathy Bowe, Assistant Director of Disaster Response and Safety, WV Department of Transportation		
	Sherry Risk, CDBG Program Manager, WV Community Advancement and Development		
	Stephen Allen, Director, Jefferson County Department of Homeland Security and Emergency Management (remote)		
	Steven Patterson, Deputy Director, West Virginia Fusion Center		
	JaLeesa Tate, Tetra Tech, Deputy Project Manager		
	Christina Groves, Tetra Tech, Senior Planner		

Discussion Points

This section summarizes each discussion point addressed during the SPT Risk Assessment Meeting.

Welcome and Introductions

Ms. Barnett welcomed attendees to the meeting. Ms. Tate provided an overview of the purpose of the meeting, and attendees introduced themselves. The meeting serves to provide an overview of the Risk Assessment in the 2023 State Hazard Mitigation Plan (SHMP) and identifies hazards, assets, and vulnerabilities within the state.

MEETING NOTES

Purpose of State Hazard Mitigation Planning

Ms. Tate highlighted the goals of conducing the SHMP planning process. The WV SHMP serves as an opportunity for strategic planning for the future. Benefits include identifying vulnerabilities, increasing public awareness, building partnerships, and integrating statewide planning efforts. The SHMP is required for the state to maintain eligibility for FEMA's Hazard Mitigation Assistance (HMA) programs and certain categories of Public Assistance (PA).

Components of the Risk Assessment

Ms. Tate defined risk and provided an example to attendees. Risk can be defined as the intersection of hazards, assets, and vulnerabilities. Ms. Tate reviewed the basic methodology for conducting a Risk Assessment:

- Identify and describe hazards:
  - Location and extent
  - Past occurrences and impacts
  - Future probability
- Identify and assess potential impacts on assets:
  - People
  - Public service facilities
  - Critical facilities
  - Environment
  - Economy
- Analyze risks
  - Intersection of hazards, vulnerability, and exposure

Ms. Tate reviewed the below components of the Risk Assessment:

- Hazard Identification
- Asset Identification
- Vulnerability Assessment
- Changes in Development
- Impacts from Climate Extremes
- Impacts to Socially Vulnerable Communities

Statewide Snapshot

Ms. Tate reviewed the hazards identified in the state's 11 Regional Planning and Development Councils (RPDCs) and Jefferson County local hazard mitigation plans (HMPs). It was noted that all hazards may not be identified in local HMPs due to differences in geography, concentration of people and structures, etc. Additionally, hazards may be identified and categorized differently. For example, in some plans, wind may be assessed as an independent hazard, but in other HMPs, it may be categorized with severe weather. The following hazards were assessed in local HMPs; bolded hazards are included in the 2023 SHMP update.

- Civil Disturbance
- **Dam Failure**
- **Drought**
- **Earthquake**
- **Epidemic**
- Expansive Soil
- **Extreme Heat**
- **Flood**
- Hailstorm
- **Hazardous Materials Incident**
- Infestation
- **Landslide**
- **Radiological Hazards**
- **Severe Winter Storm**
- Structure/Urban Fires
- Technological Hazards
- Terrorism
- **Tornado**
- **Wildfire**
- **Wind/Severe Storm**

Social Vulnerability

Ms. Tate defined social vulnerability as the susceptibility of social groups to adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. In West Virginia, barriers and challenges contributing to social vulnerability may include the following:

- Lack of access to transportation
- Crowded housing
- Economic disadvantages
- Age
- Physical limitations and disabilities
- Lack of access to broadband (internet)

Attendees also noted the following:

- Substance abuse and addiction can serve as a barrier that contributes to the barriers and challenges noted above.
- Individuals experiencing homelessness are vulnerable and many of the barriers and challenges noted above impact them more severely.
- There is an unwillingness for people to relocate or evacuate which places them in greater danger.
- Educational barriers increase vulnerability due to the necessity for individuals to be able to interpret warnings and notifications.

Ms. Tate reviewed an analysis of the Center for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index. The index ranges from 0 to 1, with 0 representing the least vulnerability and 1 representing the greatest vulnerability. The data is aggregated by census tracts. The SVI is calculated based on 16 data points that are categorized into four themes:

- Socioeconomic status (below 150% poverty, unemployed, housing cost burden, no high school diploma, no health insurance)
- Household characteristics (aged 65 or older, aged 17 or younger, civilian with a disability, single-parent households, English language proficiency)
- Racial and ethnic minority status (Hispanic or Latino of any race; Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino)

- Housing type and transportation (multi-unit structures, mobile homes, crowding, no vehicle, group quarters)

Within West Virginia, the themes for socioeconomic status and household composition and disability have the greatest vulnerabilities within the southwestern areas of the state. The theme for minority status and language has the least vulnerability. The housing type and transportation theme is varied throughout the state and does not depict a concentration of increased vulnerability.

Ms. Tate also provided an overview of the composite SVI of all four themes representing the highest 20% percent of census tracts with an SVI of 0.8 or greater. These areas are mostly located with the southern region of the state.

Attendees noted additional information on social vulnerability within the state may be found in local HMPs, the CDBG-MIT Action Plan, and the CDBG-DR RISE Disaster Recovery Program's unmet needs assessment.

Review of Draft Risk Assessment

Ms. Tate introduced the draft Risk Assessment for the 2023 West Virginia SHMP. A summary of the discussion is provided below.

Dam Failure

Dams can result in catastrophic damages downstream that include flooding, loss of life, and damage to property and the environment. Approximately half the dams in the state are privately owned, and one-third are state-owned. The remaining percentage is a combination of federal, local government, and public utility ownership. High hazard potential dams pose the greatest risk, and 74% of dams in the state are within this category.

Attendees noted that the potential causes of dam failure (e.g., flooding, deferred maintenance, aging infrastructure, etc.) often occur in combination and are not mutually exclusive.

To meet High Hazard Potential Dam (HHPD) requirements, the SHMP must evaluate incremental, non-breach, and residual risk.

Drought

Per the U.S. Drought Monitor, West Virginia has not experienced frequent drought, but there have been noteworthy events in the state including a drought lasting 41 weeks and a widespread drought impacting 25% of the state. Attendees noted that drought can result in cascading hazards, such as increased wildfire risk, which can also result in poor air quality.

Earthquake

The state has a moderate risk of seismic activity and is susceptible to activity along the New Madrid Seismic Zone. Risk is lower in the state due to low population and structure density. Attendees mentioned that fracking may result in earthquakes. In 2016, a small earthquake was detected in

Braxton County as a result of fracking.[1] Additionally, attendees raised concerns regarding the potential for earthquakes to result in damage to pipelines.

Extreme Temperature (Hot and Cold)

There have been several extreme temperature events impacting the state. These events can have significant impacts on human health, commercial and agricultural businesses, and infrastructure. Attendees noted the limitations to using the National Centers for Environmental Information (NCEI) database to quantify impacts from extreme temperature events; fatalities and economic damages are often not reported accurately. Attendees encouraged the use of locally available data to provide a more in-depth assessment of extreme temperature. The state's Fusion Center developed a Statewide Threat Assessment that includes additional information on climate data.

Flood

Flooding is the most frequent and devastating hazard in the state. The mountainous topography of the landscape exacerbates flooding, and towns located in valleys may experience more impacts from flooding. Localized flooding events outside of the Special Flood Hazard Area have increased. Attendees noted the following additional discussion for inclusion in the SHMP.

- Excessive localized rainfall
- Riverine/flash flooding
- Stormwater flooding
- Flooding as a result of infrastructure being undersized and/or infrastructure failure

Hazardous Materials

Hazardous material incidents can occur anywhere in the state but are most likely to occur along major transportation routes. West Virginia has multiple capabilities to support the cleanup of hazardous material incidents, such as the National Guard Civil Support Team. Attendees encouraged direct outreach to the Department of Environmental Protection (DEP) to gain additional insight for this hazard.

Landslide

The eastern region of the state is especially susceptible to landslides due to its mountainous terrain. The total exposure area landslide (TEAL) data provides granular detailed information in regard to the location of homes, structures, roads, etc. This information can be used to inform the goals and objectives developed for the plan. The TEAL data also includes photos that can be used throughout the plan to depict what a landslide may look like.

Levee Failure

There are 21 levee systems in the state. In addition to these regulated levees, there are several homebuilt levees prevalent throughout the state. These homebuilt structures are likely not constructed to engineering standards, are not regulated, and can result in multiple unintended consequences.

[1] https://www.dailykos.com/stories/2016/5/10/1525056/-West-Virginia-fracking-and-earthquakes

Attendees noted that the Huntington Levee has the highest risk in FEMA Region III. Attendees encouraged developing SHMP goals that will strengthen coordination between actions completed for levees and dams and mitigation activities.

Severe Storm

Severe storms may include high winds, thunderstorms, lightning, hail, tornadoes, and remnants of hurricanes. Although these events can occur anywhere in the state, the flatter areas tend to be ideal for tornado longevity.

Subsidence

The state's susceptibility to subsidence is exacerbated due to abandoned mines and areas with karst and carbonate rocks. Karst topography is most common in the eastern part of the state. DEP oversees abandoned mine lands, and it was recommended to reach out to DEP directly to gather additional information.

Pandemic

The entire state is susceptible; however, location-based factors such as population density, travel, and the length of time spent in a location all contribute to the spread of infectious diseases. Previous occurrences include COVID-19, seasonal flu, H1N1, and West Nile virus.

Radiological Incidents

Radiological materials released into the environment may be disabling or fatal as a result of direct exposure or ingestion of contaminated food or water. While there are no radiological facilities located within the state, the Beaver Valley Nuclear Power Station is within the proximity of the state and poses a risk.

Radon Exposure

Radon exposure can pose a serious threat to public health when it accumulates in poorly ventilated residential and occupation settings. Radon is found everywhere in the state, but some counties have elevated levels of radon.

Utility Failure

A significant interruption of utilities can result in disruption or loss of public services, equipment failure, loss of heating and cooling, etc. These events can occur anywhere in the state but are typically localized.

Wildfire

Appalachian forests tend to be wetter when compared to fire-prone forests in the western U.S. Appalachian forests typically burn at lower severities. An intact, mature temperate forest offers conditions less likely to burn into severe wildfires. With less undergrowth, the fire cannot jump into the forest crown as easily; with thicker bark, mature trees resist fire damage; and with more shade, the forest floor is often cooler and wetter.

Attendees noted that additional data is available and will provide the data to Tetra Tech.

Winter Weather

Several winter weather events have occurred in the state. The higher elevations of the state, including the foothills, tend to experience more frequent winter weather events, with the western portions of the state generally experiencing less frequent snow events.

Next Steps and Questions

Ms. Tate reviewed the next steps in the HMP update process with attendees:

- Goals and Objectives Meeting
  - January 18, 2023, from 9:00 a.m.–12:00 p.m.
- Mitigation Strategy Meeting
  - February 9, 2023, from 9:00 a.m.–12:00 p.m.
- Draft Plan Review
  - Mid-April

With no further questions, Ms. Barnett and Ms. Tate thanked attendees for their time and participation.

The meeting adjourned at 12:50 p.m.

TETRA TECH

West Virginia 2023 State Hazard Mitigation Plan Update

January 4, 2023

Christina Groves, CFM and JaLeesa Tate, CFM

West Virginia Emergency Management — *Leading with Science®*

1

Agenda

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- Welcome and Introductions
- Purpose of State Hazard Mitigation Planning
- Components of the Risk Assessment
- Statewide Snapshot
- Review of Draft Risk Assessments
- Next Steps and Questions

West Virginia Emergency Management 2

2

Stakeholder Introductions

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- Name
- Organization/Agency
- Role in Mitigation
- Focus and concerns

West Virginia Emergency Management 3

3

Purpose of State Hazard Mitigation Planning

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- Identify vulnerabilities and increase public awareness
- Develop roadmap for long-term risk reduction strategies
- Build partnerships
- Integrate statewide planning efforts
- Identify shared goals across State government

Strategic planning for the future

Maintain eligibility for Federal funding:

- Hazard Mitigation Grant Program
- Flood Mitigation Assistance
- Building Resilient Infrastructure and Communities
- Fire Mitigation Assistance Grants
- Public Assistance (PA) Categories C through G (e.g., repairs to damaged infrastructure)

West Virginia Emergency Management 4

4

Defining Risk

TETRA TECH

- Identify and describe hazards
  - Location and extent
  - Past occurrences and impacts
  - Future probability
- Identify and assess potential impacts on assets
  - People
  - Public service facilities
  - Critical facilities
  - Environment
  - Economy
- Analyze risks
  - Intersection of hazards, vulnerability, and exposure

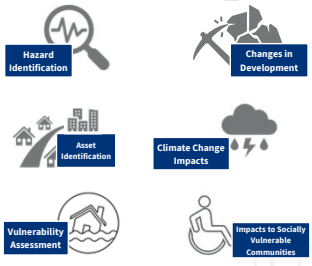
West Virginia Emergency Management 5

5

Components of a Risk Assessment

TETRA TECH

- Hazard Identification
- Asset Identification
- Vulnerability Assessment
- Changes in Development
- Climate Change Impacts
- Impacts to Socially Vulnerable Communities



West Virginia Emergency Management 6

6

Local Hazard Mitigation Plan Rollup

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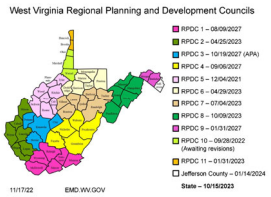
Hazards Identified	
• Civil Disturbance	• Infestation
• **Dam Failure**	• **Landslide**
• **Drought**	• **Radiological Hazards**
• **Earthquake**	• **Severe Winter Storm**
• **Epidemic**	• Structure/Urban Fires
• Expansive Soil	• Technological Hazards
• **Extreme Heat**	• Terrorism
• **Flood**	• **Tornado**
• Hailstorm	• **Wildfire**
• **Hazardous Materials Incident**	• **Wind/Severe Storm**

Bolded hazards are included in 2023 SHMP.



7

Social Vulnerability

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The susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.[1]

[1] FEMA National Risk Index 2022

- Potential barriers and challenges that may contribute to heightened social vulnerability include:
  - Lack of access to transportation
  - Crowded housing
  - Economic disadvantages
  - Age
  - Physical limitations and disabilities
  - Lack of access to broadband (internet)

8

Social Vulnerability in West Virginia

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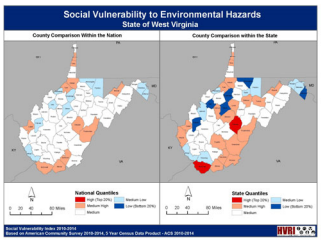
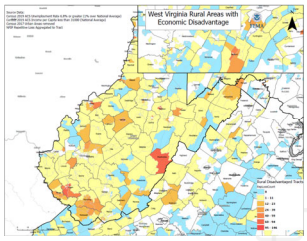
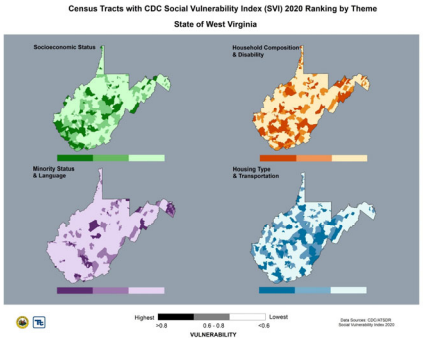




FEMA National Risk Index 2022 and FEMA Region III

9



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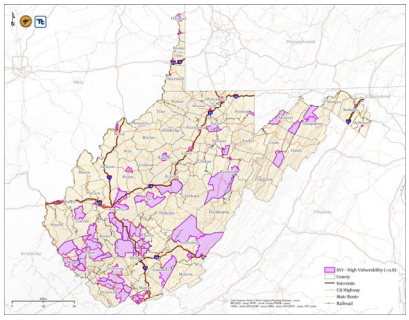
10



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11

Dam Failure

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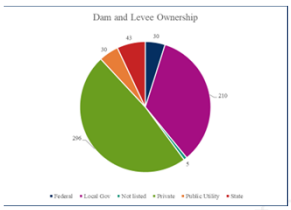
- Can result in catastrophic downstream flooding and have impacts to life, property, the economy, and the environment.
- Causes:
  - Flooding
  - Earthquakes
  - Blockages
  - Landslides
  - Geological conditions
  - Deferred maintenance
  - Aging infrastructure
  - Improper operation
  - Construction deficiencies
- State maintains inundation and evacuation zone maps for state-owned dams.

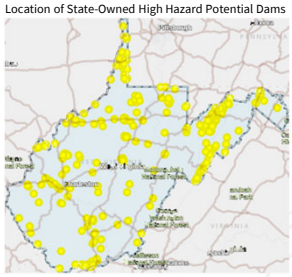


12

Dam Failure

- 74% of dams are classified as High Hazard of Significant (NID).
- Previous Occurrences:
  - **August 9, 1916:** A spillway deficiency resulted in 44 deaths, and $500,000 to $1 million in economic damages.
  - **August 9, 1916:** A spillway deficiency resulted in 60 deaths.
  - **February 26, 1972:** A dam failure of a coal-waste impoundment at Buffalo Creek Dam resulted in 125 deaths, and over $100 million in economic damages (ASDSO 2020).
  - **October 2000:** A dam in Inez, Kentucky affected WV streams, and caused $56 Million in clean-up costs across both states.
  - **April 2007:** A privately-owned pond, Lee's Fishing Lake, rose 22" after 2.5" of rainfall in 24 hours. Nearly 1000 evacuated, but no damage (Association of State Dam Safety Officials 2013).

Location of State-Owned High Hazard Potential Dams



13

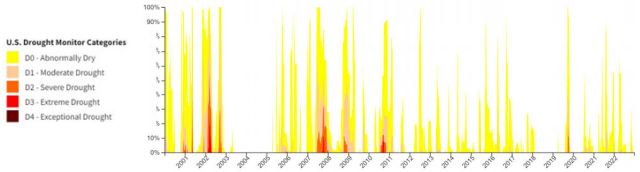
Drought

- Can negatively impact potable water supply and quality, public health, agriculture, the environment, and the economy.
- Causes:
  - Lack of rainfall
  - Increasing potable water demand (population increase)
  - Irrigation
- Entire State is vulnerable.
- Previous Occurrences:
  - **May 29, 2007 – March 4, 2008:** Longest duration of drought lasted 41 weeks
  - **March 12, 2002:** The most intense period of drought. Extreme drought conditions affected 24.55% of West Virginia land (USDM).

14

Drought

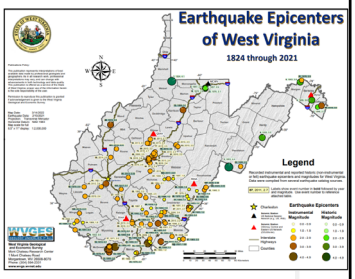
U.S. Drought Monitor: 2000 – Present West Virginia Conditions



15

Earthquake

- Can result in significant property damage and loss of life and be followed by surface faulting, flash flooding, dam failure, and landslides.
- Causes:
  - Movement of tectonic plates
- The State has a moderate risk of seismic activity; however, any potential damage from this seismic activity is relatively low, when compared to states with more dense populations and tall buildings.
- Previous Occurrences:
  - No past Federal Declared Disasters or National Center for Environmental Information (NCEI) recorded events for earthquakes in West Virginia.



16

Extreme Temperature (Hot and Cold)

- Can have a significant impact on human health, commercial/agricultural businesses, and primary and secondary effects on infrastructure (e.g., burst pipes and power failure).
- Causes:
  - Cold fronts
  - Warm fronts
  - Increased humidity
- The entire state of West Virginia is vulnerable to extreme temperature events.
  - Urban areas in the state may be more vulnerable to the heat island effect, which occurs when cities replace the natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat.
- Previous Occurrences:
  - West Virginia has been impacted by 1,827 extreme temperature events between 1950 and 2022.

Hazard Type	Number of Occurrences Between 1950 and 2022	Total Fatalities	Total Injuries	Total Property Damage ($)	Total Crop Damage ($)
Extreme Heat	894	0	6	0	0
Extreme Cold	933	0	0	$3.765 Million	$9.375 Million

17

Flood

- Most frequent and devastating hazard in West Virginia.
- Causes:
  - Heavy rain
  - Ground water levels
  - Ice jams
- Flooding is exacerbated by the mountainous topography of the State.
- Previous Occurrences:
  - Between 1953 and 2022, the State of West Virginia was included in 32 disaster (DR) or emergency (EM) declarations for flood-related events.
  - Between 2012 and 2022, West Virginia was included in 44 flood-related agricultural disaster declarations.

18

Flood

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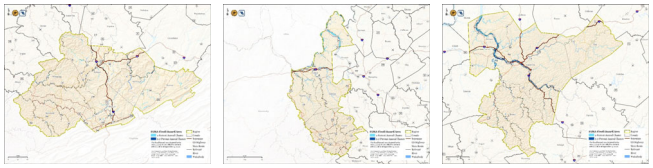
Region 1 | Region 2 | Region 3



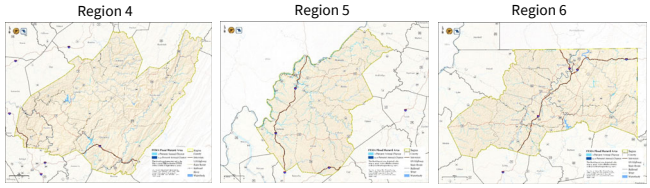
West Virginia Emergency Management 19

19

Flood

TETRA TECH

Region 4 | Region 5 | Region 6



West Virginia Emergency Management 20

20

Flood

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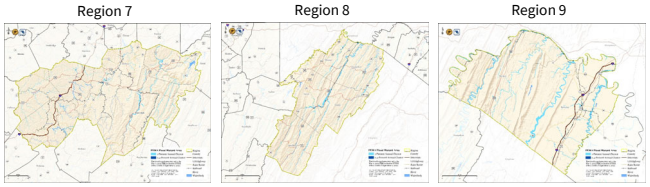
Region 7 | Region 8 | Region 9



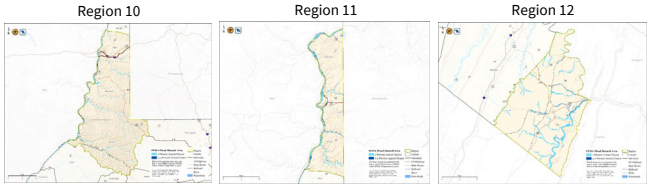
West Virginia Emergency Management 21

21

Flood

TETRA TECH

Region 10 | Region 11 | Region 12



West Virginia Emergency Management 22

22

Hazardous Materials

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- Threatens public health and the environment.
- Causes:
  - Improper disposal of chemicals
  - By-products of manufacturing processes
  - Leaks
  - Accidents
- May occur in any areas of the State; most likely to occur on major transportation corridors.
- Previous Occurrences:
  - **January 2014:** 10,000 galls of chemicals spilled from coal mining operation storage. Contaminated potable water for 300,000 people in the State.
  - **August 2022:** Tractor-trailer accidents resulted in the West Virginia Turnpike being shut down. Approximately 9 miles of Paint Creek were impacted.

West Virginia Emergency Management 23

23

Landslide

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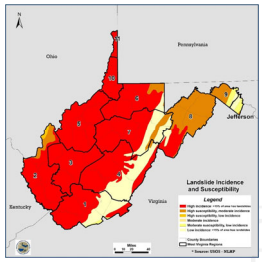
- Can range in size and have extensive impacts on people and property.
- Causes:
  - Heavy rain
  - Rapid snow melt
  - Steepening of slopes (construction or erosion)
  - Earthquakes
  - Changes in ground water levels
  - Deforestation
- The eastern region of the State is especially susceptible to landslides due to its mountainous terrain.
- Previous Occurrences:
  - **June 29, 2019:** Estimated damage to public property, Marion $597,000, Monongalia $518,00, and Preston $855,000.
  - **April 15 – 16, 2018:** Over-saturated ground due to several rounds of rain across the area lead to several landslides in western Pennsylvania and northern West Virginia.
  - **June 22 – 29 2016:** Heavy rain and erosion resulted in eight Interstate mudslides.



West Virginia Emergency Management 24

24

Levee Failure

- Can result in catastrophic localized property damage, injury, loss of life, and negative environmental impacts.
- Causes:
  - Flooding
  - Landslides
  - Geological conditions
  - Deferred maintenance
  - Construction deficiencies
- Total of 21 levee systems in the State.
- Previous Occurrences:
  - No past Federal Declared Disasters or National Center for Environmental Information (NCEI) recorded events in West Virginia.

25

Severe Storms

- High winds, thunderstorms, lightning, hail, tornadoes, and remnants of hurricanes can cover vast areas of the State quickly and without enough warning, leading to flooding, lightning-initiated fires, and significant structural damage.
- Causes:
  - Meteorological conditions (air temperature, moisture, wind, etc.)
- Severe storms can take place anywhere in West Virginia.
  - Higher elevations in mountainous areas tend to experience more snowfall and winter weather.
  - Flatter areas tend to be more ideal for tornado longevity making those areas more at risk.
- Previous Occurrences:
  - **May 3, 2021:** An isolated, cyclic supercell thunderstorm tracking along a warm front produced sporadic straight-line wind damage and spawned several tornadoes and led to one documented injury.
  - **August 25, 2020:** A line of storms developed and resulted in damaging wind and some flash flooding which led to a documented injury and $322,500 in property damages.
  - **April 9, 2020:** A strong low-pressure system produced large hail and wind gusts up to 45 mph and produced $1,016,000 in property damages.

26

Subsidence

- Impacts may be minor or major.
- Causes:
  - Removal of underground materials (pumping, fracking, or mining)
  - Earthquakes
  - Soil compaction
  - Erosion
- May occur in any area of the State, but areas with abandoned mines and areas with karst and carbonate rocks have a higher susceptibility.
  - Karst topography is most common in the eastern part of the State
- Previous Occurrences:
  - No past Federal Declared Disasters or National Center for Environmental Information (NCEI) recorded events in West Virginia.

27

Pandemic

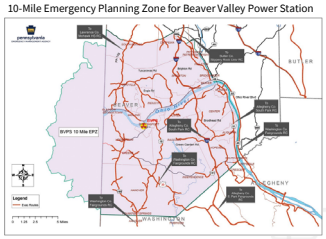
- Threatens public health on a widespread scale such as several countries, continents, or the entire globe. Can lead to social disruption, economic loss, and general widespread hardship.
- Causes:
  - Easy transmission
  - Bacteria or virus resistance
  - Emergence of a new disease
- The entire State is susceptible; however, location-based factors such as population density, travel, and the length of time spent in a location all contribute to the spread of infectious diseases.
- Previous Occurrences:
  - COVID-19
  - Seasonal Flu
  - Swine Flu
  - West Nile Virus

28

Radiological Incidents

- Radiological materials released into the environment be disabling or fatal as a result of direct exposure or ingestion of contaminated food or water.
- Causes:
  - Mishandling
  - Releases during transport
  - Discovery of uncontrolled, unlicensed, or unidentified radiological materials
  - Nuclear power plant incident
  - Terrorism
- Beaver Valley Power Station (BVPS) located to the east of Hancock County.
- Previous Occurrences:
  - No past Federal Declared Disasters or National Center for Environmental Information (NCEI) recorded events in West Virginia.

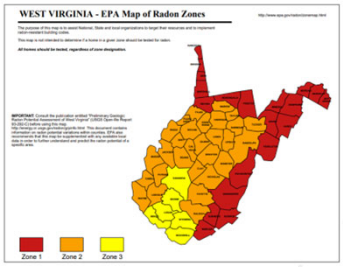
10-Mile Emergency Planning Zone for Beaver Valley Power Station



29

Radon Exposure

- Can pose a serious threat to public health when it accumulates in poorly ventilated residential and occupation settings.
- Causes:
  - Natural radioactive decay of uranium and thorium
- Found everywhere in the State, with some counties have elevated levels of radon.



30

Utility Failure

- A significant interruption of utilities can result in disruption or loss of public services, equipment failure, loss of heating and cooling, etc.
- Causes:
  - Technological failure
  - Natural disasters
  - Traffic accident
  - Human error
  - Terrorism
- May occur anywhere in the State and are typically localized.
- Previous Occurrences:
  - **February 17, 2021:** Winter storm produced heavy snow and ice accumulations which led to over 500 broken power poles and yards of wire in need of replacement. This cause significant power outages.
  - **February 10, 2021:** A wintry mix led to significant tree damage and made more than 45,000 residents in West Virginia lose power.
  - **February 24, 2019:** Isolated storms led to downed trees and powerlines leaving a peak of 91,000 residents of West Virginia without power.

31

Wildfire

- Can cause extensive damage to ecosystems and biodiversity, people, and property.
- Causes:
  - Extended drought and/or high heat
  - Lightning
  - Human-caused (powerlines, mechanical equipment, discarded cigarettes, etc.)
- Appalachian forests tend to be wetter when compared to fire prone forests in the western U.S. Appalachia forests typically burn at lower severities. An intact mature temperate forest offers conditions less likely to burn into severe wildfires: with less undergrowth, the fire can't jump into the forest crown as easily; with thicker bark mature trees resist fire damage, and with more shade, the forest floor is often cooler and wetter.
- Previous Occurrences:
  - Since the 1950s, about 1,100 forest fires burned an average of 38,000 acres annually in West Virginia.
  - 1987: 429,000 acres
  - 1991: 346,000 acres
  - 1952: 638,000 acres

32

Winter Weather

- Includes heavy snow, blizzards, sleet or freezing rain, and ice storms.
- Causes:
  - Low temperatures
  - Wind
  - Ice
  - Frozen precipitation
- Grant County has the highest number of winter events , while Mason County has the lowest.
  - The higher elevations of the State, including the foothills, tend to experience more frequent winter weather events with the western portions of the state generally getting less, or less frequent snow events.

Hazard Type	Number of Occurrences between 1950 and 2022
Heavy Snow	>500
Blizzard	42
Ice Storm	213
Winter Weather/Winter Storm	>500
Total	>500

33

Next Steps

- Goals and Objectives Meeting
  - January 18, 2023
  - 9:00 a.m. – 12:00 p.m.
- Mitigation Strategy Meeting
  - February 9, 2023
  - 9:00 a.m. – 12:00 p.m.
- Draft Plan Review
  - Mid-April

34

Questions

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35

AGENDA

STATE OF WEST VIRGINIA 2023 HAZARD MITIGATION PLAN UPDATE

State Planning Team Risk Assessment Meeting

January 4, 2023 | 9:00 a.m. – 12:00 p.m.

1.	**Welcome and Introductions**	**9:00 – 9:15**
2.	**Components of the Risk Assessment** a. Hazard Identification b. Asset Identification c. Vulnerability Analysis d. Changes in Development e. Climate Change Impacts f. Impacts to Socially Vulnerable Communities	**9:15 – 9:40**
3.	**Statewide Snapshot** a. Local HMP rollup b. Center for Disease Control Social Vulnerability Index (SVI)	**9:40 – 9:50**
4.	**Review of Draft Hazard Risk Assessments** a. Dam Failure b. Drought c. Earthquake d. Extreme Temperature (Heat and Cold) e. Flood	**9:50 – 10:25**
5.	**Break**	**10:25 – 10:35**
6.	**Review of Draft Hazard Profiles** a. Hazardous Materials b. Landslide c. Levee Failure d. Severe Storms e. Subsidence f. Pandemic g. Radiological Incidents h. Radon Exposure i. Utility Failure j. Wildfire k. Winter Weather	**10:35 – 11:50**
7.	**Next Steps and Questions**	**11:50 – 12:00**

STATE OF WEST VIRGINIA 2023 HAZARD MITIGATION PLAN UPDATE
State Planning Team Risk Assessment Meeting

January 4, 2023 | 9:00 a.m. – 12:00 p.m.

SIGN-IN

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STATE OF WEST VIRGINIA 2023 HAZARD MITIGATION PLAN UPDATE
State Planning Team Risk Assessment Meeting

January 4, 2023 | 9:00 a.m. – 12:00 p.m.

SIGN-IN

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