SOMERSET COUNTY HAZARD MITIGATION PLAN

[Document subtitle]

Somerset County Hazard Mitigation Plan

March 2025

PREPARED FOR

Somerset County Department of Public Safety
100 East Union Street,
Somerset, PA 1660

PREPARED BY

Tetra Tech, Inc.
2301 Lucien Way #120
Maitland, Florida 32751

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EXECUTIVE SUMMARY

The 2025 update to the Somerset County Hazard Mitigation Plan (HMP) was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 requires states and local governments to prepare HMPs to remain eligible to receive pre-disaster mitigation grant funds and funds made available in the wake of federally declared disasters. Additionally, DMA 2000 effectively improves the disaster planning process by increasing hazard mitigation planning requirements for hazard events. DMA 2000 requires participating municipalities to (1) document their hazard mitigation planning process and (2) identify hazards; potential losses; and mitigation needs, goals, and strategies.

The Somerset County HMP represents the work of citizens, elected and appointed government officials, business leaders, and volunteer and nonprofit groups to protect community assets, preserve the economic viability of the community, and save lives. DMA 2000 regulations require formal updates and adoptions of local plans every 5 years, reassessing risks, and updating local strategies to manage and mitigate those risks. To comply, Somerset County and inclusive jurisdictions actively participated in updating the county HMP. Extensive outreach efforts by Somerset County's Department of Emergency Services resulted in participation by 33 of the county's 48 municipalities. Upon completion and approval of the HMP, participating jurisdictions will continue to address and implement the findings and recommendations of this plan update. This 2025 version is an update of the county HMP, with the previous HMP developed in 2020.

Table ES-1 identifies municipal governments that actively participated in the HMP update process.

Table ES-1. Participating Jurisdictions in the 2024 Somerset County HMP Update

Participating Jurisdictions				
• Addison (B)	• Addison (T)	• Allegheny (T)	• Berlin (B)	• Black (T)
• Boswell (B)	• Brothersvalley (T)	• Callimont (B)	• Conemaugh (T)	• Confluence (B)
• Elk Lick (T)	• Greenville (T)	• Jefferson (T)	• Jenner (T)	• Jennerstown (B)
• Lincoln (T)	• Lower Turkeyfoot (T)	• Middlecreek (T)	• Milford (T)	• New Baltimore (B)
• New Centerville (B)	• Northampton (T)	• Ogle (T)	• Paint (T)	• Quemahoning (T)
• Rockwood (B)	• Salisbury (B)	• Somerset (B)	• Somerset (T)	• Stoystown (B)
• Stonycreek (T)	• Summit (T)	• Ursina (B)	•	•
Non-Participating Jurisdictions				
• Benson (B)	• Casselman (B)	• Central City (B)	• Fairhope (T)	• Garrett (B)
• Hooversville (B)	• Indian Lake (B)	• Rockwood (B)	• Seven Springs (B)	• Shade (T)
• Shanksville (B)	• Southampton (B)	• Upper Turkeyfoot (T)	• Wellersburg (B)	• Winder (B)

During the plan update process, Somerset County and its participating municipalities engaged in the following planning process steps:

1. Identified and prioritized hazards that may affect the county and its municipalities.
2. Assessed the county's and each municipality's vulnerabilities to these hazards.
3. Identified mitigation actions that can reduce those vulnerabilities.

4. Developed a strategy for implementing those actions, including identifying the agency (or agencies) responsible for each implementation.

Throughout the planning process, the public was offered an opportunity to comment on the existing HMP and provide suggestions for the updated version. The County hosted a Planning Team meeting that was open to the public, during which residents could provide input on the HMP. The County also hosted a public review meeting after the draft 2025 HMP and invited the public to attend to provide input into the draft document.

The following hazards were identified by the Planning Team as presenting the highest risk to the county and its municipalities:

- Opioid Addiction Response
- Flood, Flash Flood, Ice Jam
- Invasive Species
- Tornadoes and Windstorms
- Environmental Hazards (Hazmat Release)
- Dam Failure
- Levee Failure
- Utility Interruption
- Environmental Hazards (Oil and Natural Gas Pipelines)
- Pandemic and Infectious Disease
- Winter Storm
- Drought
- Transportation Accidents
- Wildfire

This HMP also includes hazard profiles for the following hazards (listed in order of risk factor analysis ranking):

- Environmental Hazard (Coal Mining
- Subsidence and Sinkholes
- Hailstorm
- Terrorism
- Landslide
- Earthquake

To mitigate the effects of those hazards, the Planning Team identified the following goals for hazard mitigation over the next 5 years:

- **Goal 1:** Protect life, property, the environment, and critical infrastructure from hazard impacts.
- **Goal 2:** Promote disaster-resistant future development.
- **Goal 3:** Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.
- **Goal 4:** Improve response and recovery capabilities.
- **Goal 5:** Protect critical infrastructure in hazard areas.
- **Goal 6:** Reduce the risk of natural hazards for socially vulnerable populations and underserved communities.
- **Goal 7:** Address long-term vulnerabilities from high-hazard dams.

Objectives and actions to be implemented are discussed in the Mitigation Action Plan in Section 6.2 of this HMP.

Additionally, Planning Team members will meet annually to evaluate the status of plan implementation and prepare a summary report of HMP status and any needed updates. The mitigation evaluation will address changes as new hazard events occur, as the area develops, and as more information becomes available pertaining to hazards and their impacts. The evaluation will include an assessment of whether the planning process and actions have been effective, whether development or other issues warrant changes to the HMP or its priorities, whether progress toward the communities' goals is satisfactory, and whether changes are warranted. The public is encouraged to give feedback (1) by directly contacting the County Hazard Mitigation Plan Coordinator, (2) during recurring review meetings, and (3) during the 5-year revision process.

To request information or provide comments regarding this plan, please contact the Somerset County Department of Emergency Services, Emergency Management. Contact information is provided below.

Mailing Address:	100 East Union Street, Somerset, PA 16601
Contact Name:	Joel D. Landis, County Emergency Management Agency Director
E-mail Address:	landisj@co.somerset.pa.us
Telephone:	(814) 445-1515, ext. 4

SECTION 1 INTRODUCTION

This section presents background information, describes the purpose, and defines the scope of the 2025 update of the Somerset County Hazard Mitigation Plan (HMP).

1.1 BACKGROUND

Across the United States, natural and human-caused disasters have led to increasing levels of deaths, injuries, property damage, and interruptions of business and government services. The time, money, and effort spent to recover from these disasters exhausts limited resources, diverting attention from important public programs and private efforts.

Somerset County, Pennsylvania, has experienced a significant number of statewide or county-specific federal disaster declarations since 1955 (FEMA 2020). Planners, citizens, elected officials, and other stakeholders in Somerset County recognize the impact of disasters on their community and have concluded that proactive efforts need to be taken to reduce the impact of natural and human-caused hazards. For that purpose, Somerset County is committed to updating, maintaining, and implementing the Somerset County Hazard Mitigation Plan (HMP).

"Hazard mitigation" refers to actions taken to prevent, reduce, or eliminate the long-term risks to life and property caused by a disaster (FEMA 2020). Pre-disaster mitigation actions, taken in advance of a hazard event, are critical to breaking the typical disaster cycle. If a community sustains damage from a hazard event and rebuilds the same way, it may experience damage again when another event occurs. Carefully selected mitigation actions are long-term, cost-effective ways to reduce the risk of future loss (PEMA 2018). "Hazard mitigation planning" is the process of identifying disaster risks and developing strategies to reduce or eliminate the loss of life and/or property damage associated with those risks.

This 2025 HMP update for Somerset County serves as a roadmap for the County to proactively reduce risk. It also fulfills federal requirements that HMPs be regularly updated to maintain eligibility for certain types of Federal Emergency Management Agency (FEMA) funding. The update was led by two advisory teams that provided guidance and steered the direction of the plan:

- The Somerset County Hazard Mitigation Core Planning Team was composed of officials from Somerset County, municipal representatives, stakeholder organizations, elected officials, and Commonwealth and federal agencies.
- The Planning Partners were additional Somerset County officials, municipal representatives, emergency first responders, and representatives from the private sector, such as utility companies.

Somerset County contracted Tetra Tech, Inc. to prepare the 2025 HMP update. The HMP update is the result of several months of collaboration between the County's citizens and officials and Tetra Tech's representatives to develop a pre-disaster, multi-hazard mitigation plan that will guide the County toward greater disaster resistance while respecting the character and needs of the community. The planning process focused on increasing opportunities for engagement; gaining meaningful input from municipalities, special districts (municipal utility authorities, school districts, etc.), and stakeholders; and developing an implementable mitigation strategy that could be achieved based on the County's current capabilities.

1.2 PURPOSE

The purpose of this HMP is to minimize the effects that natural and human-caused hazards have on the people, property, environment, and business operations of Somerset County. This document provides the background information and rationale for mitigation actions that the Core Planning Team, Planning Partners, and municipal representatives have chosen to implement across the County.

The document is governed by the Disaster Mitigation Act of 2000 and its implementing regulations (Title 44 Code of Federal Regulations [CFR] Section 201.6, published February 26, 2002). Local jurisdictions must comply with 44 CFR to remain eligible for funding and technical assistance from state and federal hazard mitigation programs, such as those listed in Table 1.2-1.

Table 4.2.1-1 Non-Emergency Federal Disaster Assistance Programs

Program	Description
Building Resilient Infrastructure and Communities (BRIC)	Pre-disaster funding for proactive mitigation and community resilience projects and plans
Hazard Mitigation Grant Program (HMGP)	Post-disaster funding for mitigation and community resilience projects and plans
HMGP Post-Fire	Assistance to help communities implement hazard mitigation measures after wildfire disasters
Flood Mitigation Assistance (FMA)	Pre-disaster funding for flood hazard mitigation and community resilience activities that benefit properties insured under the National Flood Insurance Program (NFIP)
Rehabilitation of High Hazard Potential Dams	Technical, planning, design, and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams
Safeguarding Tomorrow Revolving Loan Fund Program	Capitalization grants passed through to states for states to establish revolving loan funds that provide hazard mitigation assistance for local governments to reduce risk from natural hazards and disasters

1.3 SCOPE

The 2025 HMP update aims to advance previous and ongoing mitigation efforts proposed in the 2020 Somerset County HMP by calculating changes in risk and reassessing mitigation strategies and priorities (44 CFR Section 201.6(d)(3)). The 2025 HMP update will be integrated into other community planning initiatives to promote cohesive planning practices recommended by FEMA. FEMA requires local mitigation plans to document the following elements (FEMA 2023c):

- Planning Process—Describes how the plan was developed, who was involved, and what data was used.
- Hazard Identification/Risk Assessment—Identifies the hazards that can affect jurisdictions participating in the mitigation plan, including high hazard potential dams.
- Mitigation Strategy—Serves as the long-term blueprint for reducing risks from natural and human-caused hazards identified in the risk assessment.
- Plan Maintenance—Documents a process for evaluating implementation of the plan, which allows for efficiency for future updates to the plan.
- Plan Update—Reflects how current conditions have changed since the last plan.
- Plan Adoption—Legitimizes the plan and authorizes responsible agencies to perform their responsibilities.

In addition to the above elements, FEMA's April 2023 *Local Planning Policy Guide* emphasizes the importance of incorporating climate change impacts and equity considerations into hazard mitigation planning.

1.4 AUTHORITY AND REFERENCE

This HMP was prepared in accordance with the following regulations and guidance:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, as amended
- Title 44 CFR, Part 201, Mitigation Planning
- Disaster Mitigation Act of 2000, as amended
- FEMA Local Mitigation Planning Policy Guide, effective April 2023
- FEMA Local Mitigation Planning Handbook, May 2023
- Pennsylvania Emergency Management Services Code, Title 35, Pa C.S. Section 101
- Pennsylvania Municipalities Planning Code of 1968, Act 247 as reenacted and amended by Act 170 of 1988
- Pennsylvania Hazard Mitigation Planning Standard Operating Guide, 2020
- Commonwealth of Pennsylvania 2023 Hazard Mitigation Plan, approved August 28, 2023

A list of references used in updating this HMP is provided at the end of this volume.

1.5 COVERAGE

The mitigation actions outlined in this HMP apply to Somerset County and any municipalities within the County that adopt this plan. Only those municipalities that have participated in the plan update process may adopt this plan and will be eligible for associated state and federal hazard mitigation funding. For the purpose of this plan, municipal participation was defined as actively engaging in the planning process and providing meaningful feedback to inform the content of the plan. This included participating in meetings, completing and submitting surveys (e.g., Hazard Identification and Risk Evaluation Worksheet, Capability Assessment Survey), updating the status of the 2020 mitigation strategy, and contributing to the development of the 2025 mitigation strategy

SECTION 2 COMMUNITY PROFILE

Section 2 of the Somerset County Hazard Mitigation Plan (HMP) discusses the geography and environment, community facts, population and demographics, and land use and development in Somerset County.

2.1 GEOGRAPHY AND ENVIRONMENT

Somerset County covers approximately 1,074 square miles and is situated in the south-west portion of Pennsylvania, in a region known as the Laurel Highlands. The county is bordered by Westmoreland County to the northwest, Cambria County to the north, Bed-ford County to the east, Fayette County in the southwest, and the state of Maryland to the south. Somerset County is in the Allegheny Mountain section of the Appalachian Plateaus Physiographic Province.

2.1.1 Topography and Geology

Somerset County has several unique topographic features. The area predominantly consists of mountain ridges with rolling hills and broad valleys characterized with deep stream cut throughs. Somerset County's physiographic province is the Appalachian Plateaus and is situated within the Allegheny Mountains. Due to its unique physiography, the southern portion of the county is more mountainous. This is where Mount Davis is located which is the highest point in the state of Pennsylvania. Elevations for the county range from 1,040 ft (Southampton Township) to up to 3,213 ft (Mount Davis).

2.1.2 Hydrography and Hydrology

Somerset County has numerous streams and creeks constituting 5 major watersheds which drain to the Mississippi River Watershed. Figure 2.1.3-2 displays the watersheds of Somerset County.

The water west of the Appalachian divide within the county flow towards the Ohio River and drain into the Mississippi River. The water east of the Appalachian divide flow towards the Potomac River and drain into the Chesapeake Bay. There is a total of 2,340 miles of streams which are located within the county.

2.1.2.1 Drainage Basins and Watersheds

A watershed is the area of land that drains into a body of water, such as a river, lake, stream, or bay. It is separated from other systems by high points in the area, such as hills or slopes. It includes not only the waterway itself but also the entire land area that drains to it. For example, the watershed of a lake would include not only the streams entering the lake but also the land area that drains into those streams and eventually the lake. The county's watersheds include:

- Raystown
- Conemaugh
- North Branch of the Potomac
- Kiskiminetas
- Youghiogheny
- Beaverdam Creek
- Quemahoning Creek
- Blue Lick Creek
- Casselman River
- Brush Creek
- Buffalo Creek
- Casselman River
- Clear Shade Creek
- Dark Shade Creek

- Drake Run
- Elk lick Creek
- Fall Creek
- Laurel Hill Creek
- Flag Run
- Casselman River
- Gladdens Run
- Headwaters Raystown Branch Juniata River
- Headwaters Stonycreek River
- Indian Lake
- Lake Stonycreek
- Rhoads Creek
- Jennings Run
- Lake Somerset
- East Branch Coxes Creek
- Laurel Hill Creek
- Laurel Hill Lake Dam
- Laurel Run
- Little Piney Creek
- Piney Creek
- Middle Creek
- Middle Stonycreek River
- Mill Run
- North Branch Quemahoning Creek
- Paint Creek
- Red Run
- Roaring Run
- Shaffer Run
- Wills Creek
- Sandy Run
- Shade Creek
- South Fork Bens Creek
- Town Line Run
- Tub Mill Run
- Casselman River
- Upper Stonycreek River
- Wells Creek
- West Branch Coxes Creek
- Coxes Creek
- Whites Creek

Drainage basins generally refer to large watersheds that encompass the watersheds of many smaller rivers and streams. Drainage basins located within the county include:

- Casselman River,
- Laurel Hill Creek,
- Stoneycreek River,
- Shade Creek,
- And Quemahoning Creek.

These drainage basins listed above are a part of the larger Mississippi River Watershed system. Other drainage basins such as Wills Creek and Headwaters of Raystown Branch of the Junaita River are a part of the larger Chesapeake Bay Watershed system.

2.1.3 Climate

Somerset County has a humid continental climate. The average temperature is generally high 70’s during the warmer months and the lower 30’s in the colder months. The average precipitation is 45 inches a year for the entire county. Several unique snow events occur in the highest elevations of the county. Winter Nor’easters and lake effect upslope generally occur towards the end of October through the beginning of April. Average snow precipitation for some of the highest elevations within the county can exceed 150 inches each year. These unique snow events are caused in great part to the high elevations as well as close proximity to the Atlantic Ocean and the Great Lakes.

Figure 2.1.3-1. Base Map of Somerset County

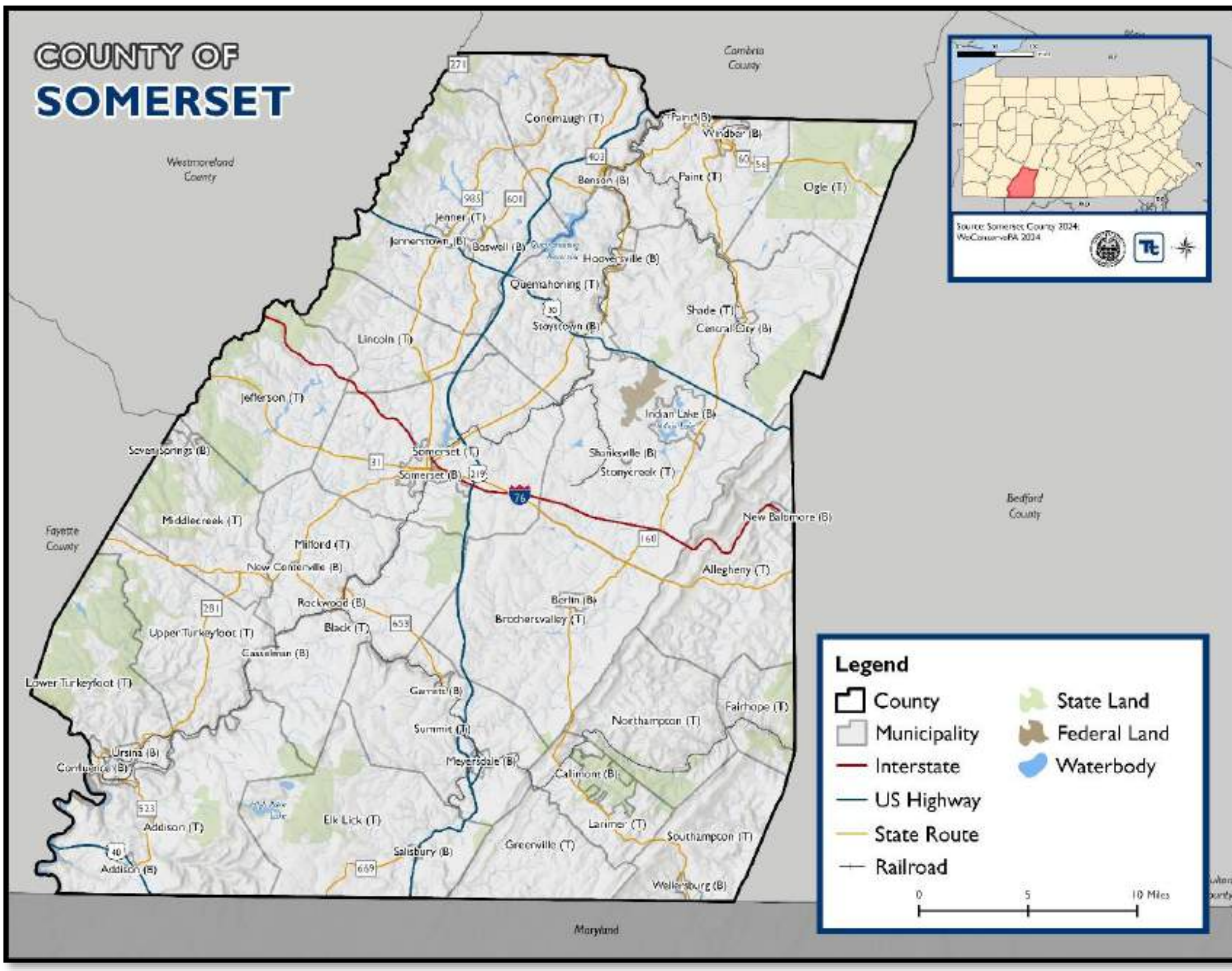
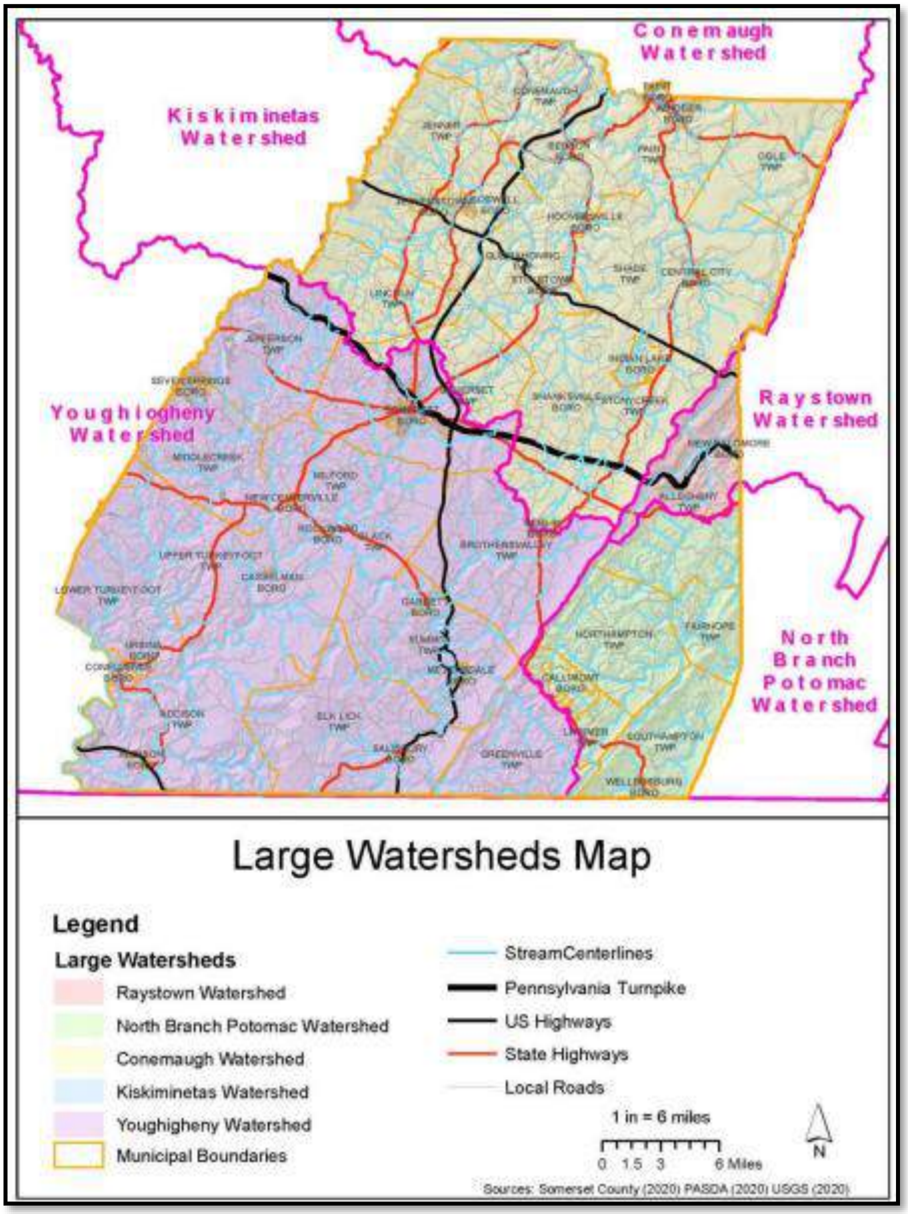


Figure 2.1.3-2. Watersheds Located Within Somerset County



Source: (Somerset County, 2020)

2.2 COMMUNITY FACTS

Somerset County was created in 1795 from Bedford County and was named after Somerset, England. The economic wealth of the county stemmed from a rich history of natural resources in the agriculture and mining industries. Due to the large number of river and stream systems within the county, transportation and trade of these resources and goods flourished. Somerset County consists of 50 municipalities composed of the following: 25 Boroughs (B) and 25 Townships (T). These municipalities are listed below.

- Addison (B)
- Benson (B)
- Berlin (B)

- Boswell (B)
- Callimont (B)
- Casselman (B)
- Central City (B)
- Confluence (B)
- Garrett (B)
- Hooversville (B)
- Indian Lake (B)
- Jennerstown (B)
- Meyersdale (B)
- New Baltimore (B)
- New Centerville (B)
- Paint (B)
- Rockwood (B)
- Salisbury (B)
- Seven Springs (B)
- Shanksville (B)
- Somerset (B)
- Stoystown (B)
- Ursina (B)
- Wellersburg (B)
- Windber (B)
- Addison (T)
- Allegheny (T)
- Black (T)
- Brothersvalley (T)
- Conemaugh (T)
- Elk Lick (T)
- Fairhope (T)
- Greenville (T)
- Jefferson (T)
- Jenner (T)
- Larimer (T)
- Lincoln (T)
- Lower Turkeyfoot (T)
- Middlecreek (T)
- Milford (T)
- Northampton (T)
- Ogle (T)
- Paint (T)
- Quemahoning (T)
- Shade (T)
- Somerset (T)
- Southampton (T)
- Stonycreek (T)
- Summit (T)
- Upper Turkeyfoot (T)

Somerset County's seat is Somerset Borough, and the county is politically classed as a 6th class county.

The leading economic industries for the county are primarily healthcare, food services, retail trade, manufacturing, and education services. The leading employment providers within the county include, but are not limited to:

- State Government
- Seven Springs Mountain Resorts, Inc. (resort)
- UPMC Somerset Hospital (healthcare)
- Chan Soon-Shiong Medical Center (healthcare)
- Somerset County
- CVS PA Distribution, Inc. (healthcare)
- Somerset Trust Company (finance)
- DeVilbiss Healthcare LLC (healthcare)
- Wheeler Brothers, Inc. (manufacturing)
- Wal-Mart (retail)

Somerset County has three hospitals, twenty-seven volunteer fire departments with seven emergency medical services, and thirteen municipal police departments. Those municipalities without an established police department are served by the Pennsylvania State Police. Somerset County also contains four major highways, Interstate 76, U.S. Route 219, U.S. Route 30, and PA Route 31.

2.3 POPULATION AND DEMOGRAPHICS

Population and demographic data provide baseline information about residents. Changes in demographics or population may be used to identify higher-risk populations. Maintaining up-to-date data on demographics will allow the county to better assess magnitudes of hazards and develop more specific mitigation plans. According to the 2022 U.S. Census, Somerset County had a population of 72,710, which represents a -1.9 percent increase from the 2020 U.S. Census population of 74,710. Table 2-1 presents the population statistics for Somerset County based on the 2010, 2020, and 2022 U.S. Census. Table 2-2 provides details regarding the demographics for Somerset County.

Table 2.1.3-1. Somerset County Population Statistics

Municipality	2010 Census	2020 Census	2022 Census Estimated	Population Change 2020-2022	Population Change 2020-2022 (%)	Population Density Per Square Mile (2022)
Addison Borough	207	*166*	*272*	*-106*	*-38.97%*	*491*
Addison Township	974	*931*	*945*	*-14*	*-1.48%*	*9*
Allegheny Township	692	*613*	*669*	*-56*	*-8.37%*	*7*
Benson Borough	191	*187*	*139*	*48*	*34.53%*	*390*
Berlin Borough	2,104	*2003*	*2,297*	*-294*	*-12.80%*	*2508*
Black Township	926	*905*	*868*	*37*	*4.26%*	*9*
Boswell Borough	1,277	*1224*	*1,411*	*-187*	*-13.25%*	*1910*
Brothersvalley Township	2,398	*2379*	*2,002*	*377*	*18.83%*	*17*
Callimont Borough	41	*56*	*52*	*4*	*7.69%*	*12*
Casselman Borough	94	*104*	*64*	*40*	*62.50%*	*0*
Central City Borough	1,124	*998*	*1,045*	*-47*	*-4.50%*	*1967*
Conemaugh Township	7,279	*6760*	*6,759*	*1*	*0.01%*	*152*
Confluence Borough	780	*722*	*596*	*126*	*21.14%*	*354*
Elk Lick	2,241	*2263*	*2,423*	*-160*	*-6.60%*	*29*

Municipality	2010 Census	2020 Census	2022 Census Estimated	Population Change 2020-2022	Population Change 2020-2022 (%)	Population Density Per Square Mile (2022)
Fairhope Township	134	100	85	15	17.65%	0
Garrett Borough	456	415	409	6	1.47%	817
Greenville Township	668	752	865	-113	-13.06%	0
Hooversville Borough	645	628	722	-94	-13.02%	1160
Indian Lake Borough	394	390	314	76	24.20%	39
Jefferson Township	1,423	1426	1,313	113	8.61%	17
Jenner Township	4,122	3710	3,713	-3	-0.08%	50
Jennerstown Borough	695	678	1,182	-504	-42.64%	629
Larimer Township	595	544	536	8	1.49%	26
Lincoln Township	1,518	1457	1,305	152	11.65%	37
Lower Turkeyfoot Township	603	546	425	121	28.47%	3
Meyersdale Borough	2,184	2070	2,118	-48	-2.27%	2618
Middlecreek Township	875	832	644	188	29.19%	4
Milford Township	1,553	1490	1,428	62	4.34%	21
New Baltimore Borough	180	142	147	-5	-3.40%	424
New Centerville Borough	133	128	118	10	8.47%	830
Northampton Township	343	305	282	23	8.16%	0
Ogle Township	501	469	493	-24	-4.87%	11
Paint Borough	1,023	906	1,122	-216	-19.25%	3267
Paint Township	3,149	3041	3,038	3	0.10%	87
Quemahoning Township	2,025	1840	1,661	179	10.78%	41
Rockwood Borough	890	843	816	27	3.31%	2496
Salisbury Borough	727	706	619	87	14.05%	1748
Seven Springs Borough	11	14	7	7	100.00%	0
Shade Township	2,774	2455	2,342	113	4.82%	29
Shanksville Borough	237	199	166	33	19.88%	0
Somerset Borough	6,277	6048	6,030	18	0.30%	2185
Somerset Township	12,122	12083	11,775	308	0.0261571	165
Southampton Township	630	603	628	-25	-3.98%	7
Stonycreek Township	2,237	2087	2,271	-184	-8.10%	20
Stoystown Borough	355	300	410	-110	-26.83%	2126
Summit Township	2,271	2147	1,911	236	12.35%	24
Upper Turkeyfoot Township	1,119	1062	1,073	-11	-1.03%	18
Ursina Borough	225	247	214	33	15.42%	238
Wellersburg Borough	181	214	148	66	44.59%	183
Windber Borough	4,138	3941	3,930	11	0.28%	1987
Somerset County	**77,742**	**74,129**	**73,802**	**327**	**0.44%**	56

Sources: U.S. Census Bureau 2010, 2020, and 2022

As shown in the tables above, Somerset County's 2022 Census population was 72,710. Based on these data, the population density of Somerset County is 56 persons per square mile, which is considerably lower than the Pennsylvania statewide average of 291 persons per square mile. Higher concentrations of people and structures can increase vulnerability to natural hazards. The potential for damage and injury in these urban areas is higher because of the greater concentration of people and property.

High-density areas pose a greater risk because a larger number of people and structures are concentrated in one area. There is the possibility for diseases to spread quicker in these areas and structural damage is expected during certain hazard events because of the proximity of buildings. It is likely that the magnitude of an emergency or disaster will increase in more populous areas. However, having a higher concentration of people in the same area will provide an opportunity to quickly disseminate information. Additional focus should be provided for evacuating and sheltering larger populations during emergencies and disasters.

Table 2.1.3-2. Demographics for Somerset County

Demographics	2020	2022
Total population	73,844	73,802
Male	38,545	38,686
Female	35,299	35,116
Median age (years)	46.2	46.7
Under 5 years	3,540	3,406
18 years and under	13,377	13,378
65 years and over	16,425	17,034
Total housing units	38,523	37,796

Source: 2022 American Community Survey 5-Year Estimates, and 2020 American Community Survey 5-Year Estimates

2.3.1 Vulnerable Populations

Federal guidance requires that HMPs consider socially vulnerable populations. These populations are groups who are especially at risk during public health emergencies because of factors like socioeconomic status, household characteristics, racial and ethnic minority status, or housing type and transportation. (CDC 2022c). Socially vulnerable populations can be more susceptible to hazard events based on a number of factors, including their physical and financial ability to react or respond to a hazard and the location and construction quality of their housing. Factors such as age, income, disabilities, and English proficiency affect people's ability to cope with the effects of disasters. Individuals may face compounding barriers if they fall within multiple categories of vulnerability.

Identifying concentrations of vulnerable populations can assist communities in targeting preparedness, response, and mitigation actions. There are multiple resources available to assess social vulnerability and specific barriers associated with it. This plan characterizes socially vulnerable populations and barriers based on two resources, as appropriate for each hazard:

- U.S. Census Bureau Decennial Census and 5-year ACS estimates
- Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI).

2.3.1.1 Social Vulnerability Index

The CDC/ATSDR SVI is a combination of 16 social factors that contribute to social vulnerability as shown in Figure 2-5. These social factors are grouped under four themes to provide an indication of social vulnerability: socioeconomic status; household characteristics; racial and ethnic minority status; and housing type and transportation. The vulnerability index is established by combining all the factors. The SVI data provides a visualization of geographic areas with higher social vulnerability.

The SVI is used in FEMA's National Risk Index (NRI), an online tool that maps hazard risk across the country. The NRI bases its risk scores in part on the local community's social vulnerability, as measured by the SVI.

Within the tool, a social vulnerability score and rating represent the relative level of a community's SVI compared to all other communities in the country at the same level. The NRI score is measured on a national percentile from zero to 100, with 100 indicating the highest level of social vulnerability (FEMA 2021c). Somerset County's overall NRI social vulnerability is 33.8, meaning that the County's SVI is greater than 33.8 percent of all U.S. counties.

Figure 2.3.1-1 Population per Square Mile

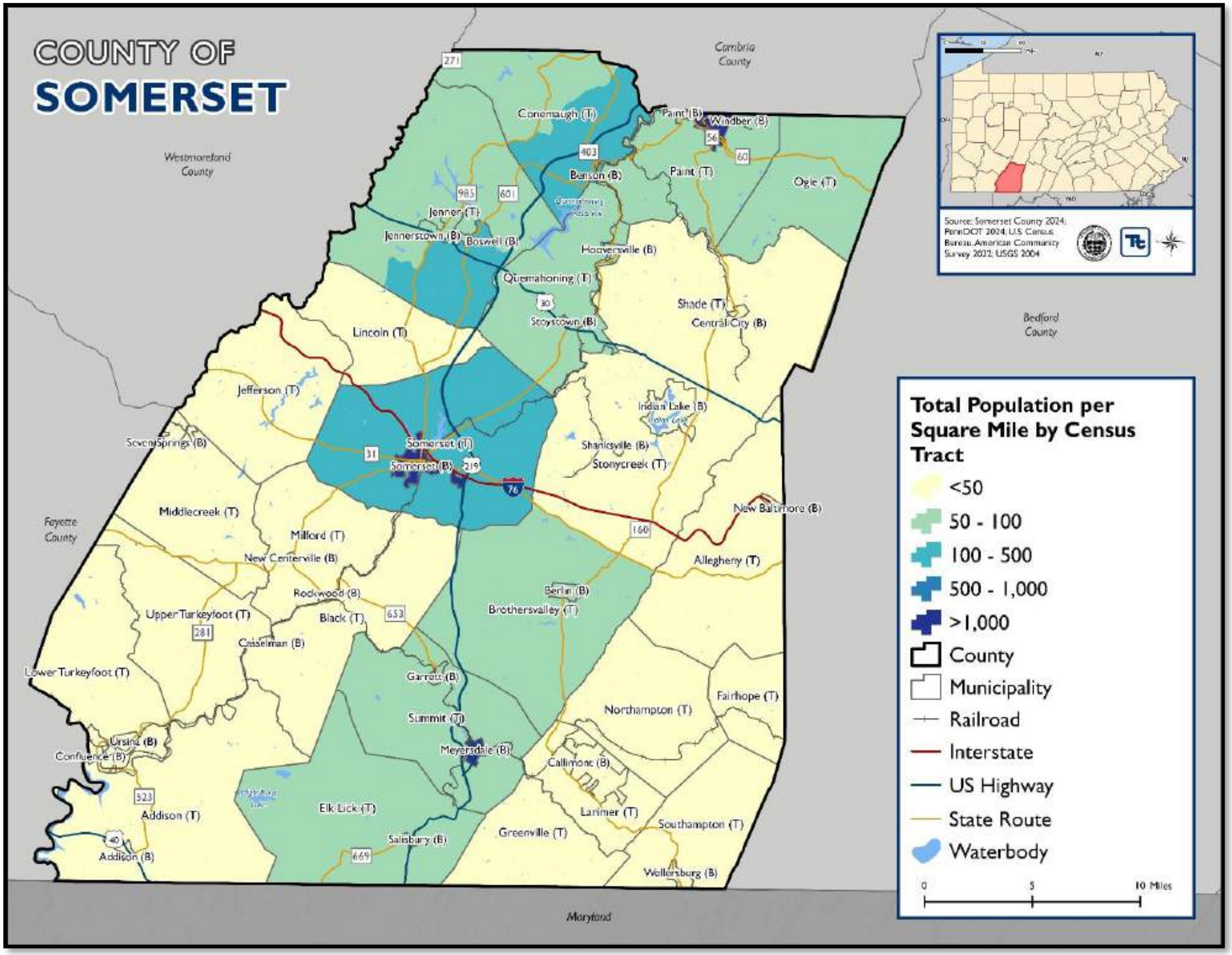
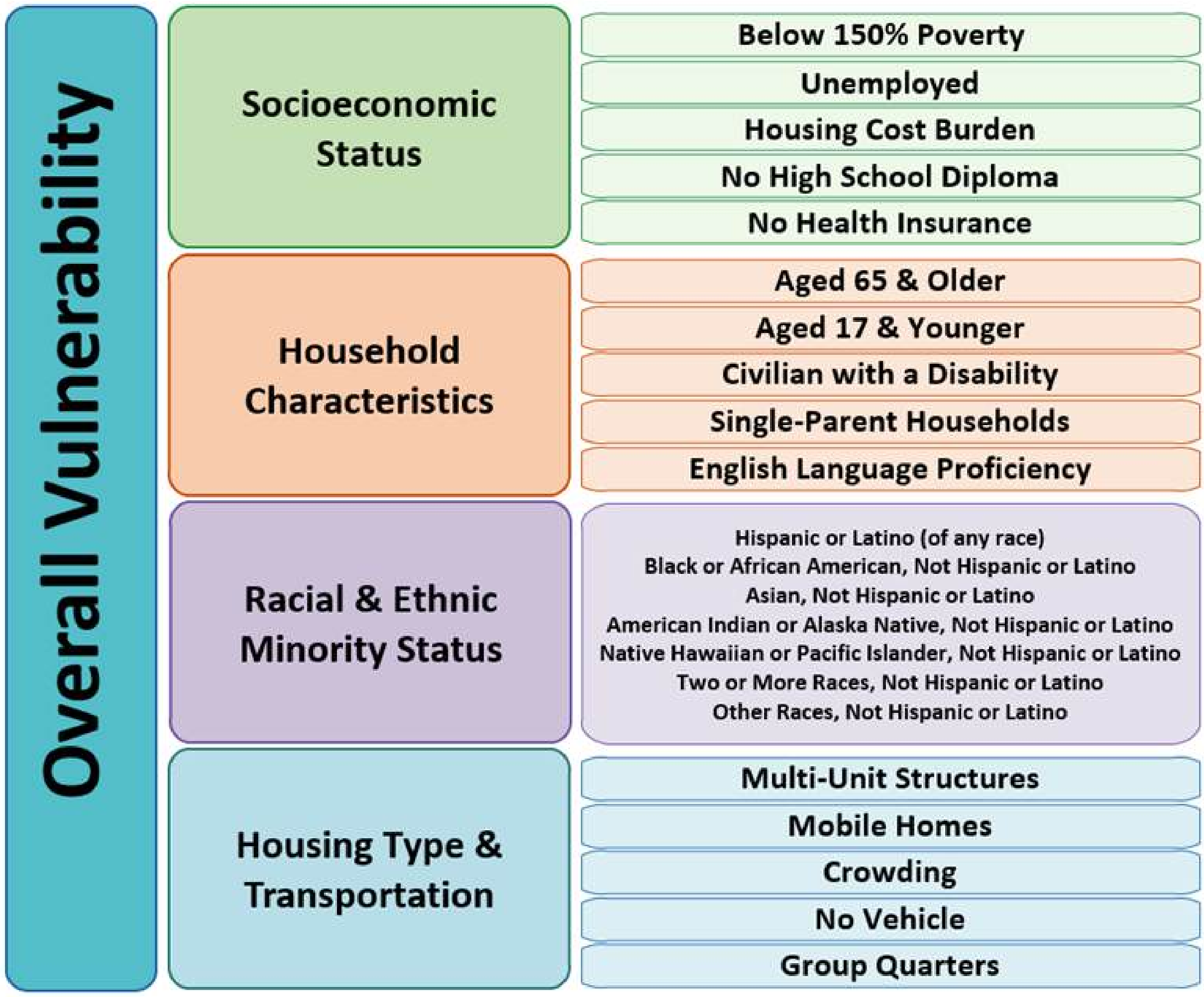


Figure 2.3.1-2 CDC/ATSDR SVI Social Factors



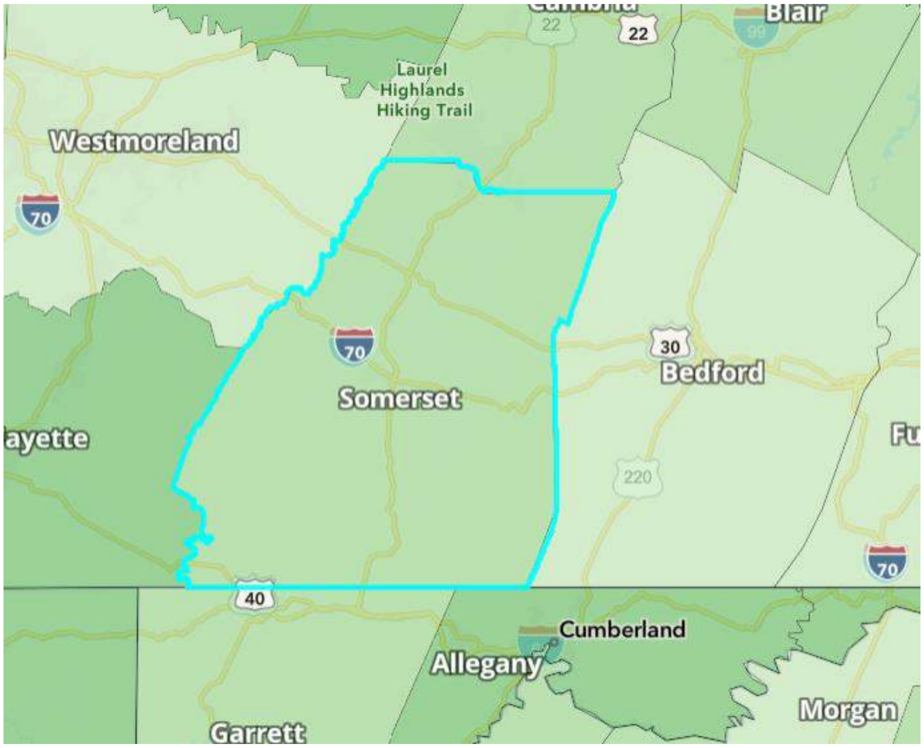
Source: CDC/ATSDR 2020

The NRI also presents social vulnerability scores for each census tract. Figure 2.3.1-3 depicts the NRI's social vulnerability score in Somerset County. A majority of the County is within the relatively low to moderate vulnerability categories.

2.3.1.2 U.S. Decennial Census and American Community Survey

When assessing social vulnerability, an individual may be categorized into one or more populations that experience a disproportionately higher vulnerability to emergencies and disasters. Quantitative data available from the U.S. Census tells what proportion of the community such individuals represent, but applying a qualitative lens of intersectionality illuminates how these individuals may be impacted disproportionately by disasters.

Figure 2.3.1-3 NRI Social Vulnerability Score for Somerset County



Within Somerset County, there are a number of individuals and groups who may experience one or more factors that contribute to heightened vulnerability. Table 2.3.1-1 provides a breakdown of vulnerable populations in Somerset County, as identified in the U.S. Census. The largest of these populations, at 23.1 percent of the County's total population, is the population older than 65. The second largest is the population of individuals with a disability, representing 15.9 percent of the County's total population. It is important to recognize that this data only accounts for those individuals whose households participated in the 2020 U.S. Decennial Census or the 2017-2022 ACS. Census data may be incomplete and not provide a full depiction of the County's population due to multiple factors, including distrust of government official or programs, immigration status, or other factors.

Figure 2.3.1-4 depicts the distribution across the County of populations that are socially vulnerable based on the ACS data. In general, most areas within Somerset County have low social vulnerability related to low income, individuals under 5 years of age, and English proficiency. The following sections provide a brief overview of how different factors of social vulnerability contribute to heightened risk to hazards.

Table 2.3.1-1 Vulnerable Population Statistics

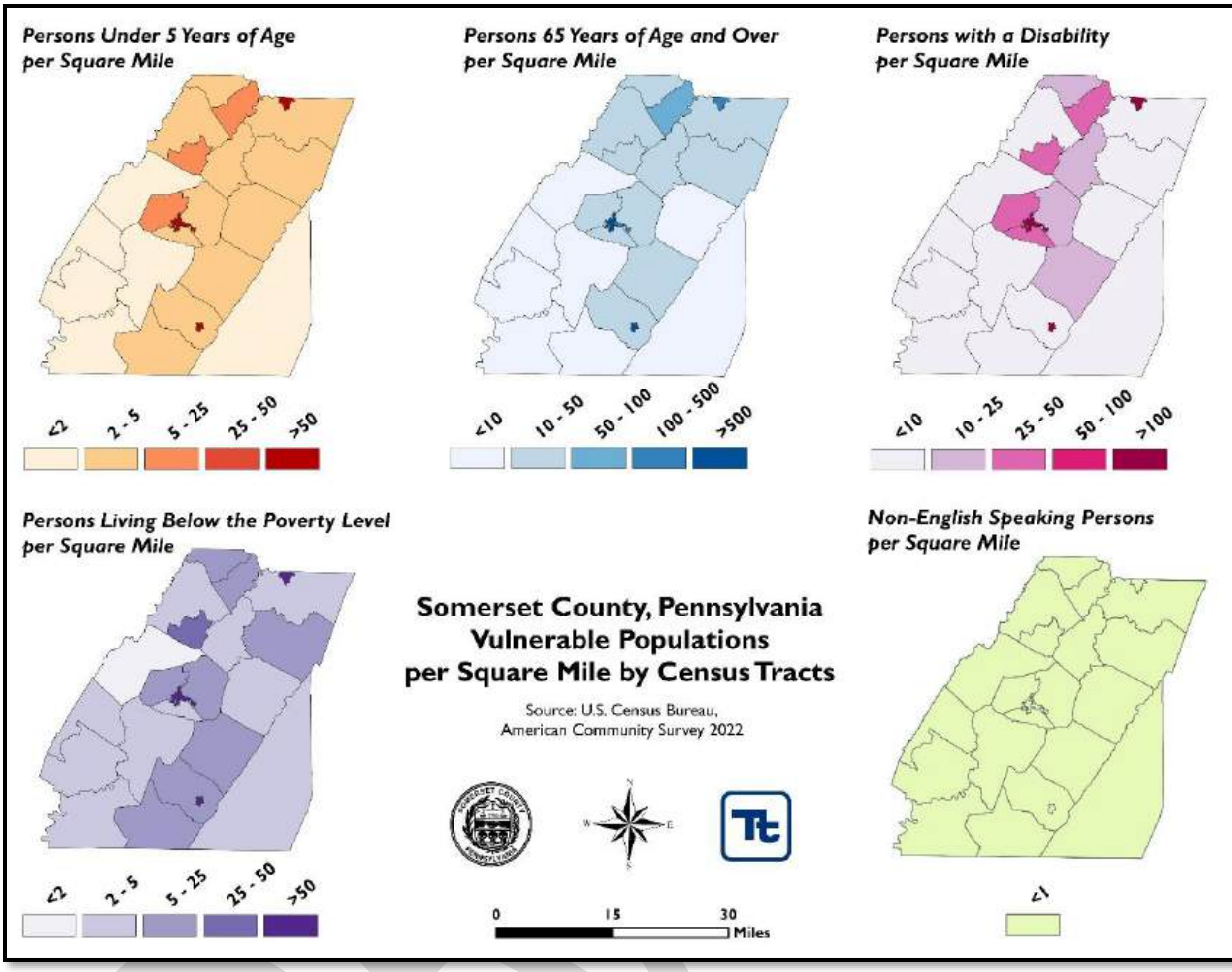
Jurisdiction	American Community Survey 5-Year Population Estimates (2022)									
	Population Over 65		Population Under 5		Non-English Speaking Population		Population with Disability		Population Below Poverty Level	
	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total
Addison (B)	82	30.1%	3	1.1%	0	0.0%	52	19.1%	20	7.4%
Addison (T)	248	26.2%	23	2.4%	0	0.0%	95	10.1%	169	17.9%
Allegheny (T)	172	25.7%	32	4.8%	5	0.7%	98	14.6%	48	7.2%
Benson (B)	24	17.3%	2	1.4%	0	0.0%	31	22.3%	7	5.0%
Berlin (B)	822	35.8%	156	6.8%	0	0.0%	447	19.5%	270	11.8%
Black (T)	171	19.7%	28	3.2%	0	0.0%	96	11.1%	74	8.5%
Boswell (B)	357	25.3%	94	6.7%	0	0.0%	286	20.3%	320	22.7%
Brothersvalley (T)	444	22.2%	82	4.1%	46	2.3%	322	16.1%	174	8.7%
Callimont (B)	16	30.8%	10	19.2%	0	0.0%	8	15.4%	2	3.8%
Casselman (B)	12	18.8%	2	3.1%	0	0.0%	12	18.8%	4	6.3%
Central City (B)	261	25.0%	61	5.8%	0	0.0%	175	16.7%	182	17.4%
Conemaugh (T)	2,046	30.3%	402	5.9%	0	0.0%	1,118	16.5%	475	7.0%
Confluence (B)	164	27.5%	12	2.0%	0	0.0%	152	25.5%	81	13.6%
Elk Lick (T)	408	16.8%	123	5.1%	84	3.5%	226	9.3%	454	18.7%
Fairhope (T)	51	60.0%	0	0.0%	0	0.0%	15	17.6%	18	21.2%
Garrett (B)	79	19.3%	8	2.0%	14	3.5%	59	14.4%	67	16.4%
Greenville (T)	122	14.1%	79	9.1%	14	1.7%	116	13.4%	151	17.5%
Hooversville (B)	181	25.1%	28	3.9%	0	0.0%	130	18.0%	61	8.4%
Indian Lake (B)	114	36.3%	10	3.2%	0	0.0%	32	10.2%	9	2.9%
Jefferson (T)	321	24.4%	53	4.0%	0	0.0%	203	15.5%	97	7.4%
Jenner (T)	703	18.9%	151	4.1%	0	0.0%	637	17.2%	334	9.0%
Jennerstown (B)	279	23.6%	35	3.0%	0	0.0%	188	15.9%	107	9.1%
Larimer (T)	105	19.6%	14	2.6%	0	0.0%	85	15.9%	47	8.8%
Lincoln (T)	306	23.4%	62	4.8%	0	0.0%	189	14.5%	29	2.2%

Jurisdiction	American Community Survey 5-Year Population Estimates (2022)									
	Population Over 65		Population Under 5		Non-English Speaking Population		Population with Disability		Population Below Poverty Level	
	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total
Lower Turkeyfoot (T)	154	36.2%	2	0.5%	5	1.1%	85	20.0%	54	12.7%
Meyersdale (B)	577	27.2%	81	3.8%	0	0.0%	465	22.0%	344	16.2%
Middlecreek (T)	197	30.6%	12	1.9%	10	1.5%	82	12.7%	80	12.4%
Milford (T)	298	20.9%	27	1.9%	0	0.0%	178	12.5%	122	8.5%
New Baltimore (B)	21	14.3%	9	6.1%	0	0.0%	21	14.3%	6	4.1%
New Centerville (B)	34	28.8%	2	1.7%	0	0.0%	13	11.0%	14	11.9%
Northampton (T)	73	25.9%	2	0.7%	0	0.0%	41	14.5%	15	5.3%
Ogle (T)	111	22.5%	30	6.1%	0	0.0%	50	10.1%	19	3.9%
Paint (B)	365	32.5%	49	4.4%	0	0.0%	160	14.3%	199	17.7%
Paint (T)	841	27.7%	86	2.8%	0	0.0%	400	13.2%	118	3.9%
Quemahoning (T)	287	17.3%	76	4.6%	5	0.3%	328	19.7%	87	5.2%
Rockwood (B)	181	22.2%	32	3.9%	0	0.0%	166	20.3%	133	16.3%
Salisbury (B)	109	17.6%	52	8.4%	0	0.0%	93	15.0%	57	9.2%
Seven Springs (B)	2	28.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shade (T)	531	22.7%	80	3.4%	0	0.0%	493	21.1%	177	7.6%
Shanksville (B)	39	23.5%	3	1.8%	0	0.0%	33	19.9%	22	13.3%
Somerset (B)	1,421	23.6%	384	6.4%	0	0.0%	1,213	20.1%	951	15.8%
Somerset (T)	2,089	17.7%	345	2.9%	24	0.2%	1,680	14.3%	758	6.4%
Southampton (T)	147	23.4%	18	2.9%	0	0.0%	107	17.0%	83	13.2%
Stonycreek (T)	470	20.7%	121	5.3%	0	0.0%	391	17.2%	152	6.7%
Stoystown (B)	127	31.0%	17	4.1%	0	0.0%	57	13.9%	35	8.5%
Summit (T)	402	21.0%	185	9.7%	17	0.9%	273	14.3%	272	14.2%
Upper Turkeyfoot (T)	269	25.1%	32	3.0%	0	0.0%	131	12.2%	92	8.6%
Ursina (B)	46	21.5%	5	2.3%	0	0.0%	44	20.6%	43	20.1%
Wellersburg (B)	41	27.7%	5	3.4%	0	0.0%	33	22.3%	14	9.5%

Jurisdiction	American Community Survey 5-Year Population Estimates (2022)									
	Population Over 65		Population Under 5		Non-English Speaking Population		Population with Disability		Population Below Poverty Level	
	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total	Number	% of Jurisdiction Total
Windber (B)	714	18.2%	281	7.2%	0	0.0%	439	11.2%	466	11.9%
Somerset County (Total)	**17,034**	**23.1%**	**3,406**	**4.6%**	**223**	**0.3%**	**11,748**	**15.9%**	**7,513**	**10.2%**

Source: 2022 American Community Survey 2017-2021 5-Year Estimates
Note: *Persons per household = 2.40. Number used to calculate Non-English Speaking population.*
Note: *% = Percent*
Note: *(B) - Borough; (T): Township*

Figure 2.3.1-4 ACS Data Related to Social Vulnerability for Somerset County



Age

Children are considered vulnerable to hazard events because they are dependent on others to safely access resources during emergencies and may experience increased health risks from hazard exposure. The elderly are more apt to lack the physical and economic resources necessary to respond to hazard events and are more likely to suffer health-related consequences. Those living on their own may have more difficulty evacuating their homes. The elderly are also more likely to live in senior care and living facilities where emergency preparedness occurs at the discretion of facility operators.

According to the 2017-2022 American Community Survey 5-Year Estimates, the median age in Somerset County was 46.7 years. Approximately 24 percent of the county's total population is aged 65 and older (U.S. Census Bureau, 2022). Older residents may have access and functional needs. For example, many may be unable to drive; therefore, special evacuation plans may be necessary. They may also have hearing or vision impairments that could make receiving emergency instructions difficult. Additionally, 4.7 percent of the county's total population is under the age of 5 (U.S. Census Bureau, 2022). Both older and younger populations have higher risks for contracting certain diseases. The county's combined population under 5 years of age and over 65 years of age represents approximately 28.7 percent of its total population (U.S. Census Bureau, 2022).

Limited English Proficiency

Individuals who are not fluent or do not possess a working proficiency in English are vulnerable because they may have difficulty understanding information being conveyed to them. Cultural differences can also add complexity to how information is being conveyed to populations with limited proficiency of English (Centers for Disease Control and Prevention , 2021). According to the 2017-2022 American Community Survey 5-Year Estimates, 3.8 percent of residents over the age of 5 primarily speak a language other than English at home. Of the 1,113 individuals who reported to speak English less than "very well", 23.6 percent speak Spanish, 46.7 percent speak other Indo-European languages, 51.8 percent speak Asian and Pacific Island Languages, and 44.7 percent speak other languages. Future hazard mitigation strategies should consider addressing language barriers to ensure that all residents can receive emergency instructions.

Physically or Mentally Disabled

Physically or mentally disabled individuals are defined as "Persons with a disability include those who have physical, sensory, or cognitive impairment that might limit a major life activity" (Centers for Disease Control and Prevention, 2020). These impairments may increase the level of difficulty that individuals may face during an emergency. Cognitive impairments may reduce an individual's capacity to receive, process, and respond to emergency information or warnings. Individuals with a physical or sensory disability may face issues of mobility, sight, hearing, or reliance on specialized medical equipment. According to the 2017-2021 data from the U.S. Census Bureau, 11 percent of the residents of Somerset County are living with a disability (U.S. Census Bureau, 2022).

2.3.1.3 Income

Household income has many implications for disaster preparedness and post-disaster recovery. Households and individuals that are low-income may struggle to afford disaster preparedness measures, such as purchasing flood insurance for their homes (SAMHSA, 2017). Low-income households may have a more difficult time evacuating during hazard events due to financial and employment barriers. Additionally, low-income and impoverished individuals and households often live in lower quality structures and in more hazard-prone areas than their higher-income peers (SAMHSA, 2017). Emergency responders may have difficulty connecting with individuals within this economic bracket for several reasons, including limited internet access within these communities. Additionally, some low-income families and individuals may not own vehicles and therefore could be more vulnerable during an evacuation.

The U.S. Census Bureau identifies households with two adults and two children with an annual household income below $27,479 per year as living in poverty (U.S. Census Bureau 2021b). The 2017-2022 ACS 5-Year Estimates indicate that median household income in Somerset County was $57,357, about $10,000 less than the statewide median for Pennsylvania ($67,587). The poverty rate for individuals was 10.8 percent. Table 2.3.1-2 summarizes economic characteristics of Somerset County's population and population distribution of residents with incomes below the poverty level.

Table 2.3.1-2 Economic Characteristics in Somerset County

Economic Characteristics	2010	2022
Median household income	$39,194	$57,257
Median family income	$ 48,994	$ 73,803
Per capita income	$ 19,903	$ 19,326
Families with income below the poverty level	9.1%	8.4%
Individuals with income below the poverty level	14.4 %	10.8%

Source: U.S. Census Bureau 2010 and 2022 American Community Survey 5-Year Estimates

Race and Ethnicity

Members of the BIPOC (Black, Indigenous, and People of Color) population often experience more profound short- and long-term impacts from disasters than their white peers. One recent study reported the following (Berberian, Gonzalez and Cushing 2022):

> Multiple studies of heat, extreme cold, hurricanes, flooding, and wildfires find evidence that people of color, including Black, Latinx, Native American, Pacific Islander, and Asian communities are at higher risk of climate-related health impacts than Whites… [S]tudies of adults have found evidence of racial disparities related to climatic changes with respect to mortality, respiratory and cardiovascular disease, mental health, and heat-related illness… and infants and children of color have experienced adverse perinatal outcomes, occupational heat stress, and increases in emergency department visits associated with extreme weather.

Somerset County has a growing population of BIPOC residents, increasing from 3.2 percent of the total population in 2010 to 6.7 percent of the population in 2021. Table 2.3.1-3 summarizes race and ethnicity population information for Somerset County. Although the BIPOC population is not included in the risk assessment for hazards in this report, the trend of a growing BIPOC community is recognized as an important consideration for ongoing hazard mitigation in the County. As the County's demographics continue to shift, future mitigation actions should account for the particular needs of communities of color.

Table 2.3.1-3. Race and Ethnicity in Somerset County

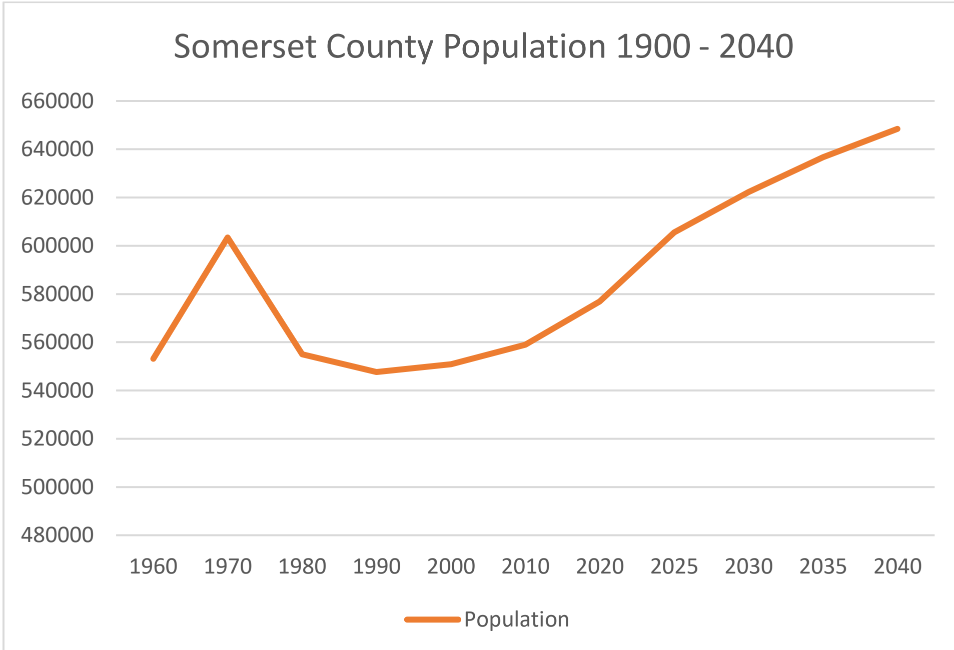
Race and Ethnicity	2010	% of Population	2022	% of Population
White	75,666	96.7.3%	71,513	96.9%
Black or African American	1,698	2.2 %	1,771	2.4%
American Indian and Alaska Native	60	0.1 %	827	1.1%
Asian	173	0.2 %	484	0.7%
Native Hawaiian and Other Pacific Islander	0	0.0 %	105	0.1%
Two or more races	559	0.7%	1,741	2.4%
Foreign born	590	0.8%	769	1.1%
Speak a language other than English	2,682	3.6%	2,640	3.8%
Hispanic or Latino	782	1.0%	1,140	1.5%

Source: U.S. Census Bureau 2010 and 2022 American Community Survey 5-Year Estimates

2.3.2 Population and Demographic Trends

This section discusses population trends to use as a basis for estimating future changes that could result from the seasonal character of the population and significantly change the character of the area. Population trends can provide a basis for making decisions on the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can also be used to support planning decisions regarding future development in vulnerable areas. Various Census Bureau products were used as sources for the population trends section. The Decennial Census is the official population count taken every 10 years. In addition to the U.S. Census historic counts, the population projections from the Pennsylvania State Data Center for Rural Pennsylvania and the Pennsylvania Department of Environmental Protection were utilized to provide insight into future population trends. Figure 2-3 depicts the county's population from 1900 – 2040. The county's population peaked in 1970 with a record high of 603,456. The Center for Rural Pennsylvania projects that the population will rapidly increase from 2020 to 2040 with an estimated 12.4 increase over three decades. The Department for Environmental Protection's population projections are more conservative, estimating less than a 1 percent increase between 2020 and 2040 accounting for a 2040 population of 571,458.

Figure 2.3.1-1 Somerset County Population Change and Projection, 1900 - 2040



Source: U.S. Census Bureau, Pennsylvania State Data Center for Rural Pennsylvania 2013, and PA DEP 2013

Population changes at the municipal level are also important to capture to better understand changing populations within the county and where the concentration of population resides.

Table 2.3.1-4 provides population estimates and projections for each municipality in Somerset County and for the county as a whole. The Department of Environmental Protection estimates the population of the entire county to be 76,493 by the year 2040, which represents a net population increase of 2 percent in a 15-year period. It should be noted that changes in population or demographics may be used to identify higher-risk populations. Maintaining up-to-date data on demographics will allow Somerset County to better assess magnitudes of hazards and develop more specific mitigation plans and strategies.

Table 2.3.2-1. Somerset County Population Projections by Municipality

Municipality	2000 Census	2010 Census	2020 Census	2030 Projection	2040 Projection	Population Change Estimate 2000 - 2040	Projected Population Change 2020- 2040 (%)
Addison Borough	214	207	205	200	197	-8%	4%
Addison Township	1,019	974	996	980	986	-3%	1%
Allegheny Township	654	692	685	704	707	8%	-3%
Benson Borough	194	191	174	165	151	-22%	15%
Berlin Borough	2,192	2,104	2,139	2,104	2,110	-4%	1%
Black Township	980	926	925	893	879	-10%	5%
Boswell Borough	1,364	1,277	1,162	1,057	947	-31%	23%
Brothersvalley Township	2,415	2,398	2,402	2,394	2,393	-1%	0%
Callimont Borough	51	41	37	34	30	-41%	23%
Casselman Borough	99	94	98	96	98	-1%	0%

Municipality	2000 Census	2010 Census	2020 Census	2030 Projection	2040 Projection	Population Change Estimate 2000 - 2040	Projected Population Change 2020- 2040 (%)
Central City Borough	1,258	1,124	1,073	977	907	-28%	18%
Conemaugh Township	7,452	7,279	7,042	6,842	6,620	-11%	6%
Confluence Borough	834	780	735	684	637	-24%	15%
Elk Lick	2,293	2,241	2,207	2,163	2,125	-7%	4%
Fairhope Township	137	134	133	130	129	-6%	3%
Garrett Borough	449	456	418	406	380	-15%	10%
Greenville Township	718	668	677	653	648	-10%	4%
Hooversville Borough	779	645	615	560	519	-33%	18%
Indian Lake Borough	450	394	405	378	373	-17%	9%
Jefferson Township	1,375	1,423	1,394	1,409	1,399	2%	0%
Jenner Township	4,054	4,122	4,098	4,127	4,125	2%	-1%
Jennerstown Borough	714	695	732	737	760	6%	-4%
Larimer Township	590	595	622	636	657	11%	-5%
Lincoln Township	1,669	1,519	1,463	1,353	1,274	-24%	15%
Lower Turkeyfoot Township	672	603	575	523	484	-28%	19%
Meyersdale Borough	2,473	2,184	2,034	1,851	1,687	-32%	21%
Middlecreek Township	797	875	927	994	1,053	32%	-12%
Milford Township	1,561	1,553	1,559	1,557	1,560	0%	0%
New Baltimore Borough	168	180	189	199	209	24%	-10%
New Centerville Borough	193	133	121	110	99	-49%	22%
Northampton Township	366	343	339	324	315	-14%	8%
Ogle Township	588	501	456	415	372	-37%	23%
Paint Borough	1,103	1,023	996	938	898	-19%	11%
Paint Township	3,300	3,149	2,975	2,814	2,646	-20%	12%
Quemahoning Township	2,180	2,025	1,889	1,743	1,602	-27%	18%
Rockwood Borough	954	890	828	765	703	-26%	18%
Salisbury Borough	878	727	755	687	674	-23%	12%
Seven Springs Borough	126	11	13	15	17	-87%	-24%
Shade Township	2,886	2,774	2,560	2,404	2,215	-23%	16%
Shanksville Borough	245	237	239	236	235	-4%	2%
Somerset Borough	6,762	6,277	6,245	5,954	5,812	-14%	7%
Somerset Township	11,088	12,122	13,911	15,269	16,874	52%	-18%
Southampton Township	655	630	678	684	713	9%	-5%
Stonycreek Township	2,221	2,237	2,323	2,369	2,437	10%	-5%
Stoystown Borough	428	355	346	315	296	-31%	17%

Municipality	2000 Census	2010 Census	2020 Census	2030 Projection	2040 Projection	Population Change Estimate 2000 - 2040	Projected Population Change 2020- 2040 (%)
Summit Township	2,368	2,271	2,157	2,053	1,943	-18%	11%
Upper Turkeyfoot Township	1,232	1,119	1,128	1,067	1,046	-15%	8%
Ursina Borough	254	225	205	186	167	-34%	23%
Wellersburg Borough	176	181	165	161	150	-15%	10%
Windber Borough	4,395	4,138	3,822	3,539	3,237	-26%	18%
Somerset County	**80,023**	**77,742**	**77,872**	**76,855**	**76,493**	-4%	2%

Sources: DEP 2012, U.S. Census 2020

a. Growth projection calculated from 2012 DEP projections for 2020 and 2040.

b. 2040 total population based on DEP growth percentage applied to 2020 U.S. Decennial Census value

2.3.3 Housing

Somerset County has an estimated 37,796 housing units. These properties may be vulnerable to various natural hazards, particularly those located in defined hazard areas. Damage to residential properties is not only costly to repair or rebuild but is also devastating to the displaced residents.

According to the U.S. Census, approximately 23.4 percent of the county's residential properties are vacant; most vacancies are units available for rent. Vacant buildings are particularly vulnerable to arson and criminal activity. Because vacant properties are not inhabited year-round or may not be adequately maintained, many are structurally deficient and at risk of collapse.

Approximately 19.3 percent of the county's housing units are renter-occupied. Because renters are more transient than homeowners, communicating with renters may be more difficult than communicating with homeowners. Similarly, communications with tourists would be harder during an emergency event. Communication strategies should be developed to ensure that these populations receive proper notifications. Table 2.3.3-1 summarizes characteristics of the residential properties in Somerset County.

Table 2.3.3-1. Housing Characteristics in Somerset County

Housing Characteristics	2010	2022
Total housing units	38,070	37,796
Owner-occupied housing units	30,319	23,373
Renter-occupied housing units	6537	5,583
Vacant housing units	7,751	8,840
Median value (dollars)	$92,200	$124,500
Housing units with a mortgage	11,914	11,154
Housing units without a mortgage	11,868	12,126

Source: 2010 and 2022 American Community Survey 5-Year Estimates

2.4 LAND USE AND DEVELOPMENT

2.4.1 Existing Land Uses and Land Cover

Somerset County's existing land use patterns are greatly influenced by surrounding natural features, such as i5w rolling hills, farmland, forests, and river valleys. These features have largely determined the location of transportation corridors and development activities as well as agricultural practices. Of the County's total land area of 1,072 square miles, 64.4 percent is categorized as forest, 22.7 percent as agricultural use, and 7.7 percent is classified as urban area (see Figure 2.3.1-1).

Agricultural land is scattered throughout the County, with a concentration in the west-central region. Agricultural use of land in Somerset County has stayed relatively the same since 2012. According to the U.S. Department of Agriculture, the County had a 10 percent decrease in its farmland acres between 2017 and 2022 (USDA, 2022). During that same time period, the number of farms in the County decreased by 14 percent, from 1,152 farms in 2017 (USDA, Census of Somerset County Profile: Somerset County, Pennsylvania, 2022) to 998 farms in 2022 (USDA, USDA Census of Agriculture, 2022). The change in the average size of farms in the County increased from 190 acres in 2017 to 198 acres in 2022.

Somerset County has identified that the county's growing recreation and tourism economy is established as a viable economic force. The county needs to protect architectural and scenic qualities as important resources for tourism. Years of decline and shifts in the economy have left towns and boroughs in a neglected status, a redevelopment program could restore vibrancy and health to these areas.

Future growth for the county is focused on infill development to account for the majority of the county being developed. Redevelopment will be prioritized around existing infrastructure and identifying opportunities to create green spaces.

Table 2.4.1-1 Land Use Summary in Somerset County

Land Use Category	2021 Data	
	Acreage	% of County
Agriculture	157,175	22.7%
Barren Land	4,504	0.7%
Forest	445,479	64.4%
Rangeland	21,045	3.0%
Urban Area	53,212	7.7%
Water	5,135	0.7%
Wetland	5,519	0.8%
Somerset County (Total)	**692,069**	**100.0%**

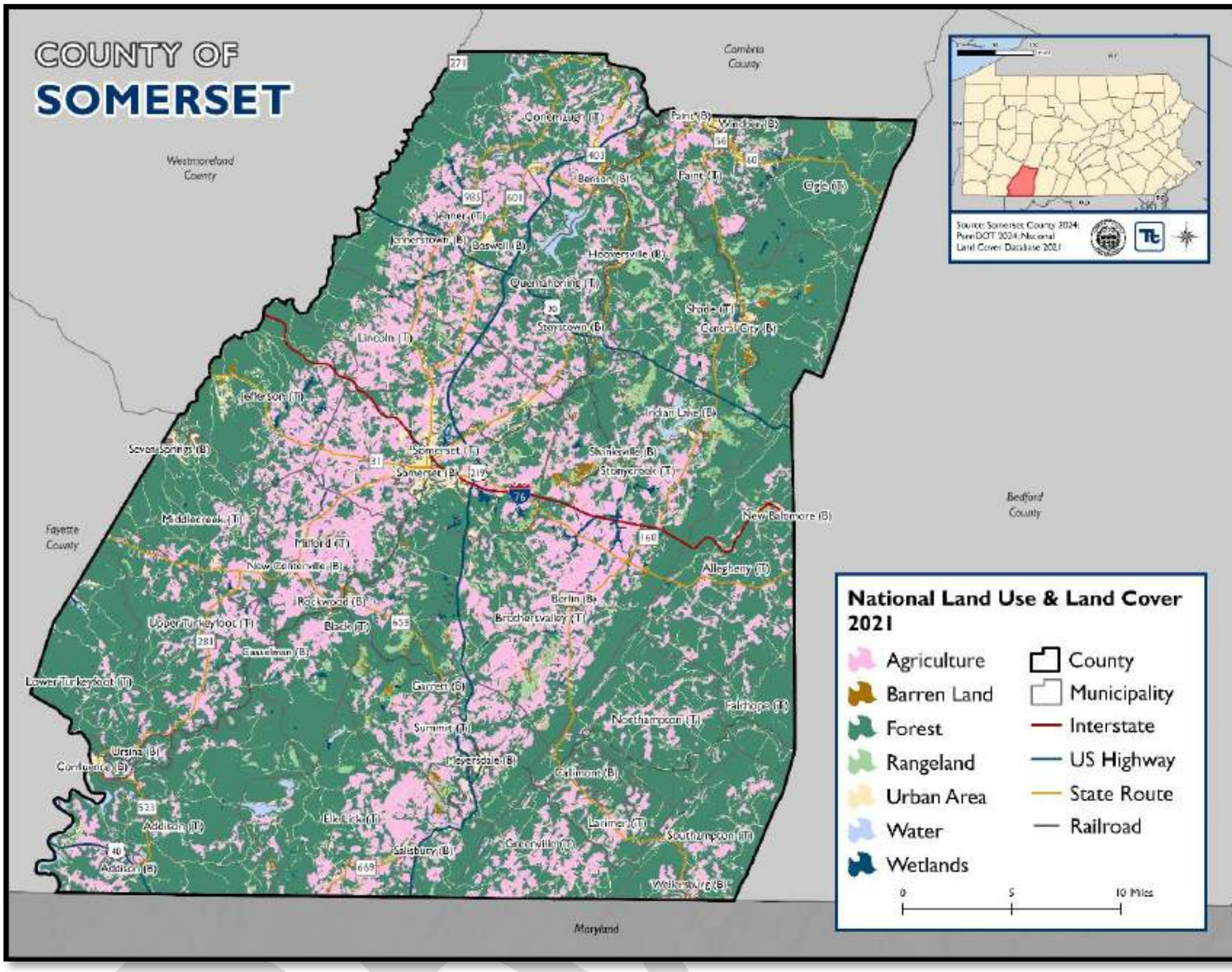
Source: USGS/NLCD 2019, Note: % = Percent

Land Use and Land Cover

Land use and land cover are often related, but they have different meanings. Land use reflects human decisions about how land will be used. Land cover refers to the vegetative characteristics or manmade constructions on the land's surface. For example, after a timber harvest land cover has changed, but the land use of that area will not have changed if the site will continue to be used for timber production in the future.

Land use is generally determined by surveys based on field observations or enumeration. Land cover is generally determined using remote sensing techniques or interpretation of aerial photography (USDA, USDA Census of Agriculture, 2022)

Figure 2.3.1-1. Somerset County Land Use and Land Cover



2.4.2 General Building Stock

There are 85,193 buildings in the planning area, with a total replacement value of $50,126,777,010. Table 2.4.2-1 lists the number and estimated replacement cost value (RCV) of general buildings in Somerset County and the municipalities within the county, collected from Somerset County and the U.S. Army Corps of Engineers National Structure Inventory. The RCV of general buildings within County is shown for residential, commercial, and industrial structures in Table 2.4.2-2.

Table 2.4.2-1 General Building Stock in Somerset County

Jurisdiction	Number of Buildings	Replacement Cost Value		
		Structure	Contents	Total
Addison (B)	255	$86,207,249	$62,254,215	$148,461,465
Addison (T)	2,429	$645,018,087	$491,685,350	$1,136,703,437
Allegheny (T)	1,509	$430,642,706	$351,166,766	$781,809,472
Benson (B)	173	$54,133,593	$35,141,129	$89,274,721
Berlin (B)	1,392	$517,655,492	$377,613,792	$895,269,284

Jurisdiction	Number of Buildings	Replacement Cost Value		
		Structure	Contents	Total
Black (T)	1,515	$451,681,340	$382,793,397	$834,474,737
Boswell (B)	826	$280,698,436	$193,701,857	$474,400,294
Brothersvalley (T)	3,330	$1,140,908,582	$923,557,404	$2,064,465,986
Callimont (B)	55	$17,391,483	$13,539,390	$30,930,873
Casselman (B)	119	$24,740,431	$16,346,459	$41,086,890
Central City (B)	912	$268,931,118	$174,023,386	$442,954,504
Conemaugh (T)	6,338	$2,271,270,754	$1,609,715,960	$3,880,986,714
Confluence (B)	753	$220,975,803	$158,423,839	$379,399,641
Elk Lick (T)	3,334	$1,017,600,574	$835,763,445	$1,853,364,019
Fairhope (T)	304	$63,981,207	$50,972,537	$114,953,744
Garrett (B)	377	$96,714,470	$66,484,837	$163,199,308
Greenville (T)	1,145	$336,330,965	$283,486,655	$619,817,620
Hooversville (B)	581	$168,953,912	$115,305,928	$284,259,840
Indian Lake (B)	1,148	$477,900,010	$297,163,486	$775,063,497
Jefferson (T)	3,395	$1,047,896,515	$715,987,064	$1,763,883,579
Jenner (T)	5,016	$1,518,261,632	$1,168,960,174	$2,687,221,806
Jennerstown (B)	641	$244,971,832	$159,663,579	$404,635,410
Larimer (T)	839	$229,330,613	$181,715,189	$411,045,802
Lincoln (T)	1,981	$670,442,283	$539,357,110	$1,209,799,393
Lower Turkeyfoot (T)	1,168	$290,408,867	$238,241,342	$528,650,209
Meyersdale (B)	1,529	$515,803,034	$372,993,338	$888,796,373
Middlecreek (T)	2,860	$795,398,177	$566,079,831	$1,361,478,007
Milford (T)	2,434	$794,702,183	$620,003,578	$1,414,705,761
New Baltimore (B)	174	$46,597,838	$31,244,690	$77,842,527
New Centerville (B)	171	$59,877,317	$44,591,062	$104,468,378
Northampton (T)	763	$193,380,855	$162,143,848	$355,524,703
Ogle (T)	687	$193,910,858	$142,062,334	$335,973,192
Paint (B)	553	$176,966,906	$117,870,383	$294,837,290
Paint (T)	3,474	$1,199,450,731	$872,790,761	$2,072,241,492
Quemahoning (T)	2,464	$792,725,319	$679,302,553	$1,472,027,871
Rockwood (B)	619	$203,614,599	$146,069,202	$349,683,802
Salisbury (B)	639	$207,307,442	$138,092,243	$345,399,685
Seven Springs (B)	82	$69,758,699	$69,758,699	$139,517,399
Shade (T)	3,461	$1,001,611,678	$757,862,926	$1,759,474,604
Shanksville (B)	178	$59,429,771	$38,564,332	$97,994,103
Somerset (B)	3,433	$1,822,202,472	$1,455,043,571	$3,277,246,043
Somerset (T)	8,899	$3,624,927,443	$2,864,580,843	$6,489,508,286
Southampton (T)	1,001	$258,727,989	$211,168,746	$469,896,734
Stonycreek (T)	3,547	$1,049,094,100	$819,040,599	$1,868,134,699
Stoystown (B)	266	$86,596,199	$56,068,401	$142,664,600

Jurisdiction	Number of Buildings	Replacement Cost Value		
		Structure	Contents	Total
Summit (T)	3,085	$972,629,642	$792,776,714	$1,765,406,355
Upper Turkeyfoot (T)	2,126	$578,868,154	$456,141,242	$1,035,009,396
Ursina (B)	279	$71,221,733	$46,999,916	$118,221,649
Wellersburg (B)	261	$69,775,987	$48,147,561	$117,923,548
Windber (B)	2,673	$1,011,897,206	$744,791,064	$1,756,688,270
Somerset County (Total)	**85,193**	**$28,429,524,284**	**$21,697,252,725**	**$50,126,777,010**

Source: *Somerset County 2024; USACE 2022*

Table 2.4.2-2 Replacement Cost Value for Building Type in Somerset County

Jurisdiction	Residential		Commercial		Industrial		Government, Religion, Agricultural, and Education	
	Building Count	Total Replacement Cost Value	Building Count	Total Replacement Cost Value	Building Count	Total Replacement Cost Value	Building Count	Total Replacement Cost Value
Addison (B)	95	$71,859,102	149	$62,993,948	0	$0	11	$13,608,414
Addison (T)	808	$459,998,210	1,226	$350,067,589	0	$0	395	$326,637,638
Allegheny (T)	349	$241,403,318	776	$211,545,332	3	$6,486,591	381	$322,374,230
Benson (B)	92	$56,977,392	73	$26,302,483	1	$1,462,048	7	$4,532,798
Berlin (B)	751	$479,560,723	605	$237,229,504	2	$66,552,674	34	$111,926,382
Black (T)	380	$239,849,700	843	$297,714,479	18	$57,782,420	274	$239,128,139
Boswell (B)	437	$262,770,149	359	$138,358,117	2	$2,967,355	28	$70,304,673
Brothersvalley (T)	908	$665,659,664	1,788	$624,965,678	12	$18,599,960	622	$755,240,685
Callimont (B)	15	$11,556,277	29	$10,886,558	0	$0	11	$8,488,037
Casselman (B)	51	$25,181,917	65	$14,203,015	0	$0	3	$1,701,957
Central City (B)	464	$284,723,197	425	$130,123,936	0	$0	23	$28,107,371
Conemaugh (T)	2,596	$2,043,527,605	3,097	$1,013,986,363	13	$69,838,317	632	$753,634,429
Confluence (B)	302	$189,767,986	414	$153,522,593	2	$3,520,156	35	$32,588,905
Elk Lick (T)	784	$577,468,690	1,882	$596,069,349	11	$58,532,534	657	$621,293,446
Fairhope (T)	81	$39,026,009	147	$30,354,373	0	$0	76	$45,573,362
Garrett (B)	176	$90,688,899	179	$52,639,799	0	$0	22	$19,870,609
Greenville (T)	220	$159,026,249	609	$163,827,721	3	$822,200	313	$296,141,451
Hooversville (B)	274	$160,943,951	285	$101,208,911	0	$0	22	$22,106,978
Indian Lake (B)	564	$542,627,902	563	$218,551,098	1	$697,217	20	$13,187,281
Jefferson (T)	1,530	$998,932,468	1,561	$477,720,736	8	$4,543,510	296	$282,686,864
Jenner (T)	1,663	$1,083,318,581	2,681	$899,997,454	16	$45,462,791	656	$658,442,981
Jennerstown (B)	314	$257,198,581	306	$120,904,402	1	$2,123,038	20	$24,409,389
Larimer (T)	234	$142,846,273	409	$112,192,536	0	$0	196	$156,006,992
Lincoln (T)	609	$424,096,756	1,029	$367,423,701	6	$43,904,702	337	$374,374,234
Lower Turkeyfoot (T)	301	$157,231,023	676	$167,403,771	0	$0	191	$204,015,416

Jurisdiction	Residential		Commercial		Industrial		Government, Religion, Agricultural, and Education	
	Building Count	Total Replacement Cost Value	Building Count	Total Replacement Cost Value	Building Count	Total Replacement Cost Value	Building Count	Total Replacement Cost Value
Meyersdale (B)	750	$463,547,898	731	$303,006,292	4	$55,406,753	44	$66,835,429
Middlecreek (T)	1,309	$690,682,616	1,315	$432,804,175	6	$5,666,449	230	$232,324,768
Milford (T)	668	$533,274,826	1,335	$408,786,086	3	$14,586,176	428	$458,058,672
New Baltimore (B)	70	$46,059,443	97	$22,591,361	0	$0	7	$9,191,723
New Centerville (B)	59	$45,858,764	107	$43,171,767	0	$0	5	$15,437,848
Northampton (T)	153	$93,711,023	394	$86,716,905	1	$407,036	215	$174,689,739
Ogle (T)	225	$156,511,900	323	$85,797,888	9	$1,610,543	130	$92,052,861
Paint (B)	280	$177,289,568	263	$99,458,252	0	$0	10	$18,089,470
Paint (T)	1,368	$1,009,321,555	1,714	$640,994,982	17	$40,446,301	375	$381,478,654
Quemahoning (T)	694	$461,104,090	1,357	$429,289,113	5	$199,893,777	408	$381,740,892
Rockwood (B)	301	$193,242,931	298	$105,150,106	4	$34,344,567	16	$16,946,197
Salisbury (B)	309	$207,645,597	311	$104,882,482	0	$0	19	$32,871,605
Seven Springs (B)	0	$0	81	$136,838,101	0	$0	1	$2,679,298
Shade (T)	1,210	$765,253,827	1,784	$500,225,134	12	$54,921,814	455	$439,073,829
Shanksville (B)	81	$62,596,315	90	$26,008,212	0	$0	7	$9,389,576
Somerset (B)	1,835	$1,433,028,040	1,508	$1,076,162,148	19	$460,530,097	71	$307,525,757
Somerset (T)	3,175	$2,322,940,952	4,847	$2,801,963,351	22	$41,188,030	855	$1,323,415,953
Southampton (T)	251	$142,677,730	535	$133,596,578	0	$0	215	$193,622,427
Stonycreek (T)	948	$692,275,106	2,047	$613,018,672	4	$4,259,983	548	$558,580,938
Stoystown (B)	131	$91,583,394	130	$46,076,368	0	$0	5	$5,004,839
Summit (T)	846	$572,704,822	1,719	$546,691,513	15	$46,780,723	505	$599,229,298
Upper Turkeyfoot (T)	590	$368,180,737	1,073	$259,223,807	0	$0	463	$407,604,853
Ursina (B)	131	$72,761,770	140	$32,175,982	1	$160,528	7	$13,123,369
Wellersburg (B)	97	$64,885,278	144	$37,364,039	0	$0	20	$15,674,231
Windber (B)	1,348	$920,118,527	1,285	$713,139,012	7	$53,333,169	33	$70,097,563
Somerset County (Total)	**30,827**	**$21,253,497,331**	**43,804**	**$16,265,325,767**	**228**	**$1,396,831,459**	**10,334**	**$11,211,122,451**

Source: *Somerset County 2024; USACE 2022; RS Means 2024*

2.4.3 Community Lifelines and Other Critical Facilities

2.4.3.1 The Community Lifeline Concept

Community lifelines, as defined by FEMA, are the most fundamental functions of a community. Lifelines are all the services, capabilities, and physical assets that are used day-to-day to support a community's ongoing needs. When stabilized and working properly, community lifelines enable all other aspects of society to function. The following are the basic community lifelines (in alphabetical order) and multiple components of each, as defined by FEMA (FEMA, 2019):

- Communications—Communications infrastructure; responder communications; alerts, warnings, and messages; finance; 911; and dispatch
- Energy—Power grids and fuel supplies
- Food, hydration, shelter—Food and water suppliers, shelter locations, agriculture
- Hazardous material—Hazardous materials facilities, pollutants, and contaminants
- Health and medical—Medical care, public health, patient movement, medical supply chain, and fatality management
- Safety and security—Law enforcement, security, fire services, search and rescue services, government services, and community safety (including dams)
- Transportation—Highway, roadway, and motor vehicle networks; mass transit; railways; aviation; and maritime facilities
- Water systems—Potable water and wastewater infrastructure

FEMA further defines subcomponents for each of the above components—nearly 100 altogether. These subcomponents include physical facilities as well as public and private services, capabilities, activities, and systems. The essential subcomponents that make up community lifelines range from police stations to farm animals, from public records to the food supply chain, and from medical treatment to banking services.

Lifelines Identified for This Plan's Risk Assessment

It is an essential element of hazard mitigation planning to identify the community lifelines whose function can be negatively impacted by hazard events and to develop mitigation actions that will minimize the potential for such impacts. For this hazard mitigation plan, the assessment of community lifelines focuses on physical assets, the critical facilities and infrastructure that can be geographically located within mapped hazard areas and for which quantitative estimates can be made of current value and potential loss.

Table 2.4.3-1 Summarizes counts of identified physical community lifeline assets in the planning area by category, based on the best data available at the time of this plan. This information is subject to change as new information about such structures becomes available during the performance period for this plan. Appendix E provides further details, including maps, on community lifeline structures in municipalities throughout the County.

Table 2.4.3-1 Community Lifelines in Somerset County

FEMA Lifeline Category	Total Number of Lifelines
Communications	54
Energy	14
Food, Water, Shelter	0
Hazardous Materials	82
Health and Medical	3
Safety and Security	134
Transportation	390
Water Systems	0
Other Critical Facilities[a]	36
Somerset County (Total)	**713**

2.4.4 Recent and Future Trends

Somerset County emphasizes preserving the county's rural character as future development occurs. Future economic development will promote efficient land use in areas with existing public water and sewerage systems. With the assistance of the Redevelopment Authority of Somerset County created in 1956 under the Commonwealth's Urban Redevelopment Law of 1945, the county plans for future economic development. The Authority largely undertook redevelopment projects with the Borough of Windber in the northern part of Somerset County and reported to the Burgess of Windber. Projects initially were directed towards the acquisition of public rights of way or property easements to install public improvements (Somerset County Redevelopment Authority 2025).

In 1965, the Authority became non-functioning. However, due to the tragic events of the Johnstown Flood of 1977, the Authority was reorganized with the county commissioners appointing a new five member board. The Authority was responsible for overseeing a special bond issue that the legislature had enacted to help flood victims in Cambria and Somerset Counties. The Authority received in excess of $14 million dollars to assist Somerset County residents in Paint and Windber Boroughs and Paint, Ogle and Conemaugh Townships. More than 400 homeowners received financial assistance through the Authority (Somerset County Redevelopment Authority 2025).

Since 1977, the Authority has been involved with various projects across Somerset County. The Authority conducted a county-wide housing conditions survey ran a Vector Control Program, managed construction contracts with the Rails to Trails Project, Meyersdale Train Station Rehabilitation and Jenners Passive Treatment System, as well as the Oven Run and Cottagetown Mine Reclamation Projects (Somerset County Redevelopment Authority 2025).

2.5 DATA SOURCES AND LIMITATIONS

The County Profile section of this HMP was developed with information from the following sources:

- Somerset County 2020 Hazard Mitigation Plan
- Population Projection Report (Pennsylvania Department of Environmental Protection 2012)
- U.S. Census Bureau, 2000, 2010, and 2020
- U.S. Census Bureau, American Community Survey 2017-2022

The list of references at the end of this volume lists general data sources used to develop the HMP. Data sources used to perform geographic information system (GIS) analysis for the risk assessment are listed in Section 4. These sources were key in understanding the current demographic makeup of the community and in framing the foundation of the HMP. The sources listed provided the underlying context of the HMP and allowed the Planning Committee to understand critical vulnerabilities in the County.

Throughout the course of the planning process, the Planning Committee continually sought additional data sources to augment the information included in the HMP. The Planning Partnership made multiple requests for existing jurisdictional documents (e.g., jurisdictional hazard mitigation plans and other relevant information) and municipal documents; however, the response was limited.

SECTION 3 PLANNING PROCESS

A successful planning process builds partnerships and brings together members representing government agencies, the public, and other stakeholders to reach a consensus on ways the community will prepare for and respond to those hazards most likely to occur. Applying a comprehensive and transparent process adds validity to the Hazard Mitigation Plan (HMP). Participants involved in the HMP planning process gained a better understanding of problems and issues and helped devise solutions and actions for the community—resulting in a revised set of common community values and widespread support for directing financial, technical, and human resources to agreed-upon actions.

The planning process was an integral part of updating the Somerset County HMP. This section describes the planning process used to update the HMP, with participation from 28 out of 50 of the County's municipalities. This section also describes the hazard mitigation and multi-jurisdictional planning implemented by the Steering Committee and Planning Team in meetings and documentation with public and stakeholder participation during the HMP update process. Additional details about the process of updating each section of this HMP appear at the beginning of each section.

3.1 UPDATE PROCESS AND PARTICIPATION SUMMARY

In accordance with the Disaster Mitigation Act of 2000 (DMA 2000) requirements, this plan documents the following topics:

- Planning process
- Hazard identification
- Risk assessment
- Mitigation strategy: goals, actions, and projects
- Formal adoption by the participating jurisdictions
- Pennsylvania Emergency Management Agency (PEMA) and Federal Emergency Management Agency (FEMA) approval

The PEMA All-Hazard Mitigation Planning Standard Operating Guide lays out the standard planning process in Pennsylvania to create and update HMPs (including this HMP) and is cited in Appendix A, under Authorities and References. Section 4 (Risk Assessment) describes hazard vulnerabilities, and the risk assessment and Section 6 (Mitigation Strategy) describes the mitigation strategy for this HMP.

Public participation and planning meetings served as the main forum for gathering information to update the HMP. The Steering Committee and Planning Team were afforded access to information in relevant and approved plans, policies, and procedures for Somerset County. Opportunities for public participation included public meetings, distribution of information at municipal meetings, and chances to review and comment on the draft HMP update. To develop all sections of the HMP, the Planning Team used meetings, e-mail correspondence, and teleconferences to solicit input from county, municipal, and other stakeholders, including members of the general public. Most information received for this update came from Somerset County, its municipalities, and the Steering Committee. Through this planning process, the county established a comprehensive approach to reduce the effects of hazards on the county and its municipalities.

3.2 THE PLANNING TEAMS

3.2.1 Steering Committee

Recognizing the need to manage risk within the county, and to meet the requirements of the DMA 2000, Somerset County Emergency Services led the update to the 2020 HMP. Mr. Joel Landis, Director of Emergency

Management, developed a Steering Committee to provide guidance and direction to the planning effort, and to ensure the resulting document will be embraced both politically and by the constituency within the planning area. Mr. Bak served as chair of the Steering Committee. Throughout the planning process, Mr. Landis served as the lead planner and point of contact for the planning process. The Steering Committee was comprised of the following individuals:

- Joel D. Landis, Director, Somerset County Department of Emergency Services
- Kevin Broadwater, Emergency Management Agency Specialist, Somerset County Department of Emergency Services
- Angela Emerick, Emergency Management Agency Specialist, Somerset County Department of Emergency Services
- Craig Hollis-Nicholson, Somerset County 911
- Bradley A. Zearfoss, Planning Director, Somerset County Planning Commission
- Chadd Sines, Somerset County Planning Commission
- Lisa Danner, Project Manager, Tetra Tech

The Steering Committee was charged with the following tasks:

- Providing guidance and overseeing the planning process on behalf of the general planning partnership (Planning Team).
- Attending and participating in Steering Committee meetings.
- Assisting with the development and completion of certain planning elements, including:
    - Reviewing and updating the hazards of concern
    - Developing a public and stakeholder outreach program
    - Ensuring the data and information used in the plan update process are best available
    - Reviewing and updating the hazard mitigation planning goals and objectives
    - Identifying and screening appropriate mitigation strategies and activities
    - Reviewing and updating plan maintenance procedures
- Reviewing and commenting on plan documents prior to submittal to PEMA and FEMA.

3.2.2 Planning Team

A Planning Team was assembled to represent each of the municipalities participating in the HMP update, as well as invited stakeholders and members of the Steering Committee. The organizations listed in Table 3.2-1 were invited to participate on the Planning Team.

Table 3.2-1. Organizations Invite to Participate on the Planning Team

Name	Organization	Name	Organization
Melissa Wass	Addison Township Supervisor	George Earley	Rockwell Forest Products
Harvey Wetzler	Addison Township; Addison Volunteer Fire Department	Lenny Lichvar	Somerset Conservation District
Traci Horning	Berlin Borough	Craig Hollis-Nicholson	Somerset County 911
Tim Sprowls	Berlin Brothers Valley School District	Pam Tokar-Ickes	Somerset County Commissioner
Richard Ames	Cambria Somerset Authority	Kevin Broadwater	Somerset County Department of Emergency Services

Name	Organization	Name	Organization
Jonathan Hoover	Duke LifePoint (DLP) Conemaugh Meyersdale	Joel Landis	Somerset County Department of Emergency Services
Susan Levy	Emergency Management Department, Middlecreek Township	Sharlene McCoy	Somerset County Emergency Management Agency
Amy Link	Legislative Assistant, Office of Pennsylvania Senator Pat Stefano	Chad Sines	Somerset County Planning
Craig B. Waltermire	Milford Township	Don Miller	Somerset Township
Thomas Gerry	New Centerville Borough; Laurel Highlands Municipal Authority	Jim Leer	Somerset Volunteer Fire Department
Barry Thomas	New Centerville Borough; Laurel Highlands Municipal Authority	Tracey Zimmerman	State Correctional Institution (SCI) Somerset
Jarod Allison	Pennsylvania Department of Conservation & Natural Resources/Laurel Hill State Park	Rodney Zerfoss	Stoystown Borough
Charlie Hughes	Pennsylvania Emergency Management Agency	Danielle Smorto-Dukery	Windber Woods Senior Living & Rehabilitation Center
Nicholas Paul	PennDOT	Christine Spinos	Windber Woods Senior Living & Rehabilitation Center
Adam Pitts	PennDOT, Somerset County		

Appendices C, D, and E include complete lists of individual invitees and participants, attendance at meetings, completion of worksheets, and submittal of comments.

The Planning Team acknowledged that important steps in developing a comprehensive HMP included identifying hazards that specifically affect Somerset County, and assessing their likelihood of occurrence, along with potential damage to the people, property, and environment of the county. The Planning Team chose to focus on an all-hazards approach rather than narrow the focus to natural disasters only.

3.2.3 Contract Consultant

As the contract consultant, Tetra Tech guided the Steering Committee and Planning Team through the HMP update planning process. More specifically, Tetra Tech was tasked with:

- Assisting with the organization of a Steering Committee and Planning Team.
- Assisting with the development and implementation of a public and stakeholder outreach program.
- Collecting data.
- Facilitating and recording attendance at meetings.
- Assisting with the review, update, and ranking of the hazards of concern, hazard profiling, and risk assessment.
- Assisting with the review and update of mitigation planning goals and objectives.
- Assisting with the review of the progress of past mitigation strategies.
- Assisting with the screening of mitigation actions and the identification of appropriate actions.
- Assisting with the prioritization of mitigation actions.
- Authoring of the draft and final HMP documents.

3.3 MEETINGS AND DOCUMENTATION

Tetra Tech assisted the county in drafting planning documents, preparing meeting materials, and facilitating meetings. The Steering Committee reviewed documentation, provided validation, and acted as an advocate for the HMP update. Table 3-1 lists dates and descriptions of meetings held by the Somerset County Steering Committee and Planning Team. Tetra Tech followed up each meeting with meeting notes that documented all agenda topics, decisions, and action items identified. Appendix C includes documentation from all meetings.

Table 3.3-1. Public and Planning Meetings

Date	Description of Meeting
August 30, 2023	Kickoff meeting with the Steering Committee
October 25, 2023	Kickoff Meeting with Planning Team members, including 5-year plan review and plan update process, evaluation of identified hazards, capability assessment, and mitigation strategy review.
November 16, 2023	An annual meeting of Somerset County municipalities. This was an opportunity to present the overview of hazard mitigation, project planning process, and schedule and to present ways the municipalities could participate in the update to the 2020 Somerset County HMP.
July 3, 2024	Planning Team Meeting to review the results of the risk assessment. The Planning Team members identified problem areas and issues throughout the County for each hazard.
September 26, 2024	Mitigation Strategy Workshop to review mitigation goals, objectives, actions, and current plan status with the Planning Team.
February 28, 2025	Public HMP Draft Review Meeting to receive comments on the draft HMP.
TBD	HMP adoption by County Commissioners.

3.4 PUBLIC AND STAKEHOLDER PARTICIPATION

To maximize the effectiveness of the HMP, the Planning Team fostered continual public and stakeholder engagement. Input was encouraged and collected through a variety of methods. Somerset County residents were informed of the planning process through various sources, including newspaper-announced public notices and announcements on the Somerset County HMP project website (https://www.co.somerset.pa.us/hazard_mitigation/). Five worksheets/surveys— the Hazard/Risk Identification Survey, Municipal Risk Factor Analysis, Capabilities Assessment Survey, NFIP Survey, and Mitigation Strategy 5-Year Plan Review Worksheet (Mitigation Review Worksheet) —were given to representatives from each municipality in Somerset County.

Entities with a vested interest in the development of the updated HMP were given the opportunity to participate in the planning process by attending a Planning Partner or public meeting, completing a stakeholder survey, or offering comments on the project website. These included local, state, and federal agencies; neighboring jurisdictions; community leaders; educators; healthcare facilities; and other relevant private and nonprofit groups. Invitations to participate in meetings were sent to those stakeholders. Appendix C includes a copy of the meeting invitation list and sample copies of invitation letters sent.

Somerset County issued a public notice alerting the whole community of the availability of the public review period and the opportunity for the community to provide feedback on the draft HMP. That notice was issued as a press release and published on external websites. Somerset also issued a public notice to advertise the Draft Review Meeting.

3.5 MULTI-JURISDICTIONAL PLANNING

Somerset County took a multi-jurisdictional approach to preparing the HMP so that the HMP would apply to the County and all participating municipalities. Somerset County undertook an intensive effort to involve all 50 municipalities, the special districts, and all county school districts in the update process. Each municipality was given the opportunity to participate in this process. Municipal officials and representatives were invited to attend Planning Partner and public meetings, were provided with worksheets to update information on hazards of concern, capabilities, and mitigation strategy, and were asked to review and prioritize their mitigation actions.

Additionally, direct outreach by phone or one-on-one meeting was conducted with municipality representatives who were unable to attend other meetings or who had questions about worksheets, participation requirements, the planning process, or mitigation project selection.

Nine of the 50 municipalities and the special districts had representatives attend at least one meeting; one more participating municipality provided information through individual contact. Municipal participation culminated in the formal adoption of the HMP. Copies of municipal adoption resolutions are in Appendix F. Table 3.5-1 indicates the ways each municipality participated in the planning process.

Table 3.5-1. Participation Matrix

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Somerset County	X	X	X	X		X	X	N/A	X	X	March 2025
Addison (B)						X	X	X	X	X	Estimated April 2025
Addison (T)	X					X	X	X	X	X	Estimated April 2025
Allegheny (T)											Estimated April 2025
Benson (B)											Estimated April 2025
Berlin (B)	X	X				X	X	X	X	X	Estimated April 2025
Black (T)											Estimated April 2025
Boswell (B)		X				X	X	X	X	X	Estimated April 2025
Brothersvalley (T)	X	X				X	X	X	X	X	Estimated April 2025
Callimont (B)						X	X				Estimated April 2025

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Casselman (B)											Estimated April 2025
Central City (B)											Estimated April 2025
Conemaugh (T)						X	X	X	X		Estimated April 2025
Confluence (B)						X	X	X	X	X	Estimated April 2025
Elk Lick (T)		X				X	X	X	X	X	Estimated April 2025
Fairhope (T)											Estimated April 2025
Garrett (B)											Estimated April 2025
Greenville (T)						X	X				Estimated April 2025
Hooversville (B)											Estimated April 2025
Indian Lake (B)											Estimated April 2025
Jefferson (T)		X				X	X	X	X	X	Estimated April 2025

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Jenner (T)		X				X	X	X	X	X	Estimated April 2025
Jennerstown (B)						X	X	X	X	X	Estimated April 2025
Larimer (T)						X	X	X	X	X	Estimated April 2025
Lincoln (T)		X									Estimated April 2025
Lower Turkeyfoot (T)		X				X	X	X	X	X	Estimated April 2025
Meyersdale (B)		X				X	X				Estimated April 2025
Middlecreek (T)	X	X				X	X	X	X	X	Estimated April 2025
Milford (T)	X		X	X		X	X	X	X	X	Estimated April 2025
New Baltimore (B)											Estimated April 2025
New Centerville (B)	X		X			X	X	X	X	X	Estimated April 2025
Northampton (T)	X					X	X	X	X	X	Estimated April 2025

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Ogle (T)		X									Estimated April 2025
Paint (B)		X				X	X	X	X	X	Estimated April 2025
Paint (T)		X									Estimated April 2025
Quemahoning (T)						X	X	X	X	X	Estimated April 2025
Rockwood (B)											Estimated April 2025
Salisbury (B)						X	X	X	X	X	Estimated April 2025
Seven Springs (B)											Estimated April 2025
Shade (T)											Estimated April 2025
Shanksville (B)											Estimated April 2025
Somerset (B)						X	X				Estimated April 2025
Somerset (T)	X	X				X	X				Estimated April 2025

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Southampton (T)											Estimated April 2025
Stonycreek (T)		X									Estimated April 2025
Stoystown (B)	X					X	X				Estimated April 2025
Summit (T)						X	X				Estimated April 2025
Upper Turkeyfoot (T)											Estimated April 2025
Ursina (B)						X	X		X		Estimated April 2025
Wellersburg (B)											Estimated April 2025
Windber (B)											Estimated April 2025
Cambria Somerset Authority	X					X	X				Estimated April 2025
Laurel Highlands Municipal Authority	X		X			X	X	X	X	X	Estimated April 2025
Chan Soon-Shiong Windber Medical Center			X								Estimated April 2025

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Conemaugh Meyersdale Medical Center			X			X	X	X	X		Estimated April 2025
Meyersdale Municipal Authority											Estimated April 2025
UPMC Somerset											Estimated April 2025
Berlin Brothersvalley School District	X					X	X				Estimated April 2025
Conemaugh Township School District											Estimated April 2025
Meyersdale School District											Estimated April 2025
North Star School District											Estimated April 2025
Rockwood School District											Estimated April 2025
Salisbury-Elk Lick School District											Estimated April 2025
Shade-Central City School District											Estimated April 2025
Shanksville-Stonycreek School District											Estimated April 2025

Jurisdiction	Meetings					Worksheets					2025 Plan Adoption Date
	Planning Team Kickoff Meeting	Municipal Summit	Risk Assessment Meeting	Mitigation Strategy Workshop	HMP Draft Review Meeting	Risk Assessment Survey Received	Risk Factor Analysis Survey	NFIP Checklist Worksheet Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Somerset County Conservation District						X					Estimated April 2025
Somerset County LEPC						X					Estimated April 2025
Somerset County Planning Commission	X			X		X			X		Estimated April 2025
Somerset School District											Estimated April 2025
Turkeyfoot Valley School District											Estimated April 2025
Windber School District											Estimated April 2025

Notes:
EMC = Emergency Management Coordinator
Mun. = Municipal
LEPC = Local Emergency Planning Committee
N/A = Not applicable
TBD = To be determined after the plan is approved-pending adoption by FEMA Region III.
** = Though the worksheet was not received, the related information was collected during an interview with officials.*

SECTION 4 RISK ASSESMENT

4.1 UPDATE PROCESS SUMMARY

The Federal Emergency Management Agency (FEMA) defines risk as the potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets. This section describes risk assessment for Somerset County, as follows:

- Section 4.2 outlines the hazard identification process for both natural and human-caused hazards of concern for further profiling and evaluation.
- Section 4.3 profiles the hazards of concern (location and extent, range of magnitude, past occurrence, and future occurrence) and assesses the community's vulnerability to each of them.
- Section 4.4 summarizes the risk ranking results, potential losses, and future development and vulnerability.

4.2 HAZARD IDENTIFICATION

4.2.1 Disaster Declarations

In reviewing and updating Somerset County's hazards of concern, the Core Planning Team and Planning Partners reviewed historical records and other information from a wide range of sources. This section discusses the federal major disaster (DR) and emergency (EM) declarations, Pennsylvania gubernatorial disaster declarations or proclamations, and U.S. Small Business Administration (SBA) disaster declarations that have affected Somerset County.

Federal DR and EM declarations are issued when it has been determined that state and local governments need assistance in responding to a disaster event. Since 1965, declarations have been issued for various hazard events, including hurricanes or tropical storms, severe winter storms, and flooding. Table 4.2-1 lists the declarations that affected Somerset County from 1965 through 2023. Additional declarations can be found on the Federal Emergency Management Agency (FEMA) website at: https://www.fema.gov/disasters.

Between 1965 and 2023, Somerset County was affected by 46 events that warranted Pennsylvania gubernatorial disaster declarations or proclamations, as listed in Table 4.2-2 (PEMA 2023).

SBA disaster declarations qualify communities for access to affordable, timely, and accessible financial assistance. Table 4.2-3 lists SBA disaster declarations issued for Somerset County between 1991 and 2023 (PEMA 2018) (SBA 2023).

Table 4.2.1-1. Presidential Disaster and Emergency Declarations affecting Somerset County

Declaration Number	Date	Event
DR-4815	Aug 9, 2024 - Aug 10, 2024	Tropical Storm Debby
DR-4618	September 2021	Remnants of Hurricane Ida
DR-4506	March 2020	Covid-19 Pandemic
EM-3441	March 2020	Covid-19
DR-4267	March 2016	Severe Winter Storms and Snowstorms
DR-4099	January 2013	Hurricane Sandy
EM-3356	October 2012	Hurricane Sandy
DR-1898	April 2010	Severe Winter Storms and Snowstorms
EM-3235	September 2005	Hurricane Katrina Evacuation
DR-1557	September 2004	Tropical Depression Ivan
DR-1555	September 2004	Severe Storms and Flooding Associated with Tropical Depression Frances
EM-3180	March 2003	Snowstorm
DR-1219	June 1998	Flooding, Severe Storms, and Tornadoes
DR-1093	January 1996	Flooding

Declaration Number	Date	Event
DR-1085	January 1996	Blizzard
DR-1015	March 1994	Winter Storm, Severe Storm
EM-3105	March 1993	Blizzard
DR-754	November 1985	Severe Storms, Flooding
DR-721	August 1984	Severe Storms, Flooding
DR-537	July 1977	Severe Storms, Flooding
EM-3026	January 1977	Snowstorm
DR-340	June 1972	Flood (Agnes)

Source: FEMA 2025

Table 4.2.1-2. Gubernatorial Disaster Declarations or Proclamations affecting Somerset County

Date	Event
August 2024	Proclamation of Disaster Emergency- Tropical Storm Debby
August 2021	Proclamation of Disaster Emergency – Hurricane Ida
August 2021	Amendment to Proclamation of Disaster Emergency – Opioid Crisis
April 2021	Amendment to Proclamation of Disaster Emergency – Civil Disturbance
February 2021	Amendment to Proclamation of Disaster Emergency – Coronavirus (COVID-19)
February 2021	Amendment to Proclamation of Disaster Emergency – Opioid Crisis
February 2021	Proclamation of Disaster Emergency- Winter Weather
December 2020	Proclamation of Disaster Emergency – Winter Weather
March 2020	Proclamation of Disaster Emergency – Coronavirus (COVID-19)
February 2020	Amendment to Proclamation of Disaster Emergency – Opioid Crisis
December 2019	Amendment to Opioid Crisis Emergency Proclamation
September 2019	Amendment to Opioid Crisis Emergency Proclamation
June 2019	Amendment to Opioid Crisis Emergency Proclamation
March 2019	Amendment to Opioid Crisis Emergency Proclamation
January 2019	Proclamation of Disaster Emergency for Severe Winter Event
December 2018	Amendment to Opioid Crisis Emergency Proclamation
September 2018	Amendment to the Opioid Crisis Emergency Proclamation
August 2018	Proclamation of Disaster Emergency for Severe Weather Event
January 2018	Opioid Crisis Emergency Proclamation
March 2017	Proclamation of Emergency – Severe Winter Storm
March 2017	Proclamation of Emergency – Severe Winter Storm
January 2016	Proclamation of Emergency – Severe Winter Storm
August 2015	Proclamation of Emergency – Severe Storms
January 2015	Proclamation of Disaster Emergency – Severe Winter Storms

Date	Event
February 2014	Proclamation of Disaster – Severe Winter Storms
February 2014	Severe Ice Storm
January 2014	Proclamation of Disaster Emergency – Extreme Weather, Utility Interruption
June 2013	Proclamation of Emergency – High Winds, Thunderstorms, Heavy Rain, Tornado, Flooding
October 2012	Proclamation of Emergency – Hurricane Sandy
April 2012	Proclamation of Emergency – Spring Winter Storms
August 2011	Proclamation of Emergency - Severe Storms and Flooding (Lee/Irene)
January 2011	Proclamation of Emergency - Severe Winter Storm
February 2010	Proclamation of Emergency - Severe Winter Storm
February 2007	Proclamation of Emergency - Severe Winter Storm
February 2007	Proclamation of Emergency - Regulations
April 2007	Proclamation of Emergency – Severe Winter Storm
September 2006	Proclamation of Emergency - Tropical Depression Ernesto
September 2005	Proclamation of Emergency - Hurricane Katrina
September 2001	Terrorism
July 1999	Drought
December 1998	Drought
February 1978	Blizzard
January 1978	Heavy Snow
February 1974	Truckers' Strike
February 1972	Heavy Snow
January 1966	Heavy Snow

Source: PEMA 2018, PEMA 2025

Table 4.2.1-3. Small Business Administration Disaster Declarations affecting Somerset County

Date	Event
August 2022	Heavy Rain and Flash Flooding.
June 2018	Flooding
September 2016	Flash Flooding
July 2016	Flash Flooding
June 2009	Severe Storms and Flooding
August 2007	Severe Storms and Flooding
January 2007	Fire
August 2000	Flooding
July 1991	Drought

Source: PEMA 2023, SBA 2022

4.2.2 Summary of Hazards

The Steering Committee and Planning Team evaluated hazards of concern from the 2020 Somerset County HMP, the hazard events that have taken place in the County since the last plan update, and Pennsylvania's 2023 Hazard Mitigation Plan. All municipalities participating in the plan update process completed worksheets (Hazard Identification and Risk Evaluation Worksheet) that listed hazards profiled in the 2020 HMP and indicated whether the frequency of occurrence, magnitude of impact, and/or geographic extent of each hazard has changed since 2020. The worksheets also noted whether any hazards not profiled in the 2020 HMP should be included for the current update. Appendix C includes copies of the completed worksheets.

The Steering Committee reviewed the completed worksheets to identify hazards to be assessed in the 2025 HMP update. The updated list includes one new hazard of concern: environmental hazards– coal mining and it includes cyber-attacks into the already existing terrorism profile. It also splits one of the previous hazards of concern—dam and levee failure into two profiles each, to provide greater detail on hazard risk. The list has also been updated to remove radon as a hazard of concern since there is no recorded impact to the county. The following is the updated list of hazards of concern for this HMP:

- Dam Failure
- Drought
- Earthquake
- Environmental Hazards – Coal Mining
- Environmental Hazards – Gas and Liquid Pipelines
- Environmental Hazards – Hazardous Materials Releases
- Flood, Flash Flood, and Ice Jam
- Hailstorm
- Invasive Species
- Landslide
- Levee Failure
- Opioid Addiction Response
- Pandemic and Infectious Disease
- Subsidence, Sinkholes
- Terrorism (Cyber Attacks)
- Tornado, Windstorm
- Transportation Accidents
- Utility Interruption
- Wildfire
- Winter Storm

Individual profiles and vulnerability assessments for these hazards are provided in Section 4.3. In the updated HMP, each hazard profile includes a new subsection that discusses the effect of climate change on vulnerability.

4.3 HAZARD PROFILES

The following sections profile and assess vulnerability for each hazard of concern. Profiles include a general hazard description and details on hazard location and extent, range of magnitude, past occurrence, and future occurrence. The vulnerability assessment describes risks to life, health and safety, general building stock, critical facilities, the economy, and the environment; it also describes who future change could affect vulnerability and how vulnerability has changed since the previous HMP update.

4.3.1 Dam Failure

4.3.1.1 Hazard Description

A dam is an artificial barrier that stores water, wastewater, or liquid-borne materials. Dam failure refers to the uncontrolled release of water and any associated wastes from a dam. The area downstream of a dam that would be flooded in the event of the dam's failure is called the inundation area. This area is generally much larger than the normal river or stream floodplain. When a dam experiences a complete structural breach, the failure can release a high-velocity wall of debris-filled water that rushes downstream, damaging or destroying whatever lies within the inundation area. A dam failure has the potential to adversely affect downstream areas and lives, as well as the delivery of essential utilities or flood control. If a dam failure is severe, a large amount of water can enter the downstream body of water and overflow the stream banks for miles.

This hazard often results from a combination of natural and human causes and can follow other hazards such as hurricanes, earthquakes, and landslides (PEMA, 2020). Most failures are due to structural, mechanical or hydraulic failures, but they can also result from one or a combination of the following reasons (FEMA, 2021b):

- Inadequate design criteria
- Malfunction of dam components
- Spillway damage or malfunction
- Seepage problems
- Embankment stability problems
- Damage from vandalism
- Improper operation

Dams typically fail when spillway capacity (the maximum rate of discharge for surplus water over or around a dam when the reservoir is full) is inadequate and excess flow overtops the dam or when internal erosion through the dam or its foundation occurs. Overtopping of a dam normally gives enough time for evacuation. Seepages in earthen dams usually develop gradually and, if detected early, can allow downstream residents anywhere from a few hours to a few days to evacuate.

4.3.1.2 Location and Extent

Table 4.3.1-1 lists 77 dams are present throughout Somerset County, 31 that are listed in the USACE National Inventory of Dams and the PA DEP dam database, an additional 46 listed in the PA DEP database, and one additional listed in the USACE inventory. Figure 4-3 shows the locations of the dams that are listed in the State's database.

The information in the table on type and purpose represents two of the common features by which dams are categorized. Dams are categorized in several ways (ASDSO, n.d.):

- By the functions the dam serves: flood control, human water supply, irrigation, livestock water supply, energy generation, containment of mine tailings, recreation, or pollution control
- By construction materials or methods: earth, rock, tailings from mining or milling, concrete, masonry, steel, timber, miscellaneous materials (plastic or rubber), and any combination of these materials

- By the slope or cross-section of the dam
- By the way the dam resists water pressure forces behind it
- By the means for controlling seepage.

Table 4.3.1-1 Dams in Somerset County

Class	USACE	Dam Name	Permittee	Stream	Condition	Type	Purpose
A-1	High	North Fork	Greater Johnstown Water Authority	North Fork Bens Creek	Poor	Earth	Water Supply
A-1	High	Quemahoning	Cambria Somerset Authority	Quemahoning Creek	Satisfactory	Earth	Water Supply
B-1	High	Dalton Run	Greater Johnstown Water Authority	Dalton Run	Poor	Earth	Water Supply
B-1	High	High Point Lake	Pa Fish & Boat Commission	Glade Run	Satisfactory	Earth	Recreation
B-1	High	Indian Lake	Indian Lake Borough	Calendars Run	Satisfactory	Earth	Recreation
B-1	High	Lake George	Seven Springs Mountain Resort, Inc.	Tr Kooser Run	Poor	Earth	Recreation
B-1	High	Lake Somerset	Pa Fish & Boat Commission	East Branch Coxes Creek	Poor	Earth	Recreation
B-1	High	Lake Stonycreek	Stonycreek Valley Development Corporation	Rhoads Creek	Satisfactory	Earth	Recreation
B-1	High	Laurel Hill Lake	DCNR	Laurel Hill Creek	Satisfactory	Earth	Recreation
B-4	Low	Deer Valley Lake	Ymca Of Greater Pittsburgh	Cove Run	Not Rated	Earth	Recreation
B-4	Low	Encke	Dr. Ted K. Encke	Tr Shaffers Run	Not Rated	Earth	Recreation
B-4	Low	Laurel Hill Creek	Borough Of Somerset	Laurel Hill Creek	Not Rated	Earth	Water Supply
C-1	High	Bigan	John R. Merschat	Sandy Run	Fair	Earth	Recreation
C-1	High	Clairton Lake	Anglers Club of Clairton	Harbaugh Run	Fair	Earth	Recreation
C-1	High	Kooser Run	DCNR	Kooser Run	Fair	Earth	Recreation
C-1	High	Lake Gloria	Christian Camps of Pittsburgh, Inc.	Beaverdam Run	Not Rated	Earth	Recreation
C-1	High	Mountain Lake	Mountain Lakes of Somerset LLC	West Branch Coxes Creek	Fair	Earth	Recreation
C-1	High	Penn Scenic View Pond	DCNR	Unt Laurel Hill Cr	Satisfactory	Earth	Recreation

Class	USACE	Dam Name	Permittee	Stream	Condition	Type	Purpose
C-2	High	Hidden Valley Pond No 1	Seven Springs Mountain Resort, Inc.	Gross Run	Fair	Earth	Irrigation; Flood Risk Reduction
C-2	High	Hidden Valley Pond No 2	Seven Springs Mountain Resort, Inc.	Gross Run	Fair	Earth	Irrigation; Flood Risk Reduction
C-2	High	Laurel Highlands Baptist Camp	The Buncher Company	Gross Run	Fair	Earth	Recreation
C-3	Significant	Bev	Joseph Bevilacqua	Tr Casselman River	Not Rated	Earth	Recreation
C-3	Significant	Lost Creek	Ymca Of Greater Pittsburgh	Lost Creek	Fair	Earth	Recreation
C-3	Significant	Mcdonaldton	Berlin Sportsman Association	TR Buffalo Creek	Fair	Earth	Recreation
C-3	Significant	Stoughton Lake	Stoughton Lake Homeowners Association	Beaverdam Creek	Satisfactory	Earth	Recreation
C-4	-	Baker	Margaret A. Baker	Tr Whites Creek	-	-	-
C-4	-	Basin No 1 - J T Mine Site	Shade Landfill, Inc.	Tr Oven Creek	-	-	-
C-4	-	Beaver No. 1	Seven Springs	Allen Creek	-	-	-
C-4	-	Beaver No. 2	Seven Springs	Allen Creek	-	-	-
C-4	-	Berwind	Berwind Corporation	Panther Run	-	-	-
C-4	-	Border Intake	Cambria Somerset Authority	Stony Creek	-	-	-
C-4	-	Boswell Reservoir	Boswell Borough Municipal Authority	Roaring Run	-	-	-
C-4	-	Cass	Seven Springs Farms, Inc.	Jones Mill Run	-	-	-
C-4	-	Ccc Pond	DCNR	Tubmill Creek	-	-	-
C-4	-	Ccc Pond River Run	DCNR	Tubmill Creek	-	-	-
C-4	-	Chestnut Hill Farm #1	William Bilyak	Allen Creek	-	-	-
C-4	-	Chestnut Hill Farm #2	William Bilyak	Allen Creek	-	-	-

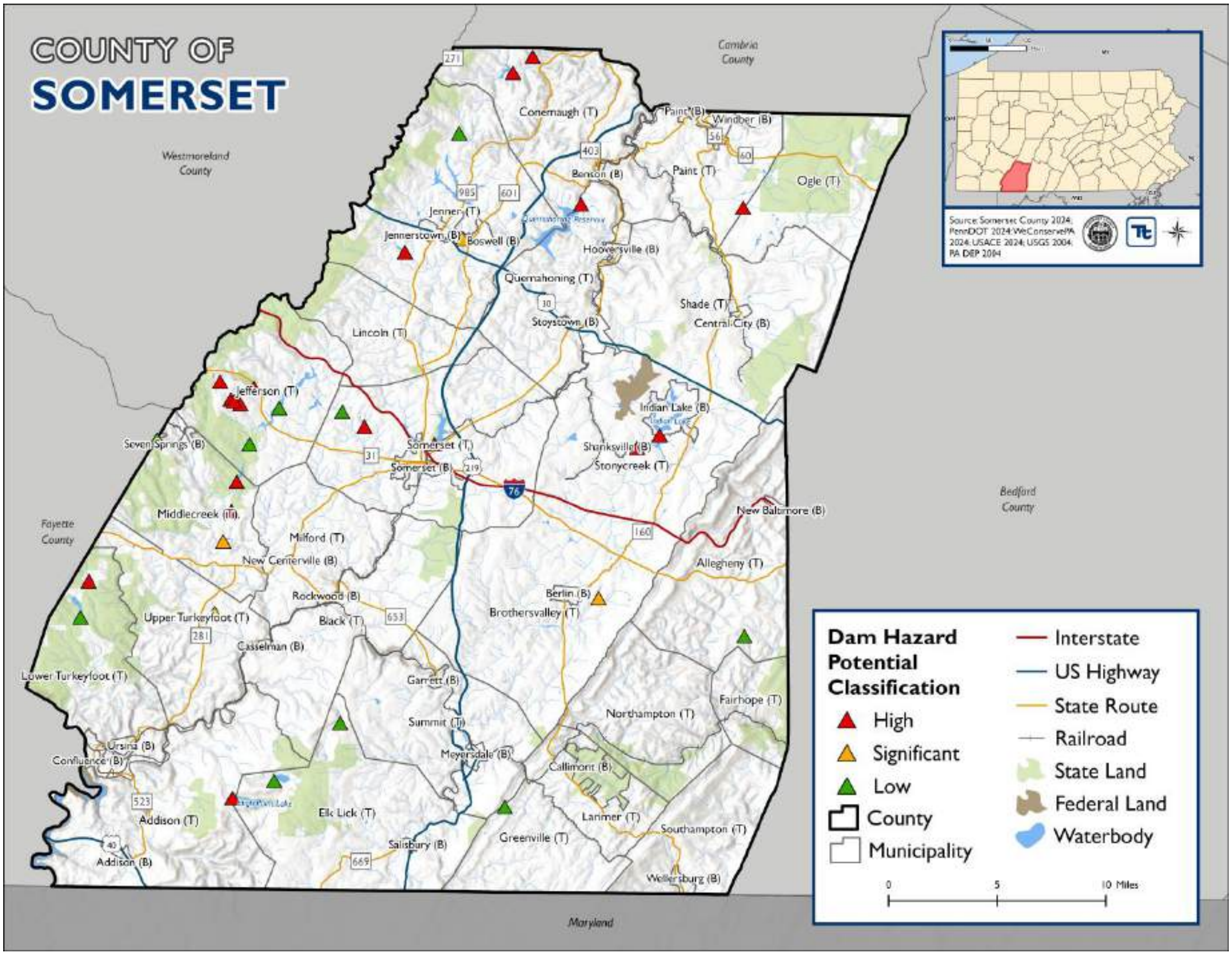
Class	USACE	Dam Name	Permittee	Stream	Condition	Type	Purpose
C-4	-	Chipmunk	Seven Springs	Blue Hole Creek	-	-	-
C-4	-	Christner	Mahlon Christner	Bigby Creek	-	-	-
C-4	Low	Conemaugh Township Impounding	Conemaugh Township Municipal Authority	South Fork Bens Creek	Not Rated	Earth	Recreation
C-4	-	Conemaugh Twp Secondary Reservoir	Conemaugh Township Municipal Authority	South Fork Bens Creek	-	-	-
C-4	Low	Cranberry Glade Lake	Pa Game Commission	Cranberry Glade Run	Not Rated	Earth	Recreation
C-4		Critchfield	John Critchfield	Elklick Creek			
C-4	Low	Crystal Lake	Meyersdale Municipal Authority	Stamm Run	Not Rated	Earth	Water Supply
C-4	-	Drake Run Intake	Confluence Borough Municipal Authority	Drake Run	-	-	-
C-4	-	Duck Pond	Seven Springs	Allen Creek	-	-	-
C-4	-	Fin N Feather No 2	Herman K. Dupree, Chairman	Allen Creek	-	-	-
C-4	-	Fin-Feather No. 1	Pittsburgh Plate Glass Company	Allen Creek	-	-	-
C-4	-	Harbeck Pond	Thomas L. Harbeck	Tr Clear Shade Creek	-	-	-
C-4	-	Hemlock	Seven Springs Farms, Inc.	Jones Mill Run	-	-	-
C-4	-	Hidden Valley Pond No 5	Seven Springs Mountain Resort, Inc.	Tr Kooser Run	-	-	-
C-4	Low	Isers Run Reservoir	Mount Davis Development Corporation	Isers Run	Not Rated	Earth	Recreation
C-4	-	Jennerstown Reservoir	Jennerstown Municipal Water Authority	Beaverdam Creek	-	-	-
C-4	-	Jones Mill	DCNR	Jones Mill Run	-	-	-
C-4	-	Kitty Hawk	Seven Springs	Blue Hole Creek	-	-	-

Class	USACE	Dam Name	Permittee	Stream	Condition	Type	Purpose
C-4	-	Laurel Falls Dam	Laurel Falls Association	Elklick Creek	-	-	-
C-4	Low	Laurel Ridge Lake	Russell Stern	Laurel Hill Creek	Not Rated	Earth	Recreation
C-4	-	Ligonier Highlands	Hutchinson Property Dev. Group	Tr Beaverdam Run	-	-	-
C-4	-	Lower	Meyersdale Municipal Authority	Stamm Run	-	-	-
C-4	-	Muskrat	Seven Springs	Allen Creek	-	-	-
C-4	-	Otter	Seven Springs	Allen Creek	-	-	-
C-4	-	Pine Lake	Gene And Leslie Shaffer	Clear Shade Creek	-	-	-
C-4	-	Piny Run	Windber Area Authority	Piney Run	-	-	-
C-4	-	Polakoski	Joseph J. Polakoski	Kimberly Run	-	-	-
C-4	-	Pumping Station Reservoir	Meyersdale Municipal Authority	Stamm Run	-	-	-
C-4	-	Rainbow	Seven Springs Farms, Inc.	Allen Creek	-	-	-
C-4	-	Sand Springs Reservoir	Meyersdale Municipal Authority	Sand Spring Run	-	-	-
C-4	-	Shaffer	Norman & Carol Shaffer	Roaring Run	-	-	-
C-4	-	Shirley	Jonathan & Jessie C. Shirley	Flaugherty Creek	-	-	-
C-4	-	Spruce Creek	Jenner Township Municipal Water Authority	Spruce Creek	-	-	-
C-4	-	Spruce Run	DCNR	Spruce Run	-	-	-
C-4	-	Stoughton Forebay	-	Tr Beaverdam Run	-	-	-
C-4	-	T Rich	T. Rich, Inc.	Tr Stony Creek	-	-	-
C-4	-	Treatment Pond	Seven Springs Municipal Authority	Allen Creek	-	-	-
C-4	-	Turtle	Seven Springs	Allen Creek	-	-	-

Class	USACE	Dam Name	Permittee	Stream	Condition	Type	Purpose
C-4	Low	Westmoreland-Fayette Council Bsa	Boy Scouts Of America Westmoreland-Fayette Council	Tr Laurel Hill Creek	Not Rated	Earth	Recreation
C-4	-	Whipkey	Laurel Valley Land Company	Laurel Hill Creek	-	-	-
	Low	Lake Tahoe	Seven Springs	Trout Run	Not Rated	Earth	Recreation

Source: PADEP 2025, USACE 2025

Figure 4.3.1-1 Dams within Somerset County



4.3.1.3 Range of Magnitude

The magnitude of a dam failure event is indicated by the dam's classification. Dams are classified according to the downstream damage that would result if the structure were to fail. Dam hazard rating systems are based on the potential consequences of a dam failure; they do not consider the probability of a failure occurring. Therefore, the classification has no relationship to a dam's condition, structural integrity, operational status, or flood storage capability. FEMA, USACE, and PA DEP have all developed classification systems for the dam failure hazard.

FEMA Dam Classifications

FEMA classifies three levels of dams based on the potential loss of human life or property destruction to downstream areas if that dam should fail (FEMA, 2004):

- Low hazard potential dams—Failure or mis-operation would result in no probable loss of human life and low economic or environmental losses. Losses are principally limited to the owner's property.
- Significant hazard potential dams—Failure or mis-operation would result in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or other impacts. These dams are often located in predominantly rural or agricultural areas.

- High hazard potential dams—Failure or mis-operation would probably cause loss of human life.

USACE Dam Classifications

Table 4.3.1-2 lists USACE-developed classifications of hazard potentials of dam failures, based only on potential consequences of a dam failure. This classification does not take into account the probability of failure.

Table 4.3.1-2. U.S. Army Corps of Engineers Hazard Potential Classification

Hazard Category[1]	Direct Loss of Life[2]	Lifeline Losses[3]	Property Losses[4]	Environmental Losses[5]
Low	None (rural location, no permanent structures for human habitation)	No disruption of services (cosmetic or rapidly repairable damage)	Private agricultural lands, equipment, and isolated buildings	Minimal incremental damage
Significant	Rural location, only transient or day-use facilities	Disruption of essential facilities and access	Major public and private facilities	Major mitigation required
High	Certain (one or more) extensive residential, commercial, or industrial development	Disruption of essential facilities and access	Extensive public and private facilities	Extensive mitigation cost or impossible to mitigate

- *Categories are assigned to overall projects, not individual structures at a project.*
- *Loss-of-life potential is based on inundation mapping of area downstream of the project. Analysis of loss-of-life potential should take into account the population at risk, time of flood wave travel, and warning time.*
- *Lifeline losses include indirect threats to life caused by the interruption of lifeline services from project failure or operational disruption; for example, loss of critical medical facilities or access to them.*
- *Property losses include damage to project facilities and downstream property and indirect impact from loss of project services, such as impact from loss of a dam and navigation pool, or impact from loss of water or power supply.*
- *Environmental impact downstream caused by the incremental flood wave produced by the project failure, beyond what would normally be expected for the magnitude flood event under which the failure occurs.*

Source: USACE 2016

Regulatory Oversight of Dams

Potential for catastrophic flooding caused by dam failures led to enactment of the National Dam Safety Act (Public Law 92-367), which for 30 years has protected Americans from dam failures. The National Dam Safety Program (NDSP) is a partnership among states, federal agencies, and other stakeholders that encourages individual and community responsibility for dam safety. Under FEMA's leadership, state assistance funds have allowed all participating states to improve their programs through increased inspections, emergency action planning, and purchases of needed equipment. FEMA has also expanded existing and initiated new training programs. Grant assistance from FEMA provides support for improvement of dam safety programs that regulate most dams in the United States (FEMA, 2023)

Pennsylvania Department of Environmental Protection

The Pennsylvania Code classifies dams and reservoirs based on size and on hazard potential in the event of failure. Size categories are determined by either reservoir storage volume or dam structure height, whichever results in the higher category, as indicted in Table 4.3.1-3. Hazard potential categories are determined by either loss of life or economic loss, whichever results in the higher category, as indicated in Table 4.3.1-3.

The State classifies dams on a scale from one (highest hazard) to five (lowest hazard)—hazards in Categories 1 and 2 are rated high hazard. Hazard Potential Category 1 dams are those whose failure could result in significant loss of life, excessive economic losses, and significant public inconvenience. Hazard Potential Category 2 dams are those whose failure could result in the loss of a few lives, appreciable property damage, and short-duration public inconvenience (Commonwealth of Pennsylvania, 1980).

Table 4.3.1-3 Dam Classification Definitions

Size Category		
Category	Impoundment Storage (Acre-feet)	Dam Height (Feet)
A	Equal to or greater than 50,000	Equal to or greater than 100
B	Less than 50,000 but greater than 1,000	Less than 100 but greater than 40
C	Equal to or less than 1,000	Equal to or less than 40
Hazard Potential Category		
Category	**Population at Risk**	**Economic Loss**
1	Substantial (Numerous homes or small businesses or a large business or school)	Excessive, such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience
2	Few (A small number of homes or small businesses)	Appreciable, such as limited residential, commercial, or agricultural damage, or moderate public inconvenience
3	None expected (no permanent structures for human habitation or employment)	Significant damage to private or public property and short-duration public inconvenience such as damage to storage facilities or loss of critical stream crossings
4	None expected (no permanent structures for human habitation or employment)	Minimal damage to private or public property and no significant public inconvenience

Source: Commonwealth of Pennsylvania 2011.

U.S. Army Corps of Engineers Dam Safety Program

The U.S. Army Corps of Engineers (USACE) is responsible for safety inspections of some federal and non-federal dams in the United States that meet the size and storage limitations specified in the National Dam Safety Act. USACE has inventoried dams and has surveyed each state's and federal agency's capabilities, practices, and regulations regarding the design, construction, operation, and maintenance of the dams. USACE has also developed guidelines for inspection and evaluation of dam safety (USACE, n.d.)The USACE National Inventory of Dams (NID) provides the most recent dates of inspection of the following Somerset County high-hazard dams:

Table 4.3.1-4. High Hazard Dams in Somerset County

Name	Last Inspected
Lake Somerset	March 12, 2021
Quemahoning	September 11, 2020
Mountain Lake	October 2, 2020
Laurel Highlands Baptist Camp	September 25, 2020
Clairton Lake	July 20, 2018
Bigan	October 9, 2020
Hidden Valley Pond No. 2	March 25, 2021
Hidden Valley Pond No. 1	March 25, 2021
Penn Scenic View Pong	August 26, 2020

Name	Last Inspected
High Point Lake	March 19, 2021
Laurel Hill Lake	August 26, 2020
Kooser Run	March 25, 2021
Dalton Run	March 25, 2021
North Fork	March 25, 2021
Lake George	March 12, 2021
Lake Gloria	November 7, 2018
Lake Stonycreek	September 8, 2020
Indian Lake	December 15, 2020

Source: USACE 2025

The Federal Energy Regulatory Commission (FERC)

The Federal Energy Regulatory Commission (FERC) has the largest dam safety program in the United States. FERC cooperates with a large number of federal and state agencies to ensure and promote dam safety and, more recently, homeland security. FERC staff inspect hydroelectric projects on an unscheduled basis to investigate the following (FERC, 2023):

Potential dam safety problems
Complaints about constructing and operating a project
Safety concerns related to natural disasters
Issues concerning compliance with terms and conditions of a license

Every 5 years, an independent consulting engineer, approved by FERC, must inspect and evaluate projects with dams higher than 32.8 feet (10 meters) or with total storage capacity of more than 2,000 acre-feet (FERC, 2023).

FERC monitors and evaluates seismic research in geographic areas where seismic activity is a concern. This information is applied to investigate and analyze structures of hydroelectric projects within these areas. FERC staff also evaluates the effects of potential and actual large floods on the safety of dams. FERC staff visit dams and licensed projects during and after floods, assess the extent of damage, and direct any studies or remedial measures the licensee must undertake. FERC's *Engineering Guidelines for the Evaluation of Hydropower Projects* guides FERC engineering staff and licensees in evaluations of dam safety. The publication is frequently revised to reflect current information and methodologies (FERC, 2023).

FERC requires licensees to prepare EAPs and conducts training sessions on developing and testing these plans. The plans outline an early warning system in the event of an actual or potential sudden release of water from a dam failure. The plans include operational procedures that may be implemented during regulatory measures, such as reducing reservoir levels and downstream flows as well as procedures for notifying affected residents and agencies responsible for emergency management. These plans are frequently updated and tested to ensure that all applicable parties are informed of the proper procedures in emergencies (FERC, 2023).

Somerset County EAPs

The EAPs associated with the Somerset County high-hazard dams provide information concerning the estimated number of homes and residents vulnerable to a dam failure. The county considers the North Fork Dam, located in Conemaugh Township, to be the most significant due to the potential impact of a failure from this dam. The inundation area resulting from a sudden dam failure is bordered on the north by Dornick Point in West Taylor Township, on the east by the City of Johnstown, and on the south and west by the North Fork Country Club. This also includes several structures along the South Fork of Benscreek, Stony Creek, and the Conemaugh River from the North Fork Country Club to the City of Johnstown. The area subject to inundation extends from the dam to the Conemaugh Gorge downstream of Johnstown, along the North Fork of the Benscreek to Benscreek, to Stony Creek, and to the Conemaugh River, and varies from 200 to 2500 feet in total width. The number of vulnerable structures includes 7,800 homes, 6 schools, one hospital, 630 businesses, 30 churches, 12 miles of rail line, and one railroad switching yard. The number of vulnerable residents is approximately 12,200. (GJWA 2018).

In 2018 the Commonwealth of Pennsylvania, Department of Environmental Protection and Greater Johnstown Water Authority submitted a Consent Order and Agreement and determined that the North Fork Dam's current combined spillway capacity and available storage volume in the reservoir would accommodate only for 31 % of the Probable Maximum Flood ("PMF") peak inflow before North Fork Dam would be overtopped and endangered, according to original computations made by the Authority's expert."

In addition to dams located within the county, Somerset County considers the "high-hazard" Youghiogheny Dam, located in Fayette County, to be significant for potential impact. Youghiogheny Dam is located on the southwest border of Somerset County and Fayette County on the Youghiogheny River Lake. According to the USACE, the lake covers 3,915 acres and reaches roughly 16 river miles long.

4.3.1.4 Past Occurrence

There have been no FEMA disaster declarations associated with dam failures in Somerset County. However, the County Emergency Management Agency has activated dam EAPs on two occasions:

Table 4.3.1-5. Dam Failures in Somerset County

Date	Municipality	Dam	Event
September 3, 2018	Elk Lick (T)	High Point Lake Dam	Reports of a loud crash from within the dam, and a short time later, heavy flows observed discharging from the dam's principal spillway outlet pipe. Event was closed on 09/26/2018.
June 12, 2014	Ogle (T)	Pine Lake Dam	Due to adverse/severe weather, the dam was thought to be in jeopardy of failure. Water did escape through areas in the dam. The event was closed on 06/13/2014.

Source: (McDEVITT, 2018) (The Daily American, 2014)

One of the worst dam failures to occur in the U.S. took place in Johnstown, PA, (Cambria County) in 1889 and claimed 2,209 lives (Association of State Dame Safety Officials [ASDSO] 2015). Another dam failure took place in Austin, PA, (Potter County) in 1911 and claimed 78 lives (ASDSO 2015). To date, there have not been any impactful dam failures in Somerset County's recent history.

4.3.1.5 Future Occurrence

Minor dam failures occur frequently; however, they often have minimal impact and cause little or no harm to the general population. Significant dam failures occur much less frequently. The probability of a significant dam failure in Somerset County is unlikely to occur. Dam failures are often a secondary effect, resulting from another hazard, such as heavy rainfall from a hurricane or tropical storm.

Dams assigned to the significant-hazard potential classification are those dams where failure or incorrect operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be in areas with population and significant infrastructure. A high-hazard potential classification assigned to a dam is based on when failure or incorrect operation has a great possibility of causing loss of human life.

Given certain circumstances, a dam failure can occur at any time. However, the probability of future occurrence can be reduced through proper design, construction, and maintenance measures.

Effects of Climate Change

Dam failures are often a secondary effect, resulting from another hazard, such as heavy rainfall from a hurricane or tropical storm. Dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs (flow over time). Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hydrograph changes, it is conceivable that the structure can lose some or all its designed margin of safety. Loss of designed margins of safety may cause floodwater to overtop the dam more readily or create unintended loads. Such situations could lead to a dam failure. Therefore, dam characteristics and climate change trends influence a structure's potential to fail.

Since dam overtopping is often caused by excessive rainfall, it is appropriate to relate the future vulnerability of dams directly with the potential for increased rainfall in Somerset County. Somerset County is expected to experience increased precipitation due to climate change, which may likewise increase the likelihood for a dam failure to occur. In Pennsylvania, precipitation is expected to increase year-round, particularly in the winter. The eastern half of the Commonwealth, which contains Somerset County, is projected to experience 10 to 12 percent higher mean annual precipitation between 2041 and 2070, compared to historical averages from 1971 to 2000 (PEMA 2018). The west central area, including Somerset County, is expected to have the highest amounts of precipitation in the Commonwealth.

Additionally, future climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. The failure probability of low, significant, and under-designed high hazard dams may increase.

4.3.1.6 Vulnerability Assessment

To assess Somerset County's risk to dam failure, a quantitative review was implemented referencing only available dam data including Emergency Action Plans for both the North Fork Dam and Dalton Dam provided by The Greater Johnstown Water Authority and dam inundation areas for the High Point Lake Dam, the Penn Scenic PMF Dam, the Quemahoning Reservoir Dam, the Youghiogheny River Dam (Figure 4.3.2-2).

Figure 4.3.1-2 Inundation Risk Area Yough Lake Dam, Penn Scenic View Dam, Quemahoning Reservoir Dam and High Point Lake Dam

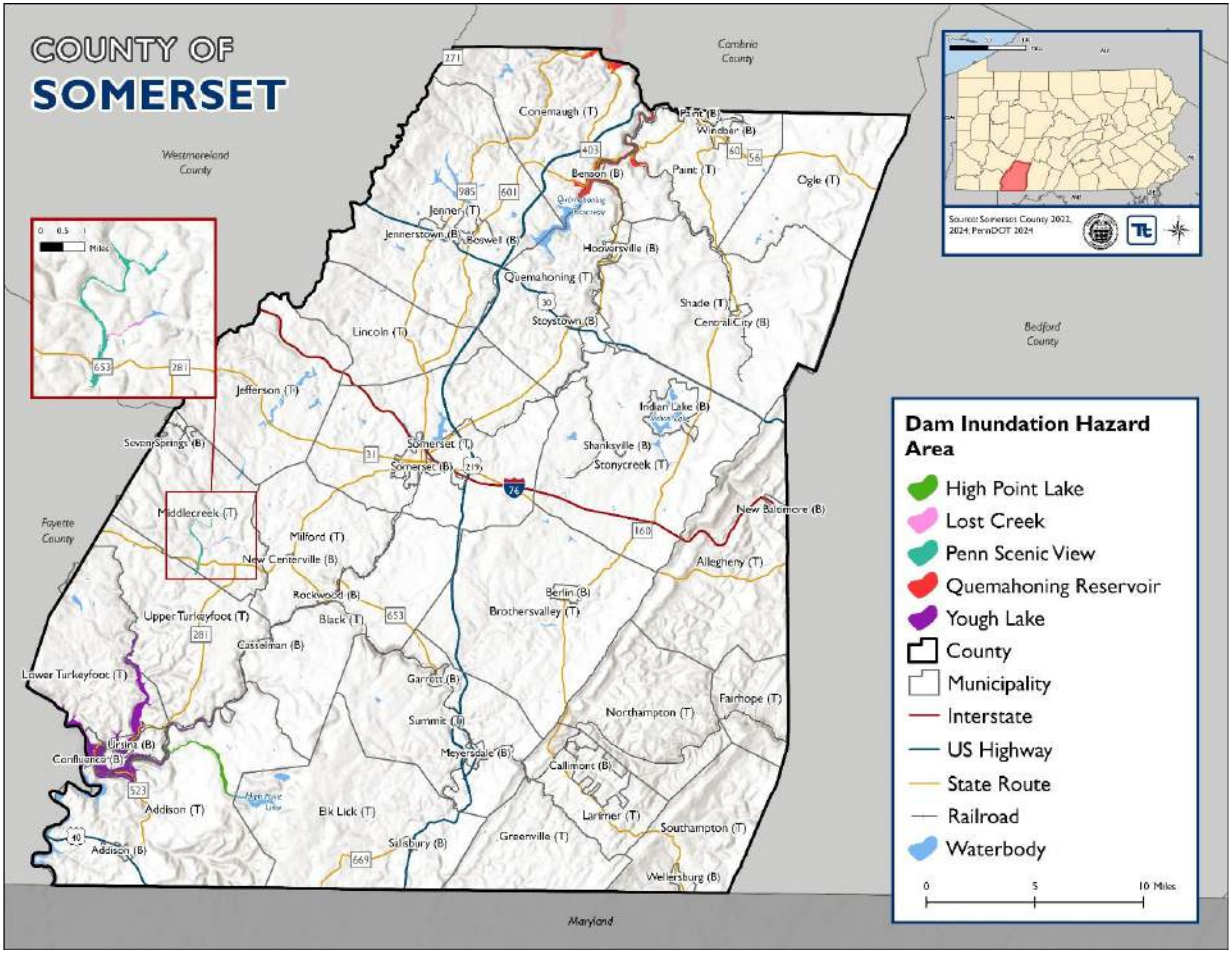
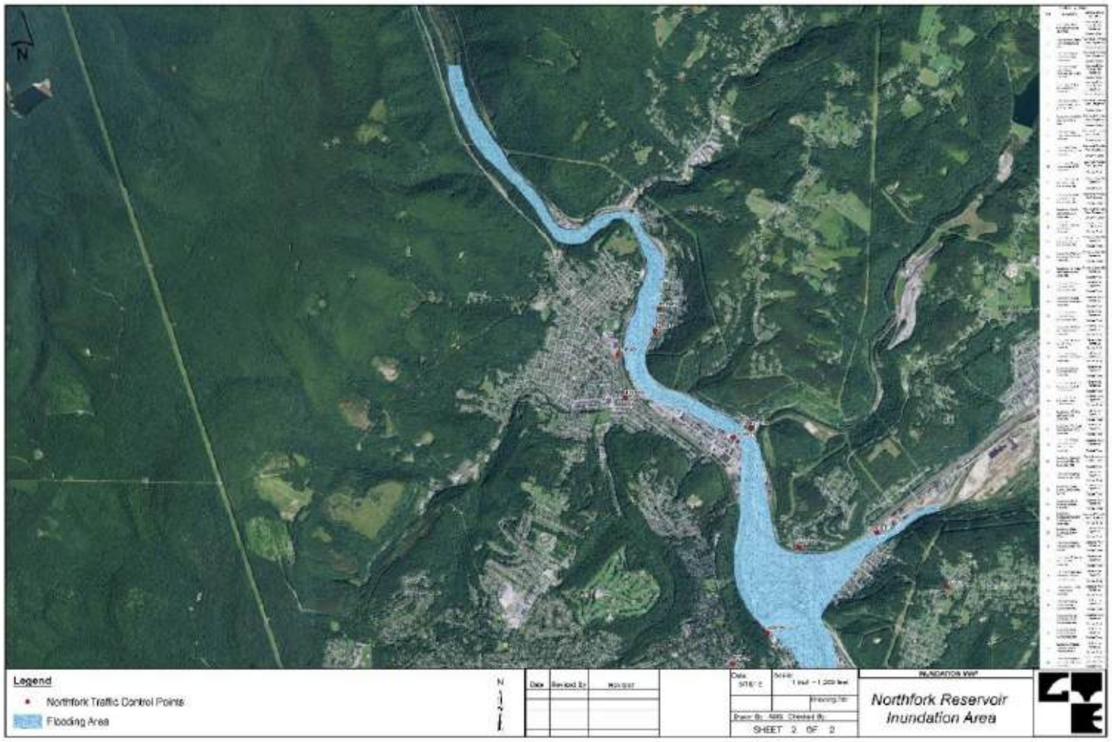
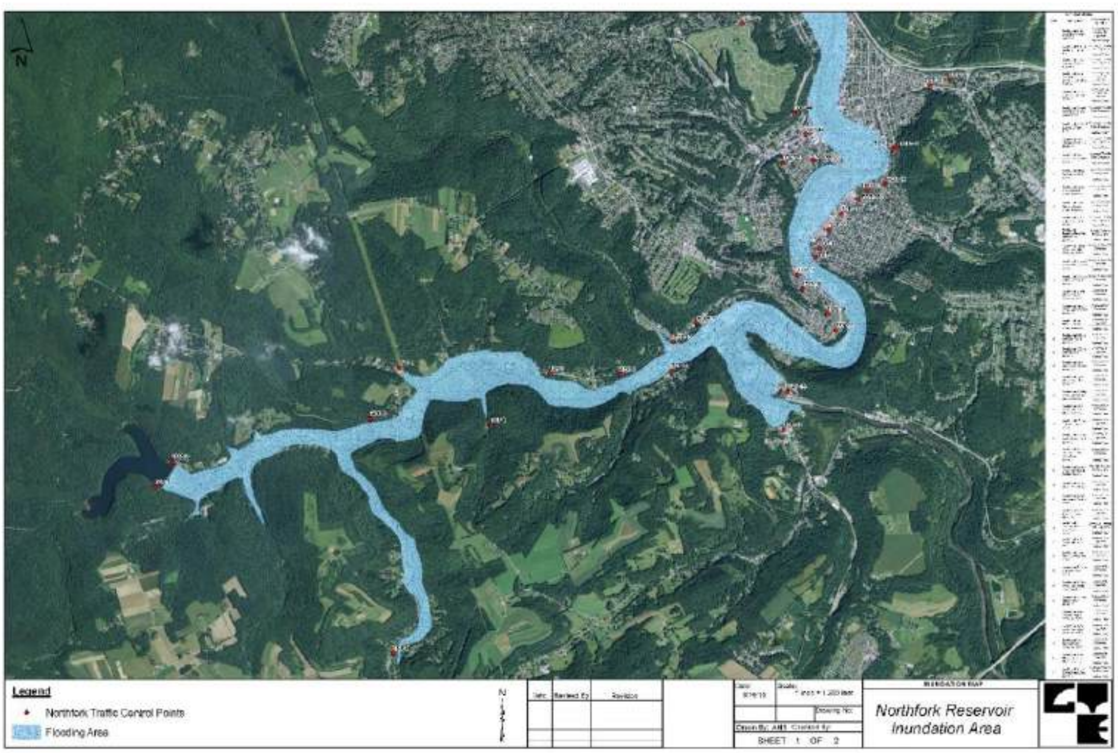


Figure 4.3.1-3 Inundation Risk Area North Fork





Source: GJWA,2015

Impact on Life, Health, and Safety

The entire population residing within a dam failure inundation zone is considered exposed and vulnerable. Of the population exposed, the economically disadvantaged and the population over the age of 65 are the most vulnerable. Economically disadvantaged populations are more vulnerable because they may be unable to evacuate their homes due to a lack of transportation, lack of a safe place to which to evacuate, or lack of financial resources (e.g., cannot afford temporary lodging). The population over the age of 65 is also highly vulnerable because they are more likely to seek or need medical attention that may not be available because of isolation during a flood event, and they may have more difficulty evacuating.

Other than the population in the dam failure inundation zone, the safety of the first responders on-scene is also at risk. First responders would be responsible for traffic control and responding to transportation accidents. There would be a higher-than-normal call volume and demand of first responders during a dam failure. Continuity of operations, including continued delivery of services, may be impeded, and additional personnel would potentially be needed due to the lack of fire and police personnel in the County.

Dam failure events are frequently associated with other natural hazard events such as earthquakes, landslides, or severe weather, which limits their predictability and compounds the hazard. The shaking associated with earthquakes may weaken the structure of a dam, particularly earthen dams, causing them to fail. Landslides can directly impact a dam, causing damage or failure. Likewise, landslides of the ground around a dam may weaken the ground on which the dam exists, causing the potential for the dam structure to fail. Landslides into the water being impounded by the dam can cause a wave to travel the length of the dam's impoundment area, ultimately crashing on the dam itself. Severe weather can result in large quantities of rain upstream of the dam that will ultimately be impounded by the dam, which could raise water levels behind the dam, resulting in overtopping of the dam and/or flooding of properties upstream of the dam itself. Populations without adequate warning of the event are highly vulnerable to this hazard.

An exposure analysis assessed five flood inundation areas within the county. Of the 50 participating jurisdictions in the county, 8 have persons living in a flood inundation area. The number of persons exposed to each jurisdiction is shown in Table 4.3.1-6.

Table 4.3.1-6. Total Population Located in Dam Inundation Hazard Areas

Jurisdiction *(B) = Borough* *(T) = Township*	Total Population (2022 ACS 5-Year Estimates)	Population in the Lost Creek (YMCA) Dam Hazard Area		Population in the High Point Lake (PFBC) Dam Hazard Area		Population in the Quemahoning Reservior (CSA) Dam Hazard Area		Population in the Penn Scenic (DCNR) Dam Hazard Area		Population in the Yough Lake (USACE) Dam Hazard Area		Population in the Aggregated Dam Inundation Hazard Area	
		Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total
Addison (B)	272	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Addison (T)	945	0	0.0%	0	0.0%	0	0.0%	0	0.0%	35	3.7%	35	3.7%
Allegheny (T)	669	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Benson (B)	139	0	0.0%	0	0.0%	119	85.6%	0	0.0%	0	0.0%	119	85.6%
Berlin (B)	2,297	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Black (T)	868	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Boswell (B)	1,411	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Brothersvalley (T)	2,002	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Callimont (B)	52	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Casselman (B)	64	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Central City (B)	1,045	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Conemaugh (T)	6,759	0	0.0%	0	0.0%	593	8.8%	0	0.0%	0	0.0%	593	8.8%
Confluence (B)	596	0	0.0%	0	0.0%	0	0.0%	0	0.0%	592	99.3%	592	99.3%
Elk Lick (T)	2,423	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Fairhope (T)	85	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Garrett (B)	409	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Greenville (T)	865	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Hooversville (B)	722	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Indian Lake (B)	314	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Jefferson (T)	1,313	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Jenner (T)	3,713	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Jennerstown (B)	1,182	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Larimer (T)	536	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lincoln (T)	1,305	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lower Turkeyfoot (T)	425	0	0.0%	2	0.5%	0	0.0%	0	0.0%	118	27.8%	121	28.5%
Meyersdale (B)	2,118	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Middlecreek (T)	644	0	0.0%	0	0.0%	0	0.0%	6	0.9%	0	0.0%	6	0.9%
Milford (T)	1,428	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
New Baltimore (B)	147	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Jurisdiction *(B) = Borough* *(T) = Township*	Total Population (2022 ACS 5-Year Estimates)	Population in the Lost Creek (YMCA) Dam Hazard Area		Population in the High Point Lake (PFBC) Dam Hazard Area		Population in the Quemahoning Reservoir (CSA) Dam Hazard Area		Population in the Penn Scenic (DCNR) Dam Hazard Area		Population in the Yough Lake (USACE) Dam Hazard Area		Population in the Aggregated Dam Inundation Hazard Area	
		Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total
New Centerville (B)	118	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Northampton (T)	282	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ogle (T)	493	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Paint (B)	1,122	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Paint (T)	3,038	0	0.0%	0	0.0%	77	2.5%	0	0.0%	0	0.0%	77	2.5%
Quemahoning (T)	1,661	0	0.0%	0	0.0%	26	1.6%	0	0.0%	0	0.0%	26	1.6%
Rockwood (B)	816	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salisbury (B)	619	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seven Springs (B)	7	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shade (T)	2,342	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shanksville (B)	166	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Somerset (B)	6,030	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Somerset (T)	11,775	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Southampton (T)	628	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Stonycreek (T)	2,271	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Stoystown (B)	410	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Summit (T)	1,911	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Upper Turkeyfoot (T)	1,073	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ursina (B)	214	0	0.0%	0	0.0%	0	0.0%	0	0.0%	205	95.8%	205	95.8%
Wellersburg (B)	148	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Windber (B)	3,930	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Somerset County (Total)	**73,802**	**0**	**0.0%**	**2**	**0.0%**	**815**	**1.1%**	**6**	**0.0%**	**950**	**1.3%**	**1,774**	**2.4%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022
Note: % = Percent; the dam inundation areas evaluated in this analysis are: High Point Lake, Lost Creek, Penn Scenic View, Quemahoning Reservoir and Yough Lake.

The data indicates North Fork Dam could affect the most people (12,200 persons) in a major breach. Evacuation plans are pertinent to protect the population of those communities. Additionally, maintenance and enhancement of infrastructure is important to reduce the risk of downstream flooding and impact on structures within the affected communities. Potential causes of downstream flooding include extreme storms, spillway erosion, and slope failure. The results of an extreme storm could cause large inflows causes the lake level to rise and discharge over the surface. In the event of slope failure, the embankment of the dam could be compromised causing a breach. During a spillway erosion, vegetation, soil and rock will be displaced and potentially cause a scour hole as well as restrict access to dam operations. Evacuation plans are pertinent to protect the population of those communities. Additionally, maintenance and enhancement of infrastructure is important to reduce the risk of downstream flooding and impact on structures within the affected communities.

Impact on General Building Stock

All buildings and infrastructure located in the dam failure inundation zone are considered exposed and vulnerable. Property located closest to the dam inundation area has the greatest potential to experience the largest, most destructive surge of water. All transportation infrastructure in the dam failure inundation zone is vulnerable to damage and potentially cutting off evacuation routes, limiting emergency access, and creating isolation issues. Utilities such as overhead power lines, cable lines, and phone lines could also be vulnerable. Loss of these utilities could create additional isolation issues for the inundation areas.

Table 4.3.1-7 shows the number of structures exposed to the aggregated dam inundation hazard area and the High Point Lake (PFBC) Dam, the Quemahoning Reservoir (CSA) Dam, and the Yough Lake (USACE) Dam inundation areas separately and the buildings' total replacement cost value at a municipal and county level. The Penn Scenic View (DCNR) Dam had no buildings in the dam inundation area. Table 4.3.1-8 shows the number of structures exposed and building type for the North Fork Dam and Dalton Dam inundation areas. Municipal level data were not provided in the EAPs for the North Fork Dam or the Dalton Dam. The total number of buildings exposed may include areas outside of Somerset County.

Table 4.3.1-7 Total Number of Buildings and Replacement Cost Value of Buildings Located in the Aggregated Dam Inundation Hazard Areas and the High Point Lake (PFBC) Dam, the Quemahoning Reservoir (CSA) Dam, and the Yough Lake (USACE) Inundation Hazard Areas

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Dam Inundation Hazard Area				Buildings in the High Point Lake (PFBC) Dam Hazard Area				Buildings in the Quemahoning Reservoir (CSA) Dam Hazard Area				Buildings in the Penn Scenic (DCNR) Dam Hazard Area				Buildings in the Yough Lake (USACE) Dam Hazard Area			
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,464.86	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Addison (T)	2,429	$1,136,703,436.50	108	4.4%	$42,561,078	3.7%	2	0.1%	$491,558	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	106	4.4%	$42,069,520	3.7%
Allegheny (T)	1,509	$781,809,471.60	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Benson (B)	173	$89,274,721.13	139	80.3%	$70,123,747	78.5%	0	0.0%	$0	0.0%	139	80.3%	$70,123,747	78.5%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Berlin (B)	1,392	$895,269,283.80	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Black (T)	1,515	$834,474,737.40	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Boswell (B)	826	$474,400,293.60	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Brothersvalley (T)	3,330	$2,064,465,986.30	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Callimont (B)	55	$30,930,872.60	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Casselman (B)	119	$41,086,889.74	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Dam Inundation Hazard Area				Buildings in the High Point Lake (PFBC) Dam Hazard Area				Buildings in the Quemahoning Reservior (CSA) Dam Hazard Area				Buildings in the Penn Scenic (DCNR) Dam Hazard Area				Buildings in the Yough Lake (USACE) Dam Hazard Area			
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Central City (B)	912	$442,954,503.80	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Conemaugh (T)	6,338	$3,880,986,714.00	540	8.5%	$314,292,357	8.1%	0	0.0%	$0	0.0%	540	8.5%	$314,292,357	8.1%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Confluence (B)	753	$379,399,641.10	744	98.8%	$369,855,467	97.5%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	744	98.8%	$369,855,467	97.5%
Elk Lick (T)	3,334	$1,853,364,018.90	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Fairhope (T)	304	$114,953,743.89	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Garrett (B)	377	$163,199,307.74	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Greenville (T)	1,145	$619,817,620.40	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Hooversville (B)	581	$284,259,840.10	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Indian Lake (B)	1,148	$775,063,496.70	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Jefferson (T)	3,395	$1,763,883,579.20	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Jenner (T)	5,016	$2,687,221,806.00	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Dam Inundation Hazard Area			Buildings in the High Point Lake (PFBC) Dam Hazard Area				Buildings in the Quemahoning Reservior (CSA) Dam Hazard Area				Buildings in the Penn Scenic (DCNR) Dam Hazard Area				Buildings in the Yough Lake (USACE) Dam Hazard Area				
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Jennerstown (B)	641	$404,635,410.30	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Larimer (T)	839	$411,045,801.50	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Lincoln (T)	1,981	$1,209,799,392.90	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Lower Turkeyfoot (T)	1,168	$528,650,209.20	329	28.2%	$184,276,115	34.9%	12	1.0%	$4,405,661	0.8%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	317	27.1%	$179,870,455	34.0%
Meyersdale (B)	1,529	$888,796,372.60	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Middlecreek (T)	2,860	$1,361,478,007.40	35	1.2%	$14,912,790	1.1%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	35	1.2%	$14,912,790	1.1%	0	0.0%	$0	0.0%
Milford (T)	2,434	$1,414,705,760.60	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
New Baltimore (B)	174	$77,842,527.28	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
New Centerville (B)	171	$104,468,378.45	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Northampton (T)	763	$355,524,702.80	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Ogle (T)	687	$335,973,192.00	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Dam Inundation Hazard Area			Buildings in the High Point Lake (PFBC) Dam Hazard Area				Buildings in the Quemahoning Reservior (CSA) Dam Hazard Area				Buildings in the Penn Scenic (DCNR) Dam Hazard Area				Buildings in the Yough Lake (USACE) Dam Hazard Area				
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Paint (B)	553	$294,837,289.50	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Paint (T)	3,474	$2,072,241,491.80	79	2.3%	$37,872,551	1.8%	0	0.0%	$0	0.0%	79	2.3%	$37,872,551	1.8%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Quemahoning (T)	2,464	$1,472,027,871.20	29	1.2%	$14,290,773	1.0%	0	0.0%	$0	0.0%	29	1.2%	$14,290,773	1.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Rockwood (B)	619	$349,683,801.70	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Salisbury (B)	639	$345,399,684.60	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Seven Springs (B)	82	$139,517,398.52	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Shade (T)	3,461	$1,759,474,603.70	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Shanksville (B)	178	$97,994,102.94	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Somerset (B)	3,433	$3,277,246,043.00	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Somerset (T)	8,899	$6,489,508,286.00	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Southampton (T)	1,001	$469,896,734.20	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Dam Inundation Hazard Area				Buildings in the High Point Lake (PFBC) Dam Hazard Area				Buildings in the Quemahoning Reservior (CSA) Dam Hazard Area				Buildings in the Penn Scenic (DCNR) Dam Hazard Area				Buildings in the Yough Lake (USACE) Dam Hazard Area			
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Stonycreek (T)	3,547	$1,868,134,699.00	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Stoystown (B)	266	$142,664,600.10	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Summit (T)	3,085	$1,765,406,355.20	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Upper Turkeyfoot (T)	2,126	$1,035,009,396.40	1	<0.1%	$63,046	<0.1%	0	<0.1%	$0	<0.1%	0	<0.1%	$0	<0.1%	0	<0.1%	$0	<0.1%	1	<0.1%	$63,046	<0.1%
Ursina (B)	279	$118,221,649.18	256	91.8%	$110,954,569	93.9%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	256	91.8%	$110,954,569	93.9%
Wellersburg (B)	261	$117,923,547.74	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Windber (B)	2,673	$1,756,688,270.40	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**2,260**	**2.7%**	**$1,159,202,492**	**2.3%**	**14**	**0.0%**	**$4,897,218**	**0.0%**	**787**	**0.9%**	**$436,579,427**	**0.9%**	**35**	**0.0%**	**$14,912,790**	**0.0%**	**1,424**	**1.7%**	**$702,813,056**	**1.4%**

Source: *Somerset County 2024; USACE 2022; RS Means 2024*
Note: *% = Percent*

Table 4.3.1-8 Total Number of Buildings and Facility Types Located in the North Fork Dam and Dalton Dam Inundation Areas.

Facility Type	North Fork (GJWA) Dam	Dalton (GJWA) Dam
Residential Homes	7,800	200
Schools	6	1
Hospitals	1	0
Businesses	600	10
Churches	30	1
Total	**8,437**	**212**

Source: GJWA, 2015

Dam failure can cause severe downstream flooding and may transport large volumes of sediment and debris, depending on the magnitude of the event. Widespread damage to buildings and infrastructure affected by an event would result in large costs to repair these locations. In addition to physical damage costs, businesses can be closed while flood waters retreat, and utilities are returned to a functioning state.

Impact on Critical Facilities

Dam failures may also impact critical facilities and infrastructure located in the downstream inundation zone. Consequentially, dam failure can cut evacuation routes, limit emergency access, and/or create isolation issues. Dam failure can cause severe downstream flooding and may transport large volumes of sediment and debris, depending on the magnitude of the event. Widespread damage to buildings and infrastructure affected by an event would result in large costs to repair these locations. In addition to physical damage costs, businesses can be closed while floodwaters retreat and utilities are returned to a functioning state. Further, utilities such as overhead power lines, cable lines, and phone lines could also be vulnerable. Loss of these utilities could create additional isolation issues for the inundation areas.

There are 713 critical facilities in Somerset County. As determined by the GIS analysis of the High Point Lake (PFBC) Dam, the Penn Scenic View (DCNR) Dam, the Quemahoning Reservoir (CSA) Dam, and the Yough Lake (USACE) Dam inundation areas, the following five jurisdictions have critical facilitates and lifelines exposed to the dam inundation areas:

- Addison Township: 2 Lifelines
- Benson Borough: 2 Lifelines
- Conemaugh Township: 9 Lifelines
- Confluence Borough: 9 Lifelines
- Lower Turkeyfoot Township: 6 Lifelines
- Middlecreek Township: 4 Lifelines
- Paint Township: 3 Lifelines
- Upper Turkeyfoot Township: 2 Lifelines
- Ursina Borough: 3 Lifelines/ 1 Critical Facility

Impact on the Economy

Severe flooding that follows an event like a dam failure can cause extensive structural damage and withhold essential services. The cost to recover from flood damages after a surge will vary depending on the hazard risk of each dam. Severe flooding that follows an event like a dam failure can cause extensive damage to public utilities and disruptions to the delivery of services. Loss of power and communications may occur, and drinking water and wastewater treatment facilities can become temporarily out of operation. Debris from surrounding buildings can accumulate should the dam mimic major flood events, such as the 1 percent annual chance flood event that is discussed in Section 4.3.6 (Flood, Flash Flood, Ice Jam).

Impact on the Environment

The environmental impacts of a dam failure can include significant water quality and debris-disposal issues or severe erosion that can impact local ecosystems. Flood waters can back up sanitary sewer systems and inundate wastewater treatment plants, causing raw sewage to contaminate residential and commercial buildings and the flooded waterway. The contents of unsecured containers of oil, fertilizers, pesticides, and other chemicals may get added to flood waters. Hazardous materials may be released and distributed widely across the floodplain. Water supply and wastewater treatment facilities could be offline for weeks. After the flood waters subside, contaminated and flood-damaged building materials and contents must be properly disposed of. Contaminated sediment must be removed from buildings, yards, and properties.

Future Changes That May Impact Vulnerability

Understanding future changes that affect vulnerability can assist in planning for future development and ensure the establishment of appropriate mitigation, planning, and preparedness measures. Several factors are examined in this section to assess hazard vulnerability.

Projected Development

As discussed and illustrated in Section 4.4 (Hazard Vulnerability Summary), areas targeted for future growth and development have been identified across the county. Any areas of growth could be potentially impacted by a dam or levee failure event if the structures are located within the flood protection area and mitigation measures are not considered. Therefore, it is the intention of the county and all participating municipalities to discourage development in vulnerable areas or to encourage higher regulatory standards at the local level.

Projected Changes in Population

Estimated population projections provided by The Center of Rural Pennsylvania indicate that Somerset County's population will decrease into 2050, decreasing the total population to approximately 65,754 persons (The Center of Rural Pennsylvania 2020). As more persons move into flood zones, an increased amount of the population will be vulnerable to dam inundation hazards. Higher density can not only create issues for local residents during evacuation of a dam failure event but can also have an effect on commuters who travel into and out of the county for work. Refer to Section 2 (County Profile) for more information about population trends in the County.

Climate Change

The Pennsylvania Department of Environmental Protection (PADEP) was directed by the Climate Change Act (Act 70 of 2008) to initiate a study of potential impacts of global climate change on the Commonwealth. The January 2021 Pennsylvania Climate Impact Assessment's main findings indicate that Pennsylvania is very likely to undergo increased temperatures in the 21st century. An increase in variability of temperature and precipitation may lead to increased frequency and/or severity of storm events. An average increase of 5.9 º F and an increase of 8 percent average annual precipitation is projected for mid-century time periods. Summer floods and general stream flow variability are projected to increase due to increased precipitation. Even with the anticipated increase in winter precipitation occurring as rain rather than snow, increased winter temperatures and a reduced snowpack may decrease rain-on-snow events and thus affect major flooding events in Pennsylvania. This conclusion regarding trends toward increased temperatures, however, remains speculative until further studies can validate it. Future improvements in modeling smaller-scale climatic processes are expected and will lead to improved understanding of the ways in which the changing climate will alter temperature, precipitation, storms, and flood events in Pennsylvania (ICF, 2021).

Increases in precipitation may stress the dam wall. Existing dams may not be able to retain and manage increases in water flow from more frequent, heavy rainfall events. Heavy rainfalls may result in more frequent overtopping of these dams and flooding of the county's assets in adjacent inundation areas. However, the probable maximum flood used to design each dam may be able to accommodate changes in climate.

4.3.1.7 Change of Vulnerability Since 2022 Hazard Mitigation Plan (HMP)

Since the 2022 analysis, population statistics have been updated using the Total Population (2022 ACS 5-Year Estimates). The general building stock was also established using RS Means 2024 building valuations that estimated replacement cost value for each building in the inventory. Additionally, the North Fork Dam and Dalton Run Emergency Action Plans were provided by the Greater Johnstown Water Authority. Inundation polygons were provided by the county for the High Point Lake Dam, Penn Scenic PMF, Quemahoning Reservoir, and the Youghiogheny Dam for this analysis.

For future HMP updates, additional dam failure inundation areas can be delineated and used to spatially assess the asset exposure. A customized general building stock list could be generated in the Hazus model to assess future impacts at the structural level versus the census-block level. Depth grids could be generated for the inundation areas and used in Hazus to estimate potential losses similar to those listed in the flood profile (Section 4.3.6).

4.3.2 Drought and Water Supply Deficiencies

4.3.2.1 Hazard Description

This section provides a profile and vulnerability assessment of the drought hazard in Somerset County. Drought conditions result when there is a deficiency of precipitation experienced over an extended period of time. The Pennsylvania Emergency Management Agency (PEMA) defines droughts as regional climatic events which can impact large areas ranging from several counties to the entire mid-Atlantic region (PEMA, 2023). Drought conditions occur in virtually all climatic zones, yet the characteristics of droughts vary significantly from one region to another, relative to normal precipitation within respective regions. Droughts can occur any time of year but have the greatest impact to society during the warm summer months. Drought and water supply deficiencies can affect agriculture, water supply, aquatic ecology, wildlife, and plant life. Drought is a temporary irregularity in typical weather patterns and differs from aridity, which reflects low rainfall within a specific region and is a permanent feature of the climate of that area.

Drought can be defined or grouped into four categories:

Meteorological drought is a measure of departure of precipitation from normal, defined solely by reference to relative degree of dryness. Because of climatic differences, dryness considered a drought at one location of the country may not be considered drought at another location.

Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels, and other parameters. Agricultural drought occurs when not enough water is available for a particular crop to grow at a particular time. Agricultural drought is defined in terms of soil moisture deficiencies relative to water demands of plant life, primarily crops.

Hydrological drought is associated with below-normal surface or subsurface water supply resulting from periods of precipitation shortfalls (including snowfall). Hydrological drought is related to effects of precipitation shortfalls on stream flows and water levels in reservoirs, lakes, and groundwater.

Socioeconomic drought is associated with supply and demand of an economic good, with elements of meteorological, hydrological, and agricultural drought categories. This differs from the aforementioned types of drought because its occurrence depends on supply and demand to identify or classify droughts. Supplies of many economic goods such as water, silage, food grains, fish, and hydroelectric power depend on weather. Socioeconomic drought occurs when demand for an economic good exceeds supply as a result of a weather-related shortfall in water supply (NDMC, 2023).

Drought can affect many sectors of an economy and can reach beyond an area undergoing physical drought. Because water is essential for producing goods and providing services, drought can reduce crop yield, increase fire hazard, lower water levels, and damage wildlife and fish habitats. Further consequences include reductions in crop yields, rangeland, and forest productivity that may lower incomes of farmers and agribusinesses; increase in prices of food and timber; increase in unemployment; reduction of tax revenues as expenditures decline; increase in crime, foreclosures, and migration; and depletion of disaster relief funds. The many impacts of drought can be categorized as economic, environmental, or social.

4.3.2.2 Location

Droughts and water supply deficiencies are regional in scope and may affect the entirety of Somerset County rather than only individual municipalities within the county. Droughts and water supply deficiencies may also concurrently affect counties near Somerset County or even the entire Commonwealth. Generally, areas along waterways will reveal drought conditions later than areas away from waterways.

The impact of a drought is generally felt first by the agricultural sector, which is dependent upon precipitation and groundwater. In locations where citizens rely on surface water for drinking water, water supplies are vulnerable to the effects of drought and thus can impact the severity of a drought. Residents depending on well water can more easily handle short-term droughts without major inconveniences than can populations that rely on surface water. However, longer-term droughts inhibit groundwater aquifers from recharging and can thus extend the problems of well owners for an indeterminate amount of time. Somerset County residents who depend on private domestic wells have this greater “hidden vulnerability” to droughts. According to the United States Geological Survey (USGS) National Water Information System, the average daily domestic self-supplied groundwater withdrawals of fresh water in Pennsylvania was 501 million gallons per day (Mgal) to 1 billion gallons per day in 2015 (USGS, 2019).

Table 4.3.2-1-1 lists the number of reported domestic wells within each municipality of Somerset County. The well data were obtained from the Pennsylvania Groundwater Information System (PaGWIS) which presents well statistics through the Pennsylvania Geologic Data Exploration (PaGEODE) web application (DCNR, 2024). Maintained by the PA Department of Conservation & Natural Resources (DCNR), this web service relies on voluntary submissions of well record data by well drillers; as a result, it is not a complete database of all domestic wells in the county. It is, however, the most complete data set of domestic wells available (DCNR, 2023).

Table 4.3.2-1 Domestic Wells in Somerset County

Municipality	# Domestic Wells
Addison (B)	34
Addison (T)	91
Allegheny (T)	152
Benson (B)	0
Berlin (B)	41
Black (T)	64
Boswell (B)	0
Brothersvalley (T)	303
Callimont (B)	8
Casselman (B)	4
Central City (B)	2
Conemaugh (T)	115
Confluence (B)	13
Elk Lick (T)	255
Fairhope (T)	44
Garrett (B)	2
Greenville (T)	97
Hooversville (B)	1
Indian Lake (B)	8
Jefferson (T)	172
Jenner (T)	106
Jennerstown (B)	2
Larimer (T)	107
Lincoln (T)	91
Lower Turkeyfoot (T)	44
Meyersdale (B)	20
Middlecreek (T)	133
Milford (T)	180
New Baltimore (B)	10
New Centerville (B)	17
Northampton (T)	69
Ogle (T)	60
Paint (B)	0
Paint (T)	53
Quemahoning (T)	138
Rockwood (B)	20
Salisbury (B)	0
Seven Springs (B)	0
Shade (T)	160
Shanksville (B)	6
Somerset (B)	47
Somerset (T)	612
Southampton (T)	66
Stonycreek (T)	244
Stoystown (B)	1
Summit (T)	214
Upper Turkeyfoot (T)	132
Ursina (B)	18
Wellersburg (B)	4
Windber (B)	56
Total	4,016

Source: DCNR, 2024

In addition to domestic wells in the county, residents may also receive their water from one of 15 public water systems serving Somerset County. companies: Hidden Valley Utility Service, Hooversville Water Company, Boswell Water Authority, Indian Creek Valley Water Authority Culligan Water Systems, and more. Of the 15, seven share connections with adjacent providers, allowing water to be redirected or shared as needed throughout the county (PA DEP, 2024). However, the majority of residents in Pennsylvania depend upon private wells for domestic water supply, with over one million private wells in the entire state, and up to 20,000 new wells drilled per year (PennState Extension, 2007).

Jurisdictions that are designated for agricultural use are particularly vulnerable to drought. According to collected reports on land for sale in Somerset County, farms and rural land sales totaled approximately 3,000 acres, valued at nearly \$52 million. Somerset County is ranked as the 10th county for overall acres for sale in Pennsylvania (Land & Farm, 2024).

4.3.2.3 Magnitude

The effects of droughts vary depending on their severity, timing, duration, and location. Some droughts may exert their greatest impact on agriculture, while others may have stronger effects on water supply or recreational activities. Droughts can adversely affect the following significantly:

Public water supplies for human consumption.
Rural water supplies for livestock consumption and agricultural operations.
Water quality.
Natural soil water or irrigation water for agriculture.
Water for forests and for fighting forest fires.
Water for navigation and recreation.

Drought conditions across the state are monitored using parameters such as precipitation, palmer soil dryness index, surface water flow, as well as groundwater levels. Each of these parameters has unique indicators for each county, including Somerset, and when readings hit a pre-determined trigger point, the indicator is coded as “Normal”, “Watch”, “Warning”, or “Emergency” (PA DEP, 2024). These four, as well as “Local Water Rationing”, are used by the PA DEP and PEMA to describe the magnitude of drought hazard events, as defined in the Commonwealth of Pennsylvania 2023 Hazard Mitigation Plan (PEMA, 2023).

Drought Watch: This is a period to alert government agencies, public water suppliers, water users, and the public regarding the potential for future drought-related problems. Drought watches are invoked when three or more drought indicators are present for a county or group of counties. The focus is on increased monitoring, awareness, and preparation for response in the event that conditions worsen. A request for voluntary water conservation is issued. The objective of voluntary water conservation measures during a drought watch is to reduce water use by 5 percent within the affected areas. Because of varying conditions, individual water suppliers or municipalities may propose more stringent conservation actions.

Drought Warning: This is a drought stage involving a coordinated response to imminent drought conditions and potential water supply shortages through concerted voluntary conservation measures to avoid or reduce shortages, relieve stressed sources, develop new sources, and, if possible, forestall the need to impose mandatory water use restrictions. The objective of voluntary water conservation measures during a drought warning is to reduce overall water use by 10 to 15 percent within the affected areas. Because of varying conditions, individual water suppliers or municipalities may propose more stringent conservation actions.

Drought Emergency: During this drought stage, water management entities assemble all available resources to respond to actual emergency conditions, avoid depletion of water sources, ensure at least minimum water supplies to protect public health and safety, support essential and high-priority water uses, and avoid unnecessary economic upsets. If deemed necessary and if ordered by the Governor during this stage, imposition of mandatory restrictions on nonessential water usage could occur, as provided for in 4 *Pa. Code*, Chapter 119. Objectives of water use restrictions (mandatory or voluntary) and other conservation measures during a drought emergency are to reduce consumptive water use within the affected areas by 15 percent and to reduce total use to the extent necessary to preserve public water system supplies, avoid or mitigate local or area shortages, and ensure equitable sharing of limited supplies.

Local Water Rationing: This fourth condition of drought is not defined as a drought stage. Local municipalities may, with the approval of the PEMA Council, implement local water rationing to share a rapidly dwindling or severely depleted water supply within designated water supply service areas. These individual water rationing plans, authorized through provisions of 4 *Pa. Code* Chapter 120, require specific limits on individual water consumption to achieve significant reductions in use. Under both mandatory restrictions imposed by the Commonwealth and local water rationing practices, procedures are specified for granting variances in consideration of individual hardships and economic dislocations (PEMA, 2023).

Statewide, five parameters are used to gauge the intensity of drought conditions: **Precipitation Deficits** (percentage difference between current conditions and the average), **Stream Flow** (the percentile difference between current and historic stream flow gage measurements), **Groundwater Level** (percentile indicating how much time the groundwater levels have been below historical average levels), **Soil Moisture** (measured from the Palmer Drought Severity Index), and **Reservoir Storage** (percentages of storage drawdown) (PEMA, 2023). Each is detailed below:

Precipitation Deficits: Because rainfall provides the basis for ground surface water resources, measuring the difference in precipitation from the normal (30-year average) tends to be the earliest indicator that a drought is possible in an area. The PA DEP will compare the cumulative precipitation for varying time periods (minimum of 3 months, maximum of 12 months) each month against the normal, 30-year average value for each same time period. Any duration that is less than the normal is considered to have had a deficit, represented by a percentage less than the normal precipitation. Table 4.3.2-2 shows what the deficit values need to be for each time period in order to qualify for each drought stage (PEMA, 2023).

Table 4.3.2-2 Precipitation Deficit Drought Indicators for Pennsylvania

Duration of Deficit Accumulation (Months)	Drought Watch (deficit as a percent of normal precipitation)	Drought Warning (deficit as percent of normal precipitation)	Drought Emergency (deficit as percent of normal precipitation)
3	25	35	45
4	20	30	40
5	20	30	40
6	20	30	40
7	18.5	28.5	38.5
8	17.5	27.5	37.5
9	16.5	26.5	36.5
10	15	25	35
11	15	25	35
12	15	25	35

Source: PEMA, 2023

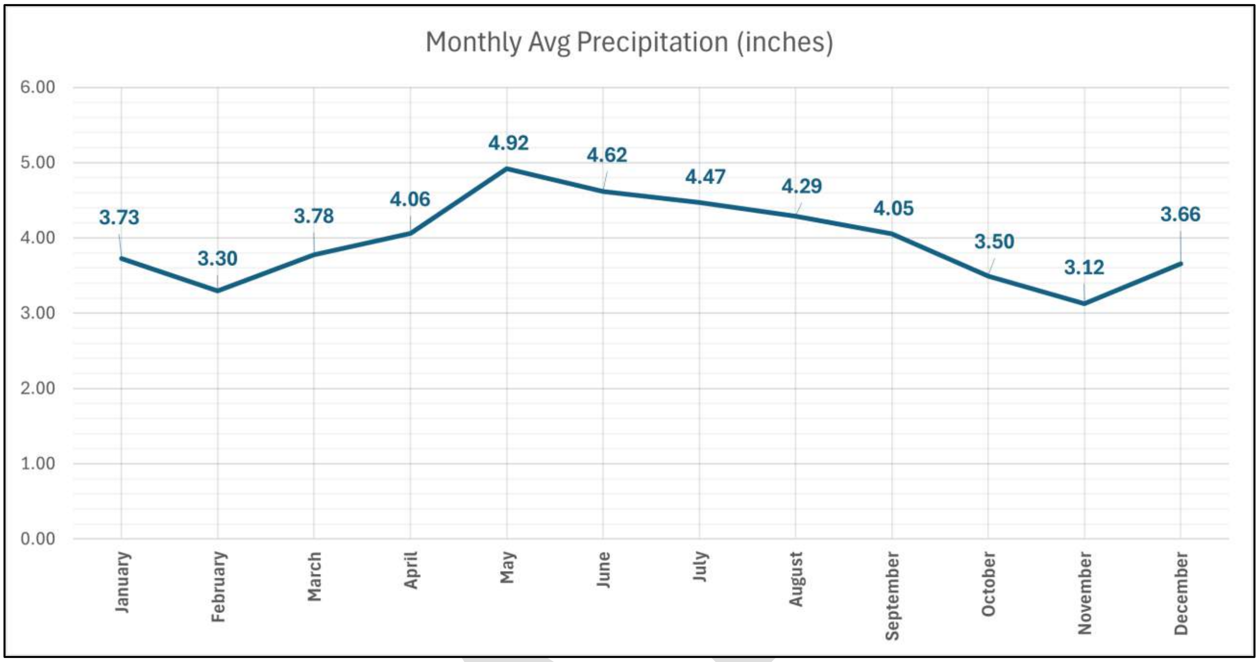
Table 4.3.2-3 presents the average monthly precipitation totals for Somerset County between 1994-2024, which is the most current three-decade data available.) in Somerset County. The average 30-year annual precipitation total for Somerset County is 47.49 inches (NOAA NCEI, 2024). Figure 4.3.2-1 breaks down the monthly average precipitation totals and illustrates how this annual total is broken down throughout the year.

Table 4.3.2-3 Monthly Precipitation Averages & Annual Totals (in inches) for Somerset Co., PA between 1994 to 2024

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Somerset County	3.73	3.30	3.78	4.06	4.92	4.62	4.47	4.29	4.05	3.50	3.12	3.66	47.49

Source: (NOAA NCEI, 2024)

Figure 4.3.2-1. 30-Year Precipitation (average, minimum, and maximum) in Somerset County



Source: (NOAA NCEI, 2024)

Stream Flows: The next earliest indicator that a drought is developing is stream flow measurements. There are 61 USGS stream gages that the DEP currently uses to monitor droughts across the state. The DEP calculates and maintains 30-day average values for stream flow based on the entire period of recording for each gage. Compared to precipitation, stream flow measurements lag by about a month or two when signaling a drought. Drought status is determined from stream flows based on percentiles, or exceedances, rather than percentages. Exceedances are similar to percentiles; a 75 percent exceedance flow value means that the current 30-day average flow is exceeded in the stream 75 percent of the time; in other words, the 30-day average flow in the stream is less than that value only 25 percent of the time. Similarly, with a 90 percent exceedance flow value, the 30-day average flows in the stream would be less than that value only 10 percent of the time, and only 5 percent of the time for a 95 percent exceedance. For stream flows, the 75, 90, and 95 percent exceedance 30-day average flows are used as indicators for drought watch, warning, and emergency, respectively.

Groundwater Levels: There is about 80 trillion gallons of groundwater stored in the soil beneath Pennsylvania. Groundwater levels for each day are used to calculate the average level of the preceding 30 days. This 30-day value is compared to the values derived from historical records yielding a percentile indicating how much time the groundwater levels have been below the historical average levels. The USGS also maintains a network of groundwater monitoring wells, just recently upgraded to at least one well in each county. Groundwater is used to indicate drought status in a manner similar to stream flows. Groundwater level exceedances of 75, 90, and 95 percent are used to indicate watch, warning, and emergency status. In this case, it is the 30-day average depth to groundwater that is measured and monitored, again in relation to long-term 30-day averages based on the period of record for each county well.

Soil Moisture: Soil moisture is measured using an algorithm calibrated for relatively homogeneous regions which measures dryness based on temperature and precipitation in the area, information which is provided by NOAA. This generates a value called the Palmer Drought Severity Index (PDSI), which is compiled by the Climate Prediction Center of the National Weather Service on a weekly basis. Table 4.3.2-4 lists PDSI classifications. The PDSI uses 0 to reflect normal status, and negative numbers indicate droughts. For example, 0 is no drought, -2 is moderate drought, and -4 is extreme drought. Positive numbers signify excess moisture. Somerset County can expect to experience drought conditions that range between Extremely Moist to Extreme Drought, according to the PDSI scale shown below.

Table 4.3.2-4 PDSI Classifications

Severity Category	PDSI Value	Drought Status
Extremely moist	+4.0 and above	None
Very moist	+3.0 to +3.99	None
Moderately moist	+2.0 to +2.99	None
Mid-range	-1.99 to 1.99	None
Moderate drought	-2.0 to -2.99	Watch
Severe drought	-3.0 to -3.99	Warning
Extreme drought	-4.0 or less	Emergency

Source: NDMC 2013

Another drought index used to determine drought conditions across Somerset County is the U.S. Drought Monitor (USDM) which provides weekly updates to their drought map products. The USDM uses the PDSI to show drought conditions throughout the United States. The USDM maps combine PSDSI data with other drought indicators, expert opinion, and meteorological and hydrological data, and it is the USDM scale that is utilized by the NOAA/NCEI database summarized in Table 4.3.2-5. Somerset County can experience a range of drought magnitudes from D0 to D4.

Figure 4.3.2-2 Drought Severity Index used by the U.S. Drought Monitor

Drought Intensity	Description
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Reservoir Storage Levels: Water level storage in several large public water supply reservoirs (especially three New York City reservoirs in the Upper Somerset River Basin) is the fifth indicator that the PA DEP uses for drought monitoring. Depending on the total quantity of storage and the length of the refill period for the various reservoirs, PA DEP uses varying percentages of storage draw-down to indicate the three drought stages for each of the reservoirs (PEMA, 2023).

The availability and management of water supply are discussed in the 2022 Pennsylvania State Water Plan (PA DEP, 2023), a joint effort by the Statewide Water Resources Committee and PADEP. In 2023, the PADEP Secretary approved an updated State Water Plan to guide the management of Pennsylvania's water resources over a 10-year planning horizon. As a functional planning tool for all Pennsylvania municipalities, counties, and regional planning partnerships, the State Water Plan profiles drought and resource constraints and encourages implementation of new technology and use policies to facilitate reduced water uses and resource demands at critical peak times. The State Water Plan provides inventories of water availability, and an assessment of current and future water use demands and trends. It also offers strategies for improving management of water resources and waterway corridors that aim to reduce damage from extreme drought and flooding conditions (PA DEP, 2023).

4.3.2.4 Past Occurrence

Historical information has been drawn from many sources regarding previous occurrences and losses associated with drought events throughout Pennsylvania and Somerset County. Because so many sources were reviewed for the purpose of developing this plan, loss and impact information pertaining to many events could vary depending on the source. Therefore, accuracy of cited monetary values is based only on the available information identified during research for this plan.

According to NOAA's National Centers for Environmental Information storm events database, Somerset County underwent 11 drought events between January 1, 1950, and October 31, 2024 (NOAA-NCEI, 2024). There has been no drought-related disaster (DR) or emergency (EM) declarations for Somerset County to date on record (FEMA, 2023). Table 4.3.2-8 summarizes all USDA declarations for drought-related disasters for Somerset County (USDA, 2023).

Based on all sources researched, drought events between 1994 and 2024 that have affected Somerset County are identified in Table 4.3.2-5 and serve as the best collection of historical data used in the 2025 Update. However, not all sources have been identified or researched, and therefore may not include all events that have occurred throughout the county.

FEMA Major Disaster and Emergency Declarations

Since 1950, there have been no major (DR) disaster declarations nor any Emergency Declarations (EM) for Somerset County due to drought conditions. State Emergency proclamation data is summarized in Table 4.3.2-7 below.

State Emergency Declarations

Since 2018, there have been no state emergency proclamations issued that involved Somerset County due to drought-related events (Commmonwealth of Pennsylvania, 2024).

USDA Disaster Declarations

Disaster declaration records available from the USDA go back to 2012, and since January 1, 2012, and December 31, 2024, there have been five USDA disaster declarations which included Somerset County, that were attributed to drought conditions. These are summarized in Table 4.3.2-5 below.

Table 4.3.2-5. USDA Declarations for Drought Events in Somerset County, PA (2012-2024)

Event Begin Date	Approval Date	Event End Date	USDA Declaration Number	Description
July 16, 2024	July 29, 2024	N/A	S5724	Drought-FAST TRACK
July 23, 2024	July 29, 2024	N/A	S5729	Drought-FAST TRACK
July 30, 2024	August 5, 2024	N/A	S5734	Drought-FAST TRACK
July 16, 2024	September 9, 2024	N/A	S5769	Drought-FAST TRACK
July 30, 2024	September 23, 2024	N/A	S5781	Drought-FAST TRACK

Source: (USDA, 2024)
Notes: Data is current up through December 31, 2024

Known drought events that have impacted Somerset County, PA between January 1994 and December 2024 are discussed in Table 4.3.2-6 below.

Table 4.3.2-6. Past Occurrences of Drought Events from 1994 to 2024

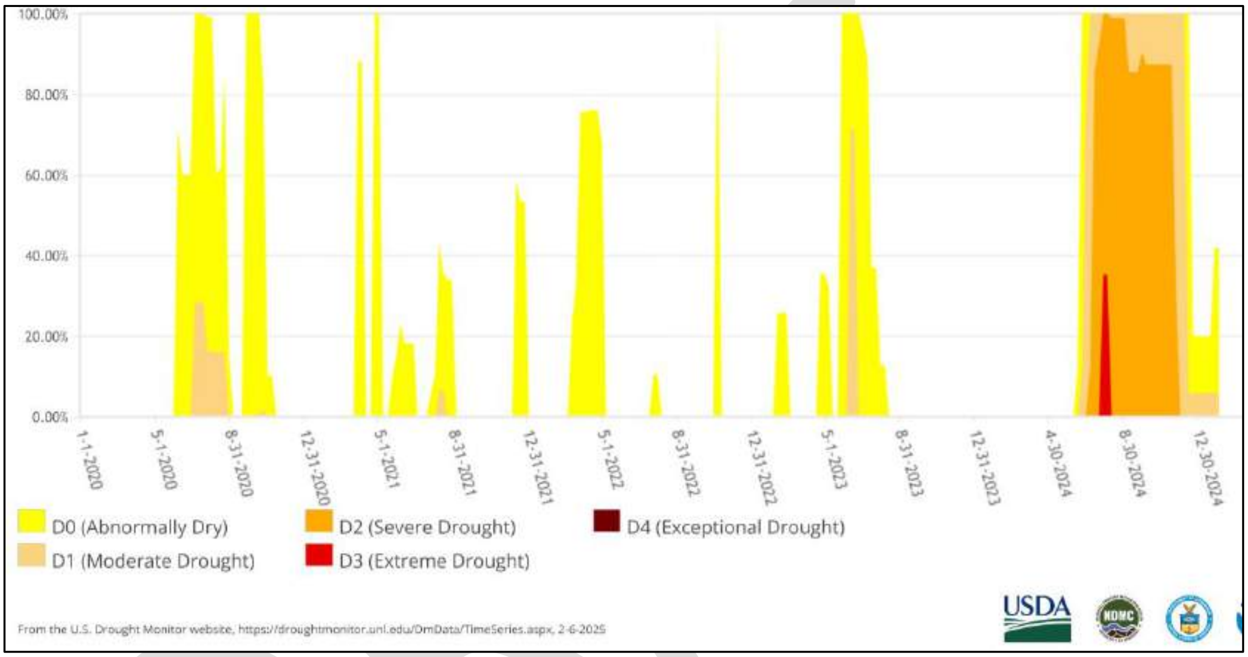
Dates of Event	Event Type	FEMA Declaration Number	USDA Disaster Designation Number	County Designated?	Losses / Impacts / PDSI Value
October 31, 1997	Drought	No	No	N/A	No recorded losses.
December 15, 1998	Drought	No	No	N/A	No recorded losses.
July 1, 1999 – July 31, 1999	Drought	No	No	N/A	No recorded losses.
August 1, 1999 – August 31, 1999	Drought	No	No	N/A	No recorded losses.
July 9 – July 31, 2024	Drought	No	S5724, S5769, S5729, S5734, S5781	Yes	D2 (severe) drought conditions developed in southern Somerset County on July 9, 2024 and continued through the end of July, gradually expanding to include all of the county.
July 30 – August 13, 2024	Drought	No			D3 (extreme) drought conditions developed in southern Somerset County on July 30, 2024 and continued through the end of July. Beginning on July 30, 2024, extreme (D3) drought conditions developed across portions of south-central Pennsylvania, including southern Somerset County, southern Bedford County, and far southwestern Fulton County. Additionally, D2 conditions developed across far southern Cambria County.
August 1 – August 13, 2024		No			D3 (extreme) drought conditions continued across southern Somerset County through early August 2024, with D2 conditions for the remainder of the county. Extreme (D3) drought conditions continued across portions of south-central Pennsylvania, including southern Somerset County, southern Bedford County, and far southwestern Fulton County. Severe (D2) drought conditions persisted in far southern Cambria County and far southwestern Franklin County. Rainfall from the remnants of Tropical Cyclone Debby ended the D3 in Somerset, Bedford, and Fulton counties, as well as the D2 in Franklin County by August 13, 2024.
August 20 - 31, 2024	Drought	No			D3 (extreme) drought conditions continued across southern Somerset County through early August 2024, with D2 conditions for the remainder of the county.
September 2024	Drought	No			Severe (D2) drought conditions continued across Somerset County through the month of September 2024.
October 2024	Drought	No			Severe (D2) drought conditions continued across Somerset County through the month of October 2024.

Sources: NOAA NCEI 2023; (USDM, 2024); (USDA, 2024); (FEMA, 2024); (NOAA-NCEI, 2024)

Recent Drought Events

Beginning on July 2, 2024, severe (D2) drought conditions developed across portions of south-central Pennsylvania. The first spot to see D2 conditions was southern Franklin County. The D2 area expanded westward by July 9, 2024, to include southern portions of Fulton, Bedford, and Somerset counties, and continued to expand west-northward by July 16, 2024, to encompass much of Fulton, Bedford, and Somerset counties, and a portion of far southern Franklin County. Severe (D2) drought conditions persisted through the end of 2024 (Figure 4.3.2-3), even though data from NCEI was only available through the end of September.

Figure 4.3.2-3 2024 Drought Severity in Somerset County

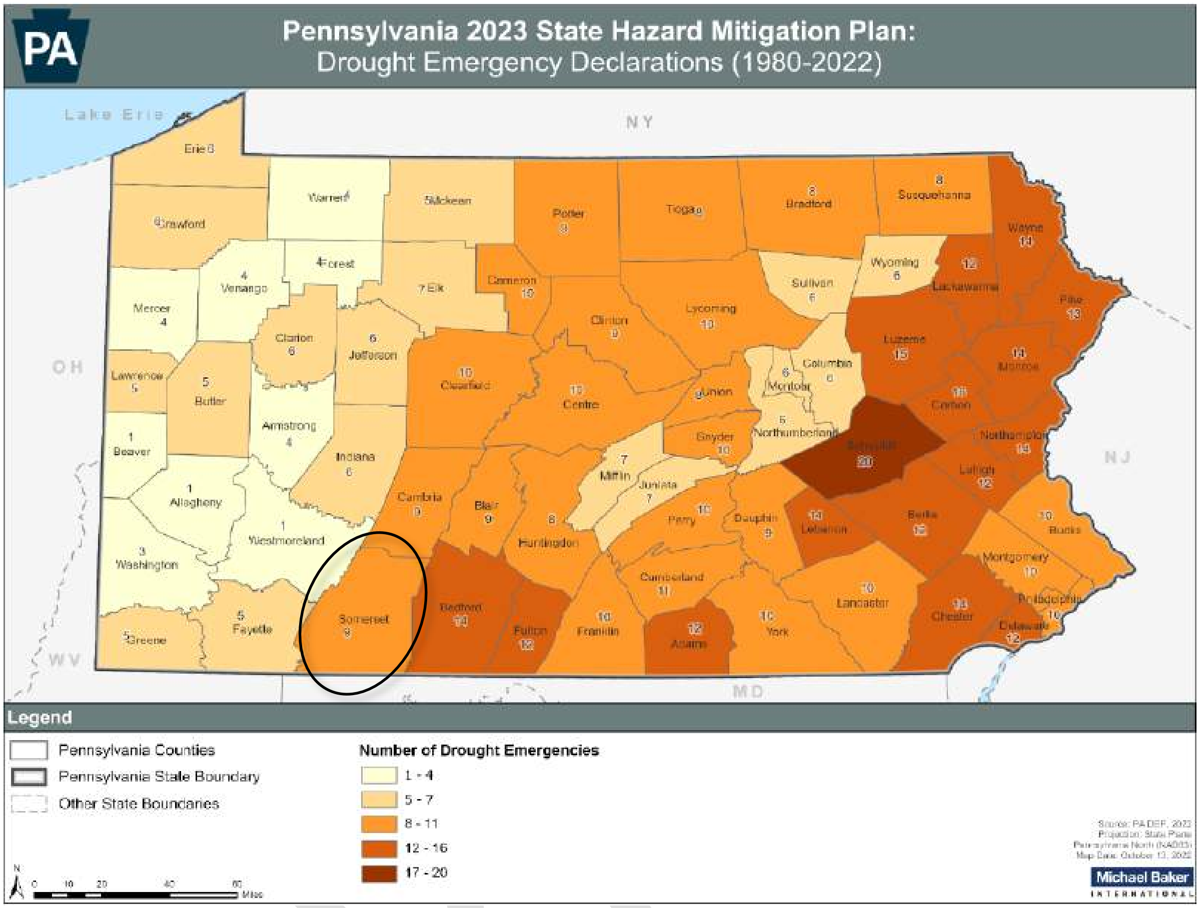


Source: (USDM, 2024)

4.3.2.5 Probability of Future Occurrences

The frequency of droughts is difficult to forecast. Based on data from a 42-year period, Somerset County experienced nine Drought Emergency Declarations, according to PEMA, as illustrated on Figure 4.3.2-4, however the dates of these emergencies were not immediately known.

Figure 4.3.2-4. Number of Drought Emergencies in PA (1980 – 2022)



Source: (PEMA, 2023)
Note: Somerset County is circled in black

Information on previous drought occurrences in the County was used to calculate the probability of future occurrence of such events, as summarized in Table 4.3.2-7 below. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on the Risk Factor Methodology probability criteria) described in Section 4.4) future occurrences of drought events are considered possible.

Table 4.3.2-7. Probability of Future Drought Events in Somerset County, PA

Hazard Type	Number of Occurrences Between 1994 and 2024	Percent Chance of Occurring in Any Given Year
Drought	11	35%

Source: (USDM, 2024); (USDA, 2024); (FEMA, 2024); (NOAA-NCEI, 2024)

Effects of Climate Change

Climate is the long-term pattern of weather conditions at a specified location; it can be described by statistics, such as extremes of temperature, precipitation, and other variables, and by the intensity, frequency, and duration of weather events (NOAA 2021a). Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as droughts. While predicting changes in drought events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (EPA 2016).

With a warmer climate, droughts can become more frequent, more severe, and longer lasting. According to the National Climate Assessment, variable precipitation and rising temperatures are intensifying droughts, increasing heavy downpours, reducing snowpack, and causing declines in water quality. Rising temperatures can lead to faster evaporation, contributing to a more volatile water cycle. This leaves less time for water to be absorbed into soil and vegetation, creating the ideal conditions for more frequent and severe drought events. Future warming will add to the stress on water supplies and impact the availability of water supply (USGCRP 2018).

4.3.2.6 Vulnerability Assessment

To understand risk, a community must evaluate assets exposed and vulnerable within the identified hazard area. For the drought hazard, all of Somerset County has been identified as the hazard area. Therefore, all assets (population, structures, critical facilities, and lifelines) described in the County Profile (Section 2) are potentially vulnerable to a drought. The following text evaluates and estimates the potential impact of the drought and water supply deficiency hazard on the county, including:

- Impact on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time.

Impact on Life, Health, and Safety

Drought conditions can cause a shortage of water available for human consumption and can reduce local firefighting capabilities. Social impacts of drought include mental and physical stress, public safety threats (increased threat from forest/grass fires), health threats, conflicts among water users, reduced quality of life, and inequities in the distribution of impacts and disaster relief. The infirm, young, and elderly are particularly susceptible to drought and extreme temperatures, sometimes associated with drought conditions, because of their age, health conditions, and limited ability to mobilize to shelters, cooling centers, and medical sources. Impacts on the economy and environment may have social implications as well. For the purposes of this plan, the entire population of the county is considered vulnerable to drought events.

Impact on General Building Stock and Critical Facilities

A drought is not expected to directly affect any structures, and all are expected to be operational during a drought event. However, droughts contribute to conditions conducive to wildfires. Risk to life and property is greatest in regions where forested areas adjoin urbanized areas (high-density residential, commercial, and industrial), also known as the WUI. Therefore, all assets in and adjacent to the WUI zone, including population, structures, critical facilities, lifelines, and businesses, are considered vulnerable to wildfire.

Impact on the Economy

A prolonged drought can exert serious direct and indirect economic impacts on a community or across the county. Impacts on small business and tourism are likely. However, the largest impact is generally seen in the agriculture business. Loss estimates are based on lost agricultural revenues throughout Somerset County.

Impact on the Environment

As summarized in the 2023 PA HMP, environmental impacts of drought include:

Hydrologic effects – lower water levels in reservoirs, lakes, and ponds; reduced streamflow; loss of wetlands; estuarine impacts; groundwater depletion and land subsidence; and effects on water quality, such as increases in salt concentration and water temperature.

Damage to animal species – lack of feed and drinking water; disease; loss of biodiversity; migration or concentration; and reduction and degradation of fish and wildlife habitat.

Reduced stream flow.
Loss of wetlands.
Increased groundwater depletion, land subsidence, and reduced groundwater recharge.
Water quality impacts like salinity, water temperature increases, pH changes, dissolved oxygen, or turbidity.
Loss of biodiversity (PEMA, 2023).

Future Changes That May Impact Vulnerability

Future Growth and Development

Areas targeted for potential future growth and development within the next 5 to 10 years have been identified across the county (further discussed in Section 2.4 of this HMP). Exposure of any new development and new residents to the drought hazard is anticipated.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by type, frequency, and intensity of weather events. Both globally and at the local level, climate change can alter the prevalence and severity of weather extremes, such as droughts. While predicting changes in drought events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating the effects of future climate change on human health, society, and the environment (U.S. Environmental Protection Agency [EPA] 2006).

According to the Pennsylvania Climate Impacts Assessment 2021 Update, the likelihood of drought is expected to occur more frequently due to extreme and unpredictable precipitation patterns seen throughout the United States (PEMA, 2021). However, the extent of drought conditions still remains uncertain as heightened temperatures are also projected to increase, causing evaporative demand, which may reduce water availability (PEMA, 2021).

4.3.2.7 Additional Data and Next Steps

The assessment above identifies vulnerable populations and potential structural and economic losses associated with this hazard of concern. The collection of additional information and actual loss data specific to the plan participants will further enhance Somerset County's vulnerability assessment.

4.3.3 Earthquake

4.3.3.1 Hazard Description

An earthquake is sudden movement of the Earth's surface caused by release of stress accumulated within or along the edge of the Earth's tectonic plates, a volcanic eruption, or a man-made explosion (Shedlock and Pakiser 1996). Most earthquakes occur at the boundaries where the Earth's tectonic plates meet (faults); less than 10 percent of earthquakes occur within plate interiors. As plates continue to move and plate boundaries change geologically over time, weakened boundary regions become part of the interiors of the plates. These zones of weakness within the continents can cause earthquakes, which are a response to stresses that originate at the edges of the plate or in the deeper crust (Shedlock and Pakiser 1996).

According to the U.S. Geological Survey (USGS) Earthquake Hazards Program, an earthquake hazard is any disruption associated with an earthquake that may affect residents' normal activities. This category includes surface faulting, ground motion (shaking), landslides, liquefaction, tectonic deformation, tsunamis, and seiches. Each of these terms is defined below:

- **Surface faulting**: Displacement that reaches the Earth's surface during a slip along a fault. This commonly occurs with shallow earthquakes—those with an epicenter of less than 20 kilometers (km).
- **Ground motion (shaking):** Movement of the Earth's surface from earthquakes or explosions. Ground motion or shaking is produced by waves generated by a sudden slip on a fault or sudden pressure at the explosive source, and the waves travel through the Earth and along its surface.
- **Landslide**: Movement of surface material down a slope.
- **Liquefaction**: A process by which water-saturated sediment temporarily loses strength and acts as a fluid, like the wet sand near the water at the beach. Earthquake shaking can cause this effect.
- **Tectonic deformation**: Change in the original shape of a material caused by stress and strain.
- **Tsunami**: A sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major sub-marine slides, or exploding volcanic islands.
- **Seiche**: Sloshing of a closed body of water, such as a lake or bay, from earthquake shaking (USGS 2025) .

Ground shaking is the primary cause of earthquake damage to man-made structures. Damage can be increased when soft soils amplify ground shaking. Soils influence damage in different ways. Soft soils can amplify the motion of earthquake waves, producing greater ground shaking and increasing stresses on built structures on the land surface. Loose, wet, sandy soils also can cause damage when they lose strength and flow as a fluid when shaken, causing foundations and underground structures to shift and break.

Table 4.3.3-1 NEHRP Soil Classifications

Soil Classification	Description
Type A	Hard rock (igneous rock)
Type B	Rock (volcanic rock)
Type C	Very dense soil and soft rock (sandstone)
Type D	Stiff soil (mud)
Type E	Soft soil (artificial fill)

Source: (FEMA/NEHRP n.d.)

The National Earthquake Hazard Reduction Program (NEHRP) developed five soil classifications (A to E) distinguished by soil shear-wave velocity that alters the severity of an earthquake; each classification is listed in Table 4.3.3-1. Class A soils (hard rock) reduce ground motion from an earthquake, and Class E soils (soft soils) amplify and magnify ground shaking and increase building damage and losses.

The following sections discuss the location and extent, range of magnitude, previous occurrence, future occurrence, and vulnerability assessment associated with the earthquake hazard in Somerset County.

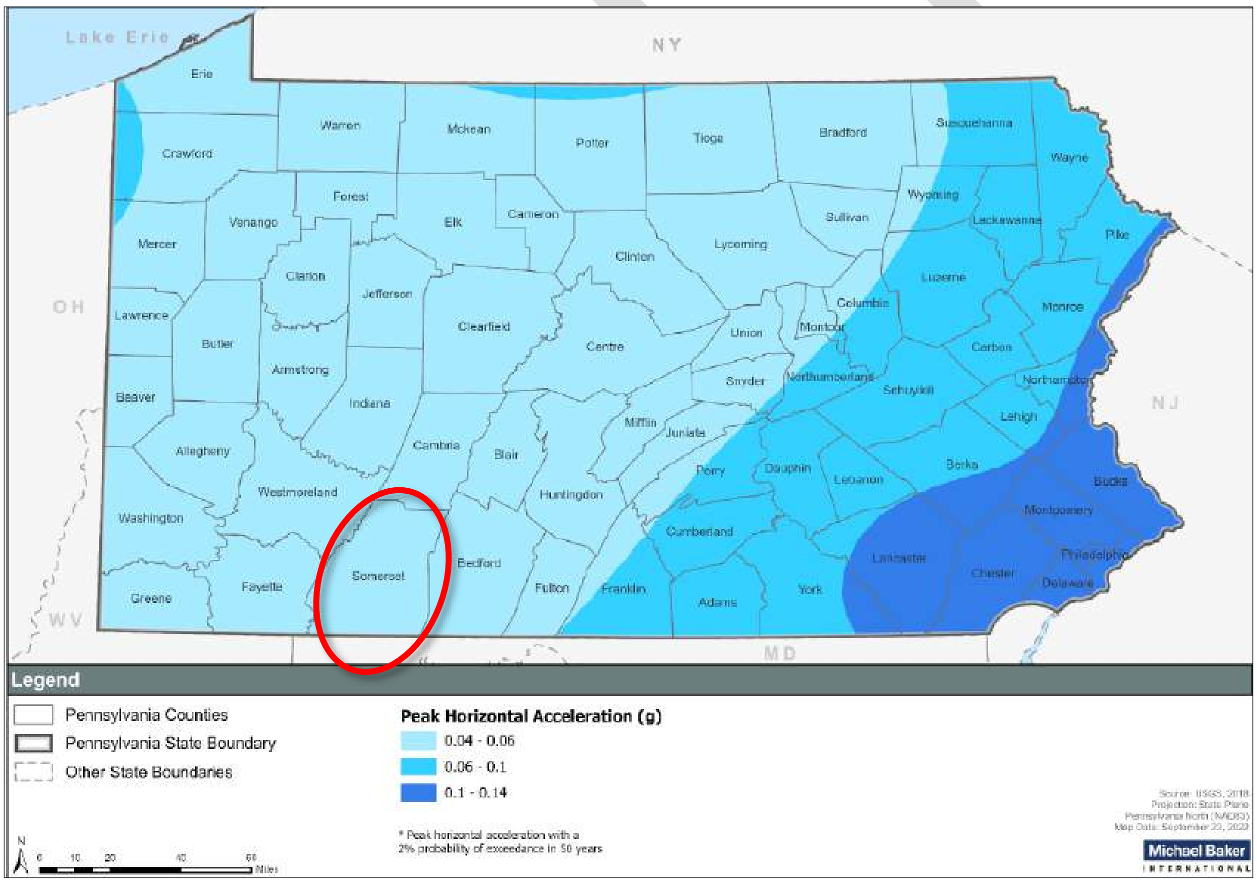
4.3.3.2 Location and Extent

Focal depth and geographic position of the epicenter of an earthquake commonly determine its location. Focal depth of an earthquake is the depth from the Earth's surface to the region where an earthquake's energy originates (the focus or hypocenter). The epicenter of an earthquake is the point on the Earth's surface directly above the hypocenter. Earthquakes usually occur without warning, and their effects can be felt in areas at great distances from the epicenter.

Earthquake epicenters in Pennsylvania are not evenly distributed. There is a large concentration in the southeastern region of the state. One earthquake epicenter has been measured in Somerset County. Earthquake events in the Pennsylvania region, including Somerset County, are mild. When events occur, they impact very small areas less than 100 kilometers in diameter.

Figure 4.3.3-1 shows relative seismic hazard zones in Pennsylvania, as determined by the USGS National Seismic Hazard Mapping Project. Earthquake hazards are highest in the southeastern region and far northwestern region of the Commonwealth (PEMA 2023). Somerset County is shown as being one of the lowest seismic hazard areas in the state.

Figure 4.3.3-1. Pennsylvania Earthquake Hazard Zones

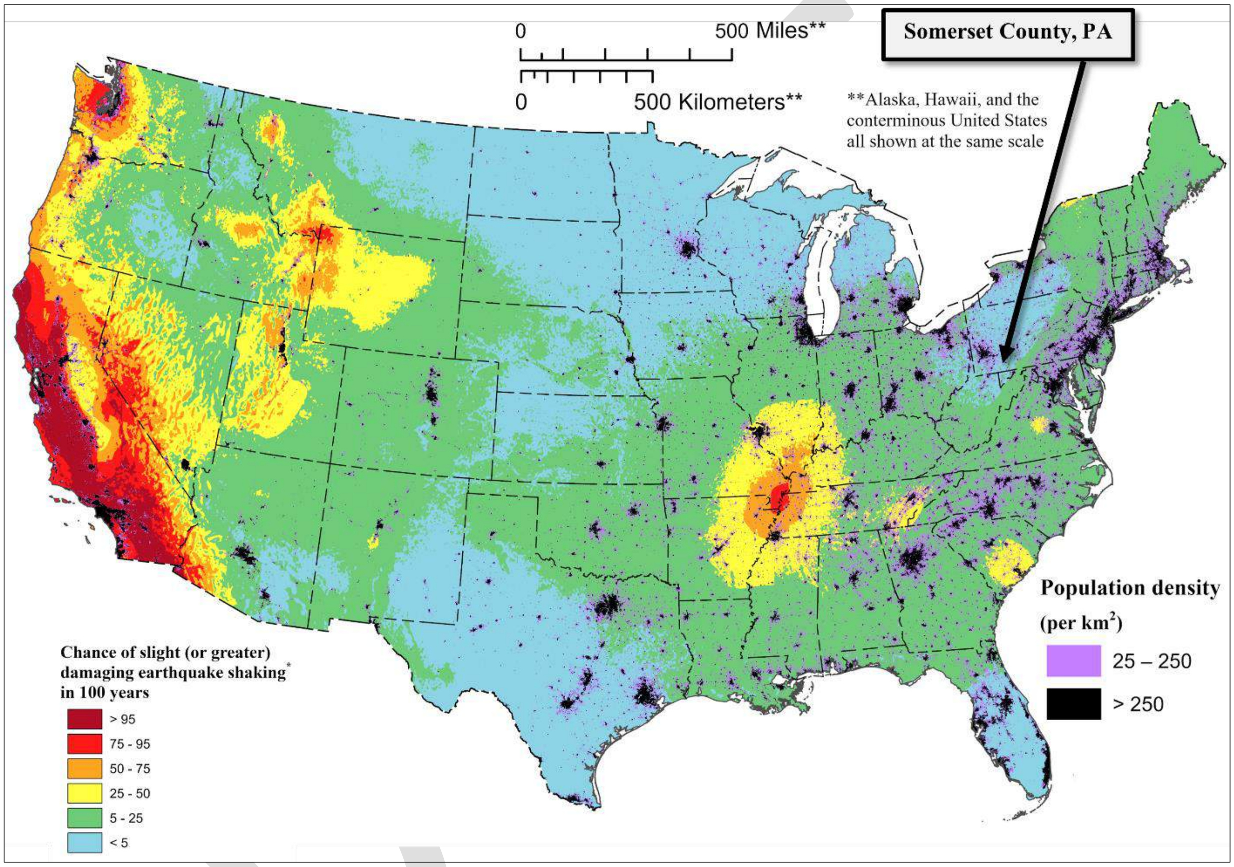


Source: (PEMA 2023)
Note: Somerset County is identified by the red oval.

The location and extent of earthquake hazards can also be summarized using maps produced by the USGS. Following an earthquake event, users can report their experiences online, and the collective "*Did You Feel It?"* website displays all reports associated with each event. The website is intended to gather citizens' experiences during an earthquake and incorporate the information into detailed maps to illustrate shaking intensity and damage assessments (USGS n.d.).

In early 2024, the USGS released an update to the National Seismic Hazard Model for the United States, and this update defines the potential for earthquake ground shaking for various probability levels. It is applied to seismic provisions of building codes, insurance rate studies, risk assessments, and other public policy. Figure 4.3.3-2 shows that Somerset County has less than a five percent chance of potentially damaging ground shaking (MMI=VI) in the next hundred years. The Modified Mercalli Intensity (MMI) scale is further discussed in the following section.

Figure 4.3.3-2 Probability of MMI VI in 100 Years (USGS)



Source: (USGS 2024)

Since 1900, there have been no earthquake epicenters located in or around Somerset County, however, larger quakes (above a magnitude 5.0) have the ability to cause damage over a larger, much further area than the epicenter's location. A discussion of previous occurrences of earthquakes in Somerset County appears in the Past Occurrence section of this profile.

4.3.3.3 Range of Magnitude

Earthquake Measurement Scales

Earthquakes are commonly measured based on the amplitude of the seismic waves generated by the earthquake (this is called magnitude) or the intensity of shaking in populated areas. Seismic waves are vibrations from earthquakes that travel through the Earth and are recorded on instruments called seismographs.

Earthquake magnitude is commonly expressed by ratings on the moment magnitude scale (M_W). This scale is based on the total moment release of the earthquake (the product of the distance a fault moved, and the force required to move it). The scale is as follows (U.S. Geological Survey, 2021):

- Great—Mw > 8
- Major—Mw = 7.0 – 7.9
- Strong—Mw = 6.0 – 6.9
- Moderate—Mw = 5.0 – 5.9
- Light—Mw = 4.0 – 4.9
- Minor—Mw = 3.0 – 3.9
- Micro—Mw < 3

The intensity of an earthquake is based on observed effects of ground shaking on people, buildings, and natural features and varies with location. The Modified Mercalli Intensity (MMI) scale expresses the intensity of an earthquake and is a subjective measure that describes the strength of a shock felt at a particular location. The MMI scale records intensity of an earthquake's effects in a given locality according to a scale from I to XII. Descriptions of MMI scales appear in Table 4.3.3-2. Earthquakes that occur in the commonwealth originate deep within the Earth's crust and not on an active fault. No injury or severe damage from earthquake events has been reported in Somerset County.

Table 4.3.3-2 Modified-Mercalli Intensity Scale with Associated Impacts

MMI Scale	Intensity	Description Of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	< 4.2
II	Feeble	Felt only by a few persons at rest, especially on upper floors of buildings.	
III	Slight	Felt quite noticeably indoors, especially on upper floors. Most people do not recognize it as an earthquake (i.e., a truck rumbling).	
IV	Moderate	Can be felt by people walking; dishes, windows, and doors are disturbed.	
V	Slightly Strong	Sleepers are awoken; unstable objects are overturned.	< 4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves; damage is slight.	< 5.4
VII	Very Strong	Damage is negligible in buildings of good design and construction, slight to moderate in well-built ordinary structures, and considerable in [poorly built or badly designed structures; some chimneys are broken.	< 6.1
VIII	Destructive	Damage is slight in specially designed structures; considerable in ordinary, substantial buildings. Moving cars become uncontrollable; masonry fractures, poorly constructed buildings damaged.	< 6.9
IX	Ruinous	Some houses collapse; ground cracks; pipes break open; damage is considerable in specially designed structures; buildings are shifted off foundations.	
X	Disastrous	Some well-built wooden structures are destroyed; most masonry and frame structures are destroyed along with foundations. Ground cracks profusely; liquefication and landslides are widespread.	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes, and cables are destroyed.	< 8.1
XII	Catastrophic	Total destruction; trees fall; lines of sight and level are distorted; ground rises and falls in waves; objects are thrown upward into the air.	> 8.1

Source: (PEMA 2023)

Quantitative measures of intensity are expressed in terms of peak ground acceleration (PGA) and spectral acceleration (SA). PGA is related to movement experienced on the ground, and SA represents movement experienced by a building (USGS, 2019). PGA and SA are measured in multiples or percentages of the acceleration caused by gravity (g). This means that at a PGA of 100 percent g (1.0 g) (an extremely strong ground motion), objects accelerate sideways at the same rate as they would accelerate vertically if dropped from a height.

Damage levels from an earthquake vary with intensity of ground shaking and with seismic capacity of structures, as noted in Table 4.3.3-3.

National maps of earthquake shaking hazards are used to establish seismic design requirements for building codes, insurance rate structures, earthquake loss studies, retrofit priorities, and land use planning applied in the United States. Scientists frequently revise these maps to reflect new information and knowledge. Buildings, bridges, highways, and utilities built to meet modern seismic design requirements are typically able to withstand earthquakes better than those designed earlier, with less damage and disruption. After thoroughly reviewing the studies, professional organizations of engineers update seismic-risk maps and seismic design requirements specified in building codes (Brown, et al., 2001).

Table 4.3.3-3. Damage Levels Experienced in Earthquakes

Ground Motion Percentage	Explanation of Damages
1-2% g	Motions are widely felt by people; hanging plants and lamps swing strongly, but damage levels, if any, are usually very low.
Below 10% g	Usually causes only slight damage, except in unusually vulnerable facilities.
10-20% g	May cause minor-to-moderate damage in well-designed buildings, with higher levels of damage in poorly designed buildings. At this level of ground shaking, only unusually poor buildings would be subject to potential collapse.
20-50% g	May cause significant damage in some modern buildings and very high levels of damage (including collapse) in poorly designed buildings.
≥50% g	May cause higher levels of damage in many buildings, even those designed to resist seismic forces.

Source: (NJOEM 2019)
Note: % g = Peak Ground Acceleration

Historical Earthquake Magnitude in Pennsylvania

Earthquake events in the Pennsylvania region, including Somerset County, are mild. When events occur, they impact very small areas less than 100 kilometers in diameter. Based on historical data of earthquakes with a recorded intensity, little damage is expected from earthquake events. However, since the worst earthquake recorded in the Commonwealth of Pennsylvania was a magnitude 5.2, a worst-case scenario for this hazard would be if an earthquake of similar magnitude occurred in Somerset County or nearby in an adjacent county, causing mild damage in populated areas.

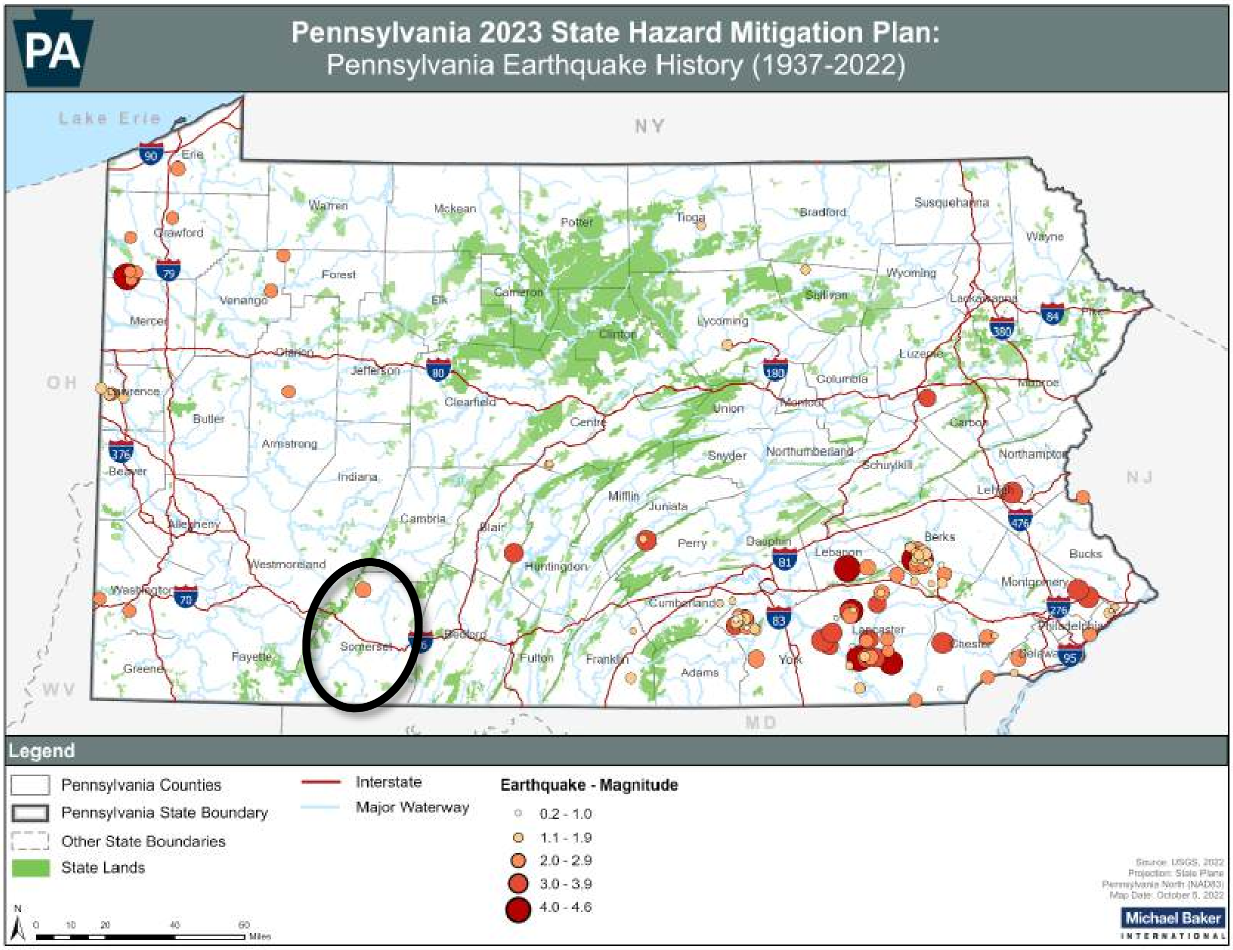
4.3.3.4 Past Occurrence

The historical record of earthquakes goes back approximately 200 years. In Pennsylvania, about 35 earthquakes have caused light damage since the colonial period. Nearly one-half of these damaging events had out of state epicenters (PEMA 2023). Very few earthquakes having a maximum intensity of IV or higher have been centered in areas outside the southeastern part of the Commonwealth (PEMA 2023). Figure 4.3.3-4 is a map of earthquake epicenters in Pennsylvania from 1973 to 2022.

According to USGS, there has been one earthquake epicenter in Somerset County during this time span. On February 3, 1982, a 2.6 magnitude earthquake occurred five kilometers west of Jerome, PA, but aside from that, no other earthquake events have been recorded in Somerset County.

In the most recently recorded incidents, Somerset felt minor tremors from a 3.4 tremor in 2019 near Mifflintown, Juniata County, a 5.8 quake in 2011 in central Virginia, and in 1938 a 3.3 magnitude earthquake in Blair County. There were no damages or injuries reported in the county from these tremors.

Figure 4.3.3-3. Earthquake Epicenters in Pennsylvania



Source: (PEMA 2023)
Note: Somerset County is within the black oval.

Since 1950, there have been no presidentially declared disasters from FEMA for any kind of earthquake-related event, nor have there been any State Emergency Proclamations or USDA Agriculture-related disaster declarations.

4.3.3.5 Future Occurrence

Earthquakes cannot be predicted and could occur any time of the day or year. Major earthquakes are infrequent in the Commonwealth and in Somerset County and may occur only once every few hundred years or longer, but the consequences of major earthquakes may potentially be very high. Based on the historic record, the future probability of damaging earthquakes impacting Somerset County is low.

According to the USGS earthquake catalog, between 1950 and 2021, there has been one earthquake with an epicenter in Somerset County. Based on available historical data, future occurrences of earthquake events can be considered *possible* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4 of this plan).

Effects of Climate Change

Impacts of global climate change on earthquake probability are unknown. Some scientists say that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the Earth's crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity, according to research into prehistoric earthquakes and volcanic activity. *National Aeronautics and Space Administration* **(***NASA)* and USGS scientists found that retreating glaciers in southern Alaska might be opening the way for future earthquakes (NASA, USGS, 2023).

Secondary impacts of earthquakes could be magnified by climate change. Soils saturated by repetitive storms could undergo liquefaction during seismic activity as a result of the increased saturation. Dams storing increased volumes of water, as a result of changes in the hydrograph, could fail during seismic events. No current models are available to estimate these impacts.

4.3.3.6 Vulnerability Assessment

A probabilistic assessment was conducted for the 2,500-year Mean Return Period (MRP) through a Level 2 analysis in Hazus to analyze the earthquake hazard and provide a range of loss estimates. To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the earthquake hazard on the county, including:

- Impact on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time

Impact on Life, Health, and Safety

General Population

Overall, the entire population of Somerset County is exposed to the earthquake hazard event. According to the 2022 ACS 5-Year Estimates U.S. Census, Somerset County has a population of 73,802 people (U.S. Census Bureau n.d.). The impact of an earthquake on life, health, and safety would depend on the severity of the event. First responder safety may be at risk as well responding to earthquake hazard events. First responders may have difficulty traveling to earthquake incidents due to limited access to roads. Risks to public safety and loss of life from an earthquake in Somerset County are minimal, with higher risk occurring in buildings as a result of damage to the structure or people walking below building ornamentation and chimneys that may be shaken loose and fall as a result of the earthquake.

Social Vulnerable Populations

Populations considered most vulnerable are located in the built environment, particularly near unreinforced masonry construction. In addition, the vulnerable population includes the elderly (persons over the age of 65) and individuals living below the Census poverty threshold. These socially vulnerable populations are most susceptible based on several factors, including their physical and financial ability to react or respond during a hazard and locations and construction quality of their housing.

Residents may be displaced or require temporary to long-term sheltering as a result of the event. The number of people requiring shelter is generally less than the number displaced, as some displaced persons use hotels or stay with family or friends after a disaster event. After running Hazus 6.0 it is estimated that there are 0 persons with sheltering needs for Somerset County for any earthquake event with a 2,500-Year Mean Return Period.

Structural building damage correlates strongly to the number of injuries and casualties from an earthquake event. Furthermore, different sectors of the community would be exposed to the hazard depending on time of day of occurrence. For example, Hazus considers that maximum residential occupancy occurs at 2:00 a.m.; educational, commercial, and industrial sectors maximum occupancy at 2:00 p.m.; and peak commute time at 5:00 p.m. Whether affected directly or indirectly, the entire population would have to contend with consequences of earthquakes to some degree. Business interruption could prevent people from working, road closures could isolate populations, and loss of functions of utilities could affect populations that suffered no direct damage from an event. Table 4.3.3-5 summarizes the estimated number of injuries, hospitalizations, and casualties as a result of the 2,500-year MRP event.

Table 4.3.3-4. Estimated Number of Injuries, Hospitalizations, and Casualties from the 2,500-Year MRP Earthquake Event

Level of Severity	Time of Day - 2,500-Year Mean Return Period		
	2:00 AM	2:00 PM	5:00 PM
Injuries	1	1	1
Hospitalization	0	0	0
Casualties	0	0	0

Source: Hazus V6.1
Note: Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

** Severity Level 1 (Injuries): Injuries will require medical attention but hospitalization is not needed*
** Severity Level 2 (Hospitalizations): Injuries will require hospitalization but are not considered life-threatening*
** Severity Level 3 (Hospitalizations): Injuries will require hospitalization and can become life threatening if not promptly treated*
** Severity Level 4 (Casualties): Victims are killed by the earthquake.*

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Impact on General Building Stock

For this HMP update, a Hazus probabilistic model was run to estimate annualized dollar losses for Somerset County. Annualized losses are useful for mitigation planning because they provide a baseline upon which to (1) compare the risk of one hazard across multiple jurisdictions and (2) compare the degree of risk of all hazards for each participating jurisdiction. Annualized loss does not, however, predict what losses will occur in any particular year.

A building's construction determines how well it can withstand the force of an earthquake (Tantala, et al. 2003). Unreinforced masonry buildings are most at risk during an earthquake because the walls are prone to collapse outward, whereas steel and wood buildings absorb more of the earthquake's energy. Additional attributes that affect a building's capability to withstand an earthquake's force include its age, number of stories, and quality of construction. Hazus considers building construction and age of buildings in its analysis. Default building ages and building types already incorporated into the inventory were used because the default general building stock was used for this Hazus analysis.

Potential building damage was evaluated by Hazus the following damage categories: none, slight, moderate, extensive, and complete. Table 4.3.3-6 provides definitions of these categories of damage for a light wood-framed building; definitions for other building types are included in the Hazus technical manual documentation.

Table 4.3.3-5. Example of Structural Damage State Definitions for a Light Wood-Framed Building

Damage Category	Description
Slight	Small plaster or gypsum-board cracks at corners of door and window openings and wall-ceiling intersections; small cracks in masonry chimneys and masonry veneer.
Moderate	Large plaster or gypsum-board cracks at corners of door and window openings; small diagonal cracks across shear wall panels exhibited by small cracks in stucco and gypsum wall panels; large cracks in brick chimneys; toppling of tall masonry chimneys.

Damage Category	Description
Extensive	Large diagonal cracks across shear wall panels or large cracks at plywood joints; permanent lateral movement of floors and roof; toppling of most brick chimneys; cracks in foundations; splitting of wood sill plates or slippage of structure over foundations; partial collapse of room-over-garage or other soft-story configurations.
Complete	Structure may have large permanent lateral displacement, may collapse, or be in imminent danger of collapse because of the crippled wall failure or the failure of the lateral load resisting system; some structures may slip and fall off the foundations; large foundation cracks.

Source: FEMA 2015

Table 4.3.3-7 summarizes the damage estimated for the 2,500-year MRP earthquake event. Damage loss estimates include structural and non-structural damage to the building and loss of contents. Residential homes have the greatest number of buildings that would experience complete destruction.

Table 4.3.3-6. Building Damage by General Occupancy for 2,500-year MRP Earthquake Event

Occupancy Class	Total Number of Buildings in Occupancy	Severity of Expected Damage	Earthquake 2,500-Year Mean Return Period	
			Building Count	Percent Buildings in Occupancy Class
Residential Exposure (Single and Multi-Family Dwellings)	30,827	None	30,396	98.6%
		Minor	373	1.2%
		Moderate	57	0.2%
		Severe	1	<0.1%
		Destruction	0	0.0%
Commercial Buildings	43,804	None	43,477	99.3%
		Minor	275	0.6%
		Moderate	52	0.1%
		Severe	<0.1%	<0.1%
		Destruction	0	0.0%
Industrial Buildings	228	None	220	96.4%
		Minor	6	2.7%
		Moderate	2	0.9%
		Severe	<0.1%	0.1%
		Destruction	0	0.0%
Government, Religion, Agricultural, and Education Buildings	10,334	None	10,198	98.7%
		Minor	131	1.3%

Occupancy Class	Total Number of Buildings in Occupancy	Severity of Expected Damage	Earthquake 2,500-Year Mean Return Period	
			Building Count	Percent Buildings in Occupancy Class
		Moderate	5	0.1%
		Severe	<0.1%	<0.1%
		Destruction	0	0.0%

Source: Hazus v6.1; Somerset County 2024; USACE 2022

Table 4.3.3-8 presents the estimated replacement cost values for buildings damaged by the 2,500-year MRP earthquake event. An estimated $23.2 million in damage would occur to buildings in the county during a 2,500-year earthquake event

Table 4.3.3-7. Estimated Building Value Damaged by the Annualized, 2,500-Year MRP Earthquake Event

Jurisdiction	Total Replacement Cost Value (RCV)	2,500-Year Mean Return Period - Estimated Losses				
		Estimated Total Damage	Percent of Total Building and Contents Replacement Cost Value	Estimated Residential Damage	Estimated Commercial Damage	Estimated Damages for All Other Occupancies
Addison (B)	$148,461,465	$52,389	<0.1%	$19,675	$21,736	$10,978
Addison (T)	$1,136,703,437	$499,035	<0.1%	$187,416	$207,048	$104,571
Allegheny (T)	$781,809,472	$301,019	<0.1%	$88,378	$113,914	$98,727
Benson (B)	$89,274,721	$42,215	<0.1%	$19,762	$13,197	$9,257
Berlin (B)	$895,269,284	$500,154	0.1%	$172,362	$185,082	$142,710
Black (T)	$834,474,737	$373,048	<0.1%	$125,069	$153,647	$94,332
Boswell (B)	$474,400,294	$203,598	<0.1%	$79,881	$82,011	$41,707
Brothersvalley (T)	$2,064,465,986	$1,197,246	0.1%	$412,225	$443,477	$341,544
Callimont (B)	$30,930,873	$10,975	<0.1%	$3,213	$4,154	$3,609
Casselman (B)	$41,086,890	$29,253	0.1%	$9,817	$12,040	$7,396
Central City (B)	$442,954,504	$173,843	<0.1%	$71,359	$65,362	$37,122
Conemaugh (T)	$3,880,986,714	$1,676,079	<0.1%	$754,481	$596,326	$325,272
Confluence (B)	$379,399,641	$154,703	<0.1%	$58,100	$64,186	$32,417
Elk Lick (T)	$1,853,364,019	$688,396	<0.1%	$209,559	$292,161	$186,675
Fairhope (T)	$114,953,744	$60,664	0.1%	$17,756	$22,958	$19,950
Garrett (B)	$163,199,308	$98,381	0.1%	$28,311	$38,892	$31,178
Greenville (T)	$619,817,620	$228,489	<0.1%	$66,879	$86,471	$75,139
Hooversville (B)	$284,259,840	$114,796	<0.1%	$36,516	$44,726	$33,553
Indian Lake (B)	$775,063,497	$352,879	<0.1%	$143,535	$144,223	$65,121
Jefferson (T)	$1,763,883,579	$739,607	<0.1%	$310,846	$280,849	$147,912
Jenner (T)	$2,687,221,806	$1,386,351	0.1%	$536,663	$577,562	$272,126

Jurisdiction	Total Replacement Cost Value (RCV)	2,500-Year Mean Return Period - Estimated Losses				
		Estimated Total Damage	Percent of Total Building and Contents Replacement Cost Value	Estimated Residential Damage	Estimated Commercial Damage	Estimated Damages for All Other Occupancies
Jennerstown (B)	$404,635,410	$191,698	<0.1%	$73,577	$81,516	$36,605
Larimer (T)	$411,045,802	$167,425	<0.1%	$49,005	$63,362	$55,058
Lincoln (T)	$1,209,799,393	$431,773	<0.1%	$181,454	$163,932	$86,387
Lower Turkeyfoot (T)	$528,650,209	$245,425	<0.1%	$83,397	$97,765	$64,263
Meyersdale (B)	$888,796,373	$342,724	<0.1%	$143,486	$143,676	$55,562
Middlecreek (T)	$1,361,478,007	$559,451	<0.1%	$219,825	$271,568	$68,058
Milford (T)	$1,414,705,761	$598,287	<0.1%	$200,796	$246,259	$151,232
New Baltimore (B)	$77,842,527	$34,722	<0.1%	$10,163	$13,141	$11,419
New Centerville (B)	$104,468,378	$42,036	<0.1%	$14,107	$17,301	$10,627
Northampton (T)	$355,524,703	$152,259	<0.1%	$44,566	$57,622	$50,071
Ogle (T)	$335,973,192	$202,483	0.1%	$87,474	$80,573	$34,436
Paint (B)	$294,837,290	$162,988	0.1%	$70,412	$64,857	$27,719
Paint (T)	$2,072,241,492	$1,023,557	<0.1%	$442,161	$407,420	$173,976
Quemahoning (T)	$1,472,027,871	$486,894	<0.1%	$154,899	$189,705	$142,290
Rockwood (B)	$349,683,802	$152,165	<0.1%	$51,067	$62,629	$38,470
Salisbury (B)	$345,399,685	$131,939	<0.1%	$40,164	$55,996	$35,778
Seven Springs (B)	$139,517,399	$16,040	<0.1%	$6,302	$7,787	$1,951
Shade (T)	$1,759,474,604	$659,726	<0.1%	$270,803	$248,045	$140,878
Shanksville (B)	$97,994,103	$54,715	0.1%	$22,255	$22,362	$10,097
Somerset (B)	$3,277,246,043	$1,868,365	0.1%	$644,905	$687,876	$535,583
Somerset (T)	$6,489,508,286	$3,510,351	0.1%	$1,064,918	$1,784,198	$661,235
Southampton (T)	$469,896,734	$199,753	<0.1%	$58,468	$75,596	$65,689
Stonycreek (T)	$1,868,134,699	$1,087,180	0.1%	$441,686	$444,240	$201,254
Stoystown (B)	$142,664,600	$52,557	<0.1%	$16,718	$20,477	$15,362
Summit (T)	$1,765,406,355	$804,594	<0.1%	$231,865	$318,135	$254,594

Jurisdiction	Total Replacement Cost Value (RCV)	2,500-Year Mean Return Period - Estimated Losses				
		Estimated Total Damage	Percent of Total Building and Contents Replacement Cost Value	Estimated Residential Damage	Estimated Commercial Damage	Estimated Damages for All Other Occupancies
Upper Turkeyfoot (T)	$1,035,009,396	$453,695	<0.1%	$146,978	$173,699	$133,017
Ursina (B)	$118,221,649	$57,320	<0.1%	$21,527	$23,782	$12,011
Wellersburg (B)	$117,923,548	$52,083	<0.1%	$15,245	$19,711	$17,128
Windber (B)	$1,756,688,270	$601,081	<0.1%	$247,020	$304,250	$49,810
Somerset County (Total)	**$50,126,777,010**	**$23,226,408**	**<0.1%**	**$8,407,049**	**$9,597,501**	**$5,221,857**

Source: Hazus v6.1; Somerset County 2024; USACE 2022; RS Means 2024
Notes: Total amount is sum of damage for all occupancy classes (residential, commercial, and industrial).
B – Borough; Twp. – Township

Impact on Critical Facilities

After consideration of general building stock exposed to and damaged by each earthquake event, critical facilities were evaluated. All critical facilities (essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and user-defined facilities) in Somerset County are considered exposed and vulnerable to the earthquake hazard. The Critical Facilities subsection of this HMP in Section 4.4 (Hazard Vulnerability Summary) discusses the inventory of critical facilities in Somerset County. Additionally, first responders may have limited access to critical facilities due to damaged infrastructure and electrical/utility fires may increase with disruptions to lines.

Hazus estimates the probability that critical facilities may sustain damage as a result of the 2,500-year MRP earthquake event. Additionally, Hazus estimates percent functionality of each facility days after the event. Table 4.3.3-9 (2,500-year MRP earthquake event) lists percent probabilities that critical facilities and utilities would sustain damage within the damage categories (column headings), and lists percent functionalities after different numbers of days following those events (column headings).

Table 4.3.3-8. Estimated Damage to and Loss of Functionality of Critical Facilities and Utilities in Somerset County for the 2,500-Year MRP Earthquake Event

Name	Average Percent Probability of Sustaining Damage 2,500-Year Mean Return Period					Average Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
Lifelines									
Communications	95.8%	3.1%	1.0%	0.1%	<0.1%	95.7%	98.8%	99.8%	99.9%
Energy	95.8%	3.1%	1.0%	0.1%	<0.1%	95.8%	98.8%	99.8%	99.9%
Food, Hydration, Shelter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous Materials	95.9%	3.0%	0.9%	0.1%	<0.1%	95.9%	98.9%	99.8%	99.9%
Health and Medical	98.6%	1.1%	0.3%	<0.1%	0.0%	98.5%	99.6%	99.9%	99.9%
Safety and Security	95.6%	3.2%	1.0%	0.1%	<0.1%	95.6%	98.7%	99.8%	99.9%
Transportation	99.9%	0.1%	<0.1%	<0.1%	<0.1%	99.8%	99.9%	99.9%	99.9%
Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: *Hazus v6.1; Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021*

Impact on Economy

Earthquakes also have impacts on the economy, including loss of business function, damage to inventory, relocation costs, wage loss, and rental loss due to the repair/replacement of buildings. Hazus estimates building-related economic losses, including income losses (wage, rental, relocation, and capital-related losses) and capital stock losses (structural, non-structural, content, and inventory losses).

This analysis did not include damage estimates for individual roadway segments and railroad tracks, but it is assumed these features would sustain damage due to ground failure, resulting in interruptions of regional transportation and of distribution of materials.

Earthquake events can also significantly affect bridges, many of which provide the only access to certain neighborhoods. Because softer soils generally follow floodplain boundaries, bridges that cross watercourses should be considered vulnerable. Another key factor in degree of vulnerability is age of facilities and infrastructure, which correlates with building standards in place at times of construction.

Table 4.3.3-10 summarizes the estimated debris generated by the 2,500-year MRP event. Hazus estimated the generation of over 2,000 tons of total debris during the 2,500-year MRP event. The Borough of Somerset would generate the greatest amount of debris at 381 tons.

Table 4.3.3-9. Estimated Debris Generated by 2,500-year MRP Earthquake Event

Jurisdiction	Debris Generated by 2,500-Year Mean Return Period		
	Brick/Wood (tons)	Concrete/Steel (tons)	Total Debris (tons)
Addison (B)	4	1	5
Addison (T)	36	8	43
Allegheny (T)	15	3	18
Benson (B)	4	1	5
Berlin (B)	48	10	58
Black (T)	30	6	36
Boswell (B)	20	4	24
Brothersvalley (T)	116	23	139
Callimont (B)	1	0	1
Casselman (B)	2	0	3
Central City (B)	13	2	15
Conemaugh (T)	140	25	165
Confluence (B)	11	2	13
Elk Lick (T)	50	10	60
Fairhope (T)	3	1	4
Garrett (B)	10	2	12
Greenville (T)	11	3	14
Hooversville (B)	16	2	18
Indian Lake (B)	20	5	26
Jefferson (T)	52	11	62
Jenner (T)	104	24	128
Jennerstown (B)	12	3	15
Larimer (T)	8	2	10
Lincoln (T)	30	6	36
Lower Turkeyfoot (T)	13	3	16
Meyersdale (B)	37	6	43
Middlecreek (T)	30	8	38
Milford (T)	48	10	59
New Baltimore (B)	2	0	2
New Centerville (B)	3	1	4

Jurisdiction	Debris Generated by 2,500-Year Mean Return Period		
	Brick/Wood (tons)	Concrete/Steel (tons)	Total Debris (tons)
Northampton (T)	7	2	9
Ogle (T)	13	3	16
Paint (B)	11	3	13
Paint (T)	66	16	82
Quemahoning (T)	66	10	76
Rockwood (B)	12	3	15
Salisbury (B)	10	2	12
Seven Springs (B)	1	0	1
Shade (T)	49	9	58
Shanksville (B)	3	1	4
Somerset (B)	327	54	381
Somerset (T)	215	63	278
Southampton (T)	10	2	12
Stonycreek (T)	63	16	79
Stoystown (B)	7	1	8
Summit (T)	84	15	100
Upper Turkeyfoot (T)	22	6	28
Ursina (B)	4	1	5
Wellersburg (B)	2	1	3
Windber (B)	39	7	46
Somerset County (Total)	**1,899**	**399**	**2,298**

Source: HAZUS-v6.1
Notes: B – Borough; Twp. – Township

Impact on the Environment

Earthquakes can lead to numerous, widespread, and devastating environmental impacts. These impacts may include but are not limited to:

- Induced flooding or landslides
- Poor water quality
- Damage to vegetation
- Breakage in sewage, wastewater, or toxic material containment

Secondary impacts can include train derailments, roadway damage, spillage of hazardous materials (HazMat), and utility interruption.

Future Changes That May Impact Vulnerability

Future Growth and Development

Human exposure and vulnerability to earthquake impacts in newly developed areas are anticipated to be similar to those currently within the county. Building codes require seismic provisions that should render new construction less vulnerable to seismic impacts than older, existing construction that may have been built to lower construction standards. Any areas of growth could also be impacted by the flood hazard if within identified hazard areas. The tables and hazard maps included in the jurisdictional annexes contain additional information regarding the specific areas of development that would increase county vulnerability to dam inundation areas.

Estimated population projections provided by The Center of Rural Pennsylvania indicate that Somerset County's population will decrease into 2050, decreasing the total population to approximately 65,754 persons (The Center of Rural Pennsylvania 2020). However, if more persons move into earthquake susceptible areas, an increased amount of the population will be vulnerable to the effects of earthquakes.

Effect of Climate Change on Vulnerability

Impacts of global climate change on earthquake probability are unknown. Some scientists say that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the Earth's crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity, according to research into prehistoric earthquakes and volcanic activity. *National Aeronautics and Space Administration* (*NASA)* and USGS scientists found that retreating glaciers in southern Alaska might be opening the way for future earthquakes (NASA, USGS 2023).

Secondary impacts of earthquakes could be magnified by climate change. Soils saturated by repetitive storms could undergo liquefaction during seismic activity as a result of the increased saturation. Dams storing increased volumes of water, as a result of changes in the hydrograph, could fail during seismic events. No current models are available to estimate these impacts.

4.3.3.7 Additional Data and Next Steps

Additional data is needed to further refine and enhance the county's vulnerability assessment, which includes identifications of unreinforced masonry critical facilities and privately owned buildings (i.e., residences) via local knowledge and/or pictometry/orthophotos. These buildings may not withstand earthquakes of certain magnitudes and plans to provide emergency response/recovery efforts for these properties can be established.

Ground shaking is the primary cause of earthquake damage to man-made structures, and soft soils amplify ground shaking. One contributor to site amplification is velocity at which rock or soil transmits shear waves (S-waves). The *NEHRP* developed five soil classifications defined by their shear-wave velocity that alter severity of an earthquake. These soil classifications range from A to E, whereby A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses. When this soil information becomes available, it may be incorporated into Hazus to further refine the county's vulnerability assessment.

4.3.4 Environmental Hazards – Coal Mining

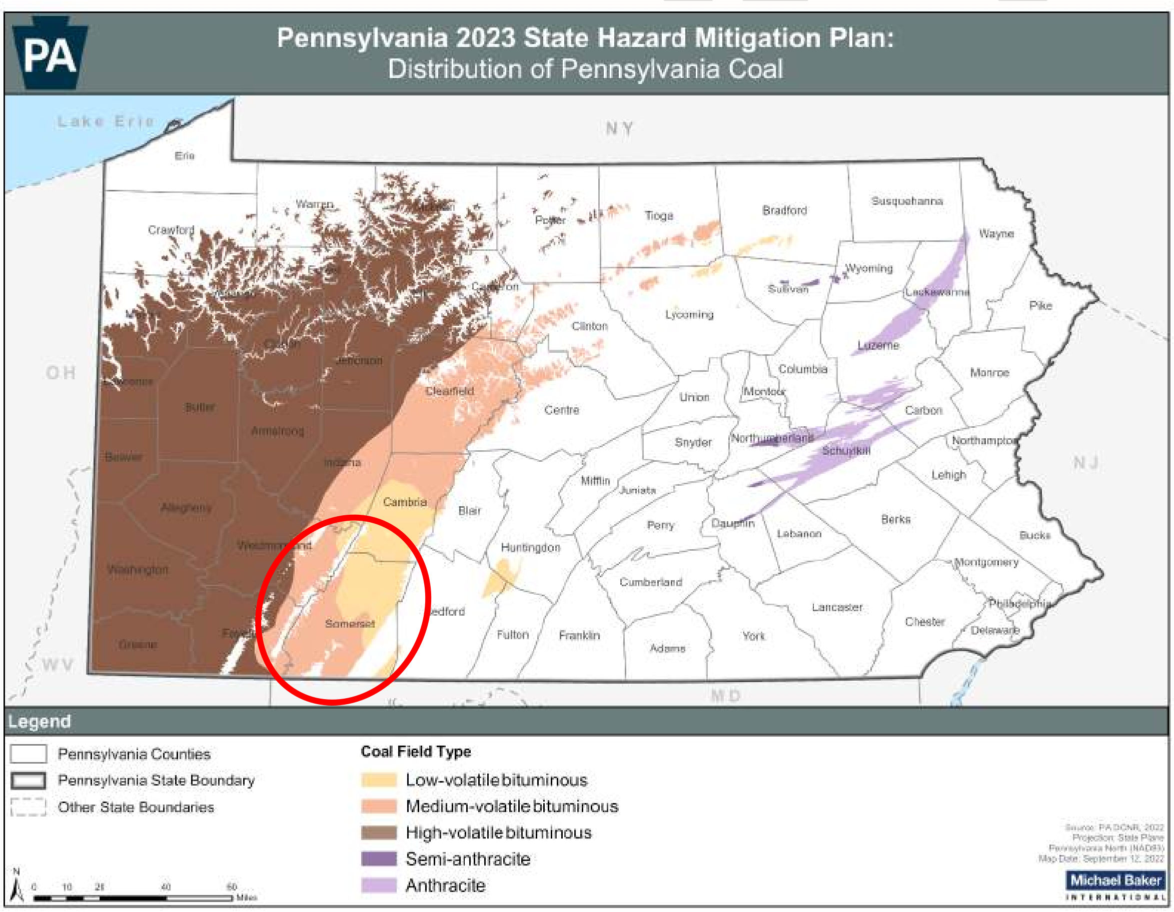
4.3.4.1 Hazard Description

This section provides a profile and vulnerability assessment of the environmental hazards – coal mining profile for the Somerset County Hazard Mitigation Plan (HMP).

Mining, including surface, underground, and open-pit operations, has been an important economic activity in Pennsylvania since before the 1860s and was instrumental in the Commonwealth's development (PEMA 2023). Coal mining is the most prominent of Pennsylvania's mining activities and continues to be a major industry. Pennsylvania produces two types of coal: bituminous and anthracite. Bituminous coal is typically used for electricity generation and metal production. Anthracite coal, which is rarer than bituminous coal and can reach a high heating point that burns blue flame, is typically used for heating and metal production (PA DEP, 2022g).

While resources other than coal are also mined in Pennsylvania - including metal ores, clay and shale, and limestone - most of these deposits are of limited extent. Coal, in contrast, has been mined under large areas of the state. Counties underlain by coal deposits are at highest risk of environmental hazards resulting from coal mining activities. This area includes the majority of southwest Pennsylvania, situated over the Commonwealth's main bituminous field, including Somerset County. Figure 4.3.4-1 includes coal deposits underlaying the state.

Figure 4.3.4-1 Pennsylvania Coal Fields



Source: (PEMA 2023)
Note: Somerset County circled in red.

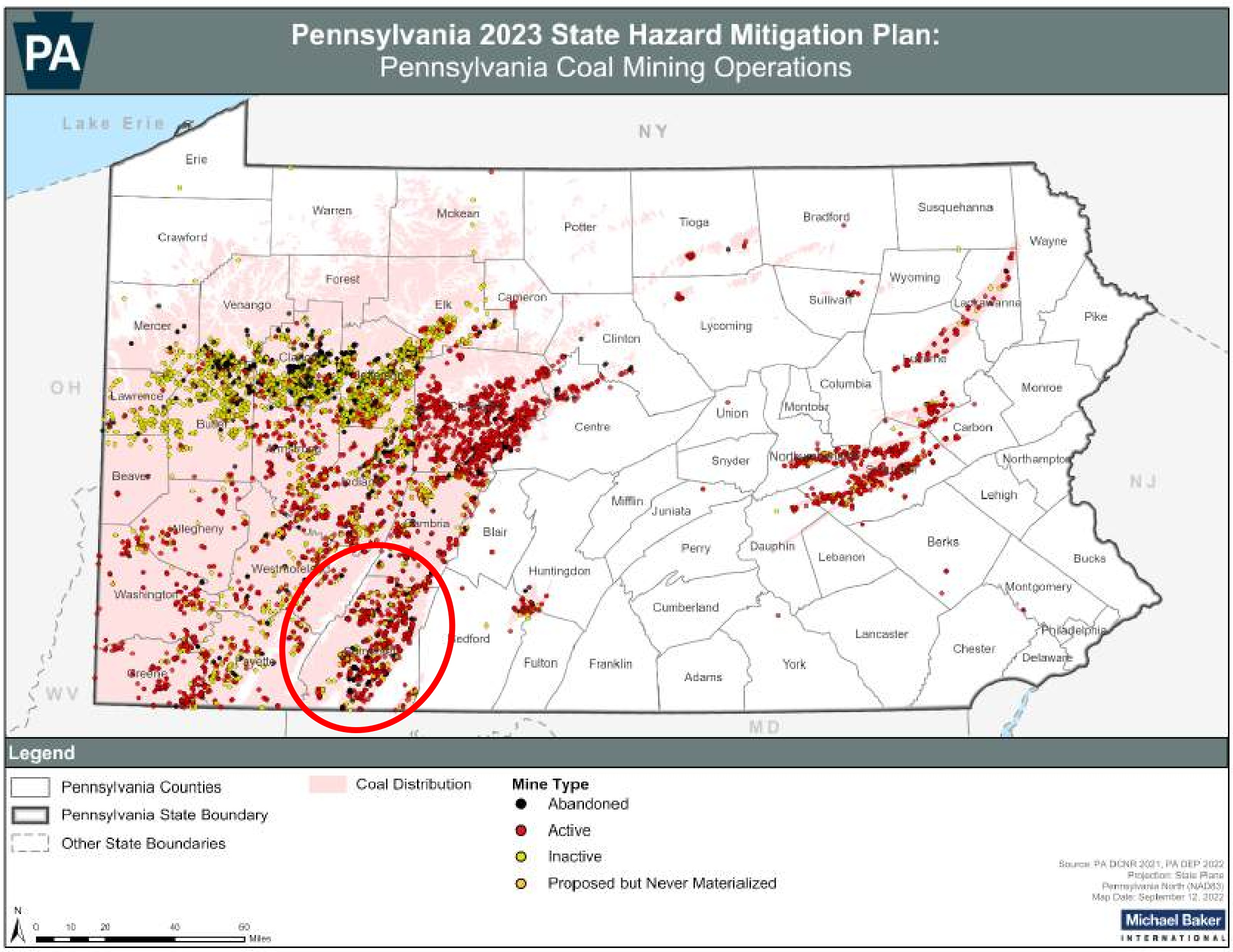
Pennsylvania was one of the first states to initiate, promulgate, and enforce environmental regulations related to mining, including mine reclamation. However, there remains a legacy of abandoned mines, waste piles, and degraded groundwater and surface water in the Commonwealth. The PA DEP notes that Pennsylvania accounts for one-third of the country's abandoned mile lands (AML) problems; the federal Office of Surface Mining AML Inventory System has identified over $1 billion of high-priority health and safety problems in the

Commonwealth (PA DEP, 2022i). According to the DEP, acid mine drainage is the number one water pollution problem in Pennsylvania, estimating there are over 5,500 miles of streams with impaired water quality from the pyrite located in mines that can persist for thousands of years after they are abandoned (Lenahan 2022)

4.3.4.2 Location and Extent

Somerset County has the second highest concentration of mines in the state, with 1,028 active and abandoned bituminous mines throughout the county. Figure 4.3.4-2 shows the location of active, inactive, proposed, and abandoned coal mining operations in Somerset County.

Figure 4.3.4-2 Coal Mining Operations in Pennsylvania



Source: (PEMA 2023)
Somerset County circled in red.

Somerset County has the second highest rate of mine employment in Pennsylvania, with over 634 mine employees in 2022 (NIOSH Mining 2022).

4.3.4.3 Range of Magnitude

Coal mining has a significant impact on neighboring communities and ecosystems. Mining activities and acid mine drainage can contaminate surface and groundwater, create acid mine drainage, cause changes in water temperature and damage to streams, lakes, ponds, estuaries, and wetland ecosystems (PEMA 2023). Mine explosions or burning refuse piles can cause air quality problems. Although mine reclamation is required for much surface mining activity, there is still a loss of quality in landscape, damage to vegetation, and degradation of habitat.

Additionally, jurisdictions where longwall mining has taken place face added risks to domestic water wells. Longwall mines involve the extraction of entire coal seams leaving caverns of up to five feet tall that are left to planned subsidence. However, this earth movement can disrupt aquifers and reduce or eliminate water sources.

Major impacts from mining include surface-elevation changes and subsidence, modification of vegetation, the chemical degradation and flow redistribution of surface water and groundwater, the creation of mine voids and entry openings, adverse aesthetic impacts, and changes in land use. Under the Act 54 (of 1994) amendments to the Bituminous Mine Subsidence and Land Conservation Act (BMSLCA) of 1966, the PA DEP is required to compile data and report findings regarding the effects of underground mining on land, structures, and water resources. DEP compiles claims of effects from bituminous underground mining on an ongoing basis and began publishing claims and incidents in the Bituminous Underground Mining Information System (BUMIS) in 2018. Current BUMIS claims are categorized as follows: land damage, methane intrusion, structure damage, utility damage, water supply contamination, water supply loss, and stream effects.

Land damage from underground coal mining is grouped into four main impact types (PA DEP 2023):

- **Tension Cracks**: Near vertical cracks or ruptures of the ground surface that can extend tens to hundreds of feet in length and several feet in depth and width. These cracks may stay open or close shortly after opening.
- **Mass Wasting**: Downward movement of earth material due to the force of gravity – commonly known as landslides or rock falls.
- **Flooding:** A new building up the stream waters as a result of the formation of a subsidence basin. A newly formed subsidence basin acts as a dam which allows the stream flow to pool. Flooding can result from the rising elevation of the stream and/or the addition of precipitation.
- **Other:** All remaining land damage impacts, including subsidence/sinkholes.

Methane is a naturally occurring hydrocarbon gas that can exist underground. It is lighter than air, colorless, odorless, and flammable. It is found in shallow organic rich deposits and deep coal beds as well as other rock units. Underground methane can be influenced by coal mining. In rare cases, methane can find its way into a structure via cracks in the foundation and/or basement floor. Stray gas problems are typically tied to an incident of structure damage (PA DEP 2022).

Structures on the ground surface can be damaged due to surface effects of underground subsidence. Utilities impacts are subsidence damage to piped, conduits, or wires which convey electricity, gas, water, sewage, internet, etc. These incidents are rare because mine operators and public utilities typically have agreements in place prior to undermining (PA DEP, 2022m).

Water contamination is an impact to the chemical properties of either a private or public water supply. Any change in water quality, color, taste, or smell is treated as water contamination. Water contamination can range from a general increase in the dissolved constituents to an increase in the amount of sediment/particulate matter in the water supply. Contamination can also result from the migration of acid mine drainage from the mine workings and mine pool to the surrounding aquifer. The commonly tested chemical water quality parameters most likely to reflect an impact due to underground coal mining are total dissolved solids, specific conductance, pH, iron, manganese, hardness, total coliform, acidity, alkalinity, and sulfates (PA DEP 2023).

Water loss is an impact to the quantity of water of either a private or public water supply. Underground mining and subsequent subsidence can affect the yield of a water supply. A water loss complaint can range from a decrease in water supply yield to a total loss of water. The cause of the water loss typically is a result of mine dewatering activities reducing the available water supply feeding a well or spring or from subsidence sealing off the fractures that were supplying groundwater to the well or spring (PA DEP 2023).

Stream impacts associated with underground mining can include diminished stream flow, a complete loss of flow or pooling within various areas of a stream as well as streambed fracturing and heaving (PEMA 2023). All three effects can result in a varying degree of habitat loss for aquatic fauna, while a complete flow loss can also result in impacts to terrestrial flora and fauna, such as loss of water supply. Any affected stream may contain one impact or a combination of flow loss, pooling, and heaving/fracture impacts. Diminished flow and complete flow loss related to underground mining is usually caused by the development of new fractures, or the expansion of pre-existing fractures, under and within the stream bed. These fractures result from land subsidence/land movement in areas that have been directly undermined or areas that are located within the underground mine's angle of draw.

Pooling is a type of stream impact that can result from subsidence. Pooling develops when the stream section over a panel subsides, but the part of the stream located above the gate (entries) does not subside as significantly (PEMA 2023). This unsubsided gate acts like a dam, raising the water level on the upstream side of the gate. The result is a reduction of the stream's flow velocity to near zero at this location. This standstill results in sediment particles settling out and depositing on the stream bed, potentially effecting the habitat used by macroinvertebrates. Additionally, pooling results in a loss of oxygen, a general warming of the water in the pool location and can prevent fish and other organisms from freely navigating the stream. Most pooling occurs in streams with a gradient of less than 2%. To alleviate pooling, mine operators use a technique known as a "gate-cut." A gate-cut consists of excavating the section of the stream bed that did not subside (the pooled area) until it is at the same elevation as the rest of the stream bed. To determine if a gate-cut has successfully removed the pooling from an impacted stream, the gate-cut is required to be monitored for five years.

A heave is where the ground in or crossing the stream bed is raised from its original position in response to extension and compression of rock layers resulting from subsidence. Heaving can disrupt stream flow by halting or redirecting flow (PA DEP 2023).

Underground mining can have both positive and adverse effects on wetlands. A wetland occurs in flat areas and have soils that are permanently saturated in water (hydric soils) and vegetation that is adapted to survive in hydric soils. When subsidence occurs in flat areas, wetlands can spontaneously form. The subsidence creates a depression allowing water to collect and remain in the depression. Over time, the soils become saturated and eventually hydric. When waterfowl visit the saturated depressions, they bring with them vegetation seeds which get deposited and, over time, will lead to the development of characteristic wetland vegetation. The adverse effect of coal mining on wetlands is the loss of habitat/wetlands. As with streams, subsidence can significantly reduce or eliminate the water source of a wetland through land fractures. Without a water source, the hydric soils will lose moisture and the vegetation that is adapted to survive in saturated soils will perish (PA DEP 2021).

In addition, active and abandoned mines can also result in injury and loss of human life. This can occur in active mines where workers are injured or killed by mine collapse, entrapment, poisonous gases, inundation, explosions, fires, equipment malfunction, and improper ventilation (MSHA 2022). Injuries and death, such as All-Terrain Vehicle (ATV) accidents, falling, and drowning, can also occur in abandoned mines.

Recently, Pennsylvania, has seen an increase in quarry trespassing due to social media posts on sites like Instagram and YouTube (The Morning Call 2015). Local officials warn that quarries contain sharp and unpredictable edges, discarded machinery under water, strong currents, and extreme changes in water temperature just below in the surface. In addition to injuries and arrests, deaths from falls and drowning have also resulted from quarry trespassing.

The mineral-waste disposal from coal mining also is a hazard. Past disposal practices have dotted Pennsylvania's landscape with, at one point, over 820 unsightly refuse piles, many containing combustible materials that cause long-term air-quality problems if ignited (Dalberto et al., 2004). Burning refuse piles have also been linked to major underground coal fires, such as those at Centralia and Shamokin in the Anthracite region of Pennsylvania.

4.3.4.4 Past Occurrence

Pennsylvania has a long history of mining and there have been numerous mining accidents across the state, including major incidents in Somerset County. In 2002, the Quecreek Mine accident flooded nearly 7 million tons of water into the mine (PEMA 2023). The accident was the result of a breach in the wall between Quecreek Mine and an abandoned, flooded adjacent mine. Nine miners were trapped for 77 hours; however, the accident ended with the safe rescue of all the trapped workers (Sliman 2023). Between 2015 and 2022, four mine fatalities and 153 injuries occurred in Somerset County (MSHA 2022). In October 2023, a mine employee was killed in an accident in a Somerset County mine (Hall 2023).

Environmental impacts from mining activities, including acid mine drainage, are an ongoing issue within the county. PA DEP has had some success with acid mine drainage site remediation, including near the Flight 93 crash site in Somerset County at Lambert Run (Lenahan 2022).

4.3.4.5 Future Occurrence

It is difficult to forecast the severity and frequency of coal mining accidents and environmental damage in Somerset County. Throughout time, the government has strengthened mining and reclamation operation and environmental regulations, permitting, and inspection criteria, but this has not prevented mining accidents and environmental damage from occurring.

Surface subsidence resulting from underground mining continues to be a major concern of those impacted by the mining industry. Despite the use of deep mine roof support methods, some subsidence will eventually occur.

It is likely that Pennsylvania will continue to modify its laws to reflect additional environmental awareness (PEMA 2023). Stricter controls on reclamation are likely. State and federal laws and programs have historically placed an emphasis on environmental preservation and reclamation. As in the past, it seems likely that Pennsylvania will be at the forefront of these programs and future occurrence will decrease.

Effects of Climate Change

The long legacy of coal mining in the region will have major effects on the climate. As global temperatures continue to rise, abandoned mines pose an increasing threat due to the release of methane, a potent greenhouse gas that accelerates climate change. Underground mine fires and subsidence could become more frequent, exacerbated by shifting weather patterns and more intense rainfall. Heavy precipitation events may also lead to the mobilization of acid mine drainage, contaminating local waterways such as the Casselman River and impacting ecosystems and drinking water supplies. These environmental stressors will put added pressure on both rural communities and local economies that have historically depended on coal mining.

As climate change intensifies, Somerset County may also experience more extreme weather, including stronger storms, which could weaken already unstable mine-lands. The region's agriculture and forestry sectors might struggle with shifting precipitation patterns and warmer temperatures, further complicating economic transitions away from coal. While efforts to reclaim and repurpose former mine lands could provide some environmental relief, long-term impacts such as groundwater contamination and increased flood risks will require ongoing mitigation strategies.

4.3.4.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets exposed and vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the hazardous materials release hazard on the county, including:

- Impact on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist in understanding this hazard over time

A spatial analysis was conducted of coal mining operations in Somerset County. The area impacted by a coal mine incident will depend on the coal mine and atmospheric conditions. For this assessment, however, 1.5 miles was selected as a representative distance within which death, injury, or significant property damage could occur.

Impact on Life, Health, and Safety

To assess the vulnerability of the population to environmental hazards related to coal mining activities, all people located within one mile an active or abandoned coal mile shown in Table 4.3.4-1. The area impacted by a coal mine incident will depend on the coal mine and atmospheric conditions. For this assessment, however, a one-mile radius was selected as a representative distance within which death, injury, or significant property damage could occur.

Roughly 41 percent of the population in Somerset County is within one mile of a coal mining operation. This could potentially put a strain on emergency services in the county. Fire departments may be called into response and recovery if explosions or fires occur. Potential environmental contamination can have adverse health impacts on communities, leading to more strain on the local healthcare system (PEMA 2023).

Table 4.3.4-1 Estimated Somerset County Population Within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area

		Population within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area	
Jurisdiction	**Total Population (2022 ACS 5-Year Estimates)**	**Number of Persons**	**% of Jurisdiction Total**
Addison (B)	272	0	0.0%
Addison (T)	945	118	12.5%
Allegheny (T)	669	0	0.0%
Benson (B)	139	139	100.0%
Berlin (B)	2,297	2,455	106.9%
Black (T)	868	511	58.9%
Boswell (B)	1,411	167	11.8%
Brothersvalley (T)	2,002	1,416	70.7%
Callimont (B)	52	0	0.0%
Casselman (B)	64	0	0.0%
Central City (B)	1,045	94	9.0%
Conemaugh (T)	6,759	2,566	38.0%

		Population within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area	
Jurisdiction	**Total Population (2022 ACS 5-Year Estimates)**	**Number of Persons**	**% of Jurisdiction Total**
Confluence (B)	596	0	0.0%
Elk Lick (T)	2,423	1,618	66.8%
Fairhope (T)	85	0	0.0%
Garrett (B)	409	264	64.5%
Greenville (T)	865	0	0.0%
Hooversville (B)	722	402	55.7%
Indian Lake (B)	314	31	9.9%
Jefferson (T)	1,313	18	1.4%
Jenner (T)	3,713	2,625	70.7%
Jennerstown (B)	1,182	37	3.1%
Larimer (T)	536	0	0.0%
Lincoln (T)	1,305	899	68.9%
Lower Turkeyfoot (T)	425	20	4.7%
Meyersdale (B)	2,118	1,225	57.8%
Middlecreek (T)	644	0	0.0%
Milford (T)	1,428	863	60.4%
New Baltimore (B)	147	0	0.0%
New Centerville (B)	118	118	100.0%
Northampton (T)	282	0	0.0%
Ogle (T)	493	8	1.6%
Paint (B)	1,122	332	29.6%
Paint (T)	3,038	2,769	91.1%
Quemahoning (T)	1,661	1,375	82.8%
Rockwood (B)	816	653	80.0%
Salisbury (B)	619	68	11.0%
Seven Springs (B)	7	0	0.0%
Shade (T)	2,342	1,706	72.8%
Shanksville (B)	166	166	100.0%
Somerset (B)	6,030	118	2.0%
Somerset (T)	11,775	3,681	31.3%
Southampton (T)	628	370	58.9%
Stonycreek (T)	2,271	1,292	56.9%
Stoystown (B)	410	409	99.8%
Summit (T)	1,911	876	45.8%
Upper Turkeyfoot (T)	1,073	0	0.0%
Ursina (B)	214	0	0.0%

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area	
		Number of Persons	% of Jurisdiction Total
Wellersburg (B)	148	152	102.7%
Windber (B)	3,930	1,121	28.5%
Somerset County (Total)	**73,802**	**30,682**	**41.6%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024
Note: % = Percent; B = Borough; T = Township

Impacts on General Building Stock

Potential losses to the general building stock caused by a coal mine operation incident is difficult to quantify. The degree of damages to the general building stock depends on the scale of the incident. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion, collapse, or subsidence occurs. The closure of waterways, railroads, airports, and highways as a result of a coal mining operation incident has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may have local or regional effects depending on the magnitude of the event and level of service disruptions. To estimate the buildings exposed to a coal mining operation incident, all buildings within a one-mile radius of an active or abandoned coal mine were identified. More than sixty percent of the total building value is vulnerable to environmental hazards related to coal mining activities, over $16 million in building value (PEMA 2023). Table 4.3.4-2 shows that 40 percent of the buildings within the county are vulnerable to the active and abandoned mine hazard area.

Table 4.3.4-2 Buildings within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area

Jurisdiction	Jurisdiction Total Buildings		Buildings within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,465	0	0.0%	$0	0.0%
Addison (T)	2,429	$1,136,703,437	403	16.6%	$190,596,535	16.8%
Allegheny (T)	1,509	$781,809,472	2	0.1%	$453,841	0.1%
Benson (B)	173	$89,274,721	173	100.0%	$89,274,721	100.0%
Berlin (B)	1,392	$895,269,284	1,475	106.0%	$980,222,989	109.5%
Black (T)	1,515	$834,474,737	798	52.7%	$368,972,159	44.2%
Boswell (B)	826	$474,400,294	96	11.6%	$47,175,301	9.9%
Brothersvalley (T)	3,330	$2,064,465,986	2,323	69.8%	$1,473,755,692	71.4%

Jurisdiction	Jurisdiction Total Buildings		Buildings within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Callimont (B)	55	$30,930,873	0	0.0%	$0	0.0%
Casselman (B)	119	$41,086,890	0	0.0%	$0	0.0%
Central City (B)	912	$442,954,504	87	9.5%	$33,705,896	7.6%
Conemaugh (T)	6,338	$3,880,986,714	2,265	35.7%	$1,277,406,572	32.9%
Confluence (B)	753	$379,399,641	0	0.0%	$0	0.0%
Elk Lick (T)	3,334	$1,853,364,019	2,081	62.4%	$1,138,502,764	61.4%
Fairhope (T)	304	$114,953,744	7	2.3%	$2,246,854	2.0%
Garrett (B)	377	$163,199,308	261	69.2%	$111,663,911	68.4%
Greenville (T)	1,145	$619,817,620	3	0.3%	$929,617	0.1%
Hooversville (B)	581	$284,259,840	344	59.2%	$162,235,191	57.1%
Indian Lake (B)	1,148	$775,063,497	90	7.8%	$59,864,681	7.7%
Jefferson (T)	3,395	$1,763,883,579	89	2.6%	$40,518,658	2.3%
Jenner (T)	5,016	$2,687,221,806	3,262	65.0%	$1,701,332,566	63.3%
Jennerstown (B)	641	$404,635,410	22	3.4%	$16,058,284	4.0%
Larimer (T)	839	$411,045,802	1	0.1%	$191,500	0.0%
Lincoln (T)	1,981	$1,209,799,393	1,162	58.7%	$635,189,714	52.5%
Lower Turkeyfoot (T)	1,168	$528,650,209	63	5.4%	$31,611,547	6.0%
Meyersdale (B)	1,529	$888,796,373	888	58.1%	$534,516,185	60.1%
Middlecreek (T)	2,860	$1,361,478,007	6	0.2%	$3,791,840	0.3%
Milford (T)	2,434	$1,414,705,761	1,426	58.6%	$845,651,784	59.8%
New Baltimore (B)	174	$77,842,527	0	0.0%	$0	0.0%
New Centerville (B)	171	$104,468,378	171	100.0%	$104,468,378	100.0%
Northampton (T)	763	$355,524,703	0	0.0%	$0	0.0%
Ogle (T)	687	$335,973,192	28	4.1%	$15,007,725	4.5%
Paint (B)	553	$294,837,290	164	29.7%	$95,042,063	32.2%
Paint (T)	3,474	$2,072,241,492	3,037	87.4%	$1,742,112,973	84.1%
Quemahoning (T)	2,464	$1,472,027,871	1,980	80.4%	$1,053,898,817	71.6%
Rockwood (B)	619	$349,683,802	495	80.0%	$275,166,850	78.7%
Salisbury (B)	639	$345,399,685	70	11.0%	$34,284,146	9.9%
Seven Springs (B)	82	$139,517,399	0	0.0%	$0	0.0%
Shade (T)	3,461	$1,759,474,604	2,458	71.0%	$1,237,725,332	70.3%
Shanksville (B)	178	$97,994,103	178	100.0%	$97,994,103	100.0%
Somerset (B)	3,433	$3,277,246,043	71	2.1%	$135,884,659	4.1%
Somerset (T)	8,899	$6,489,508,286	2,673	30.0%	$1,819,792,401	28.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings within 1-mile of an Active (Surface, Underground, and Deep-Underground Mines) and/or Abandoned Mine Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Southampton (T)	1,001	$469,896,734	536	53.5%	$250,901,515	53.4%
Stonycreek (T)	3,547	$1,868,134,699	2,191	61.8%	$1,096,682,641	58.7%
Stoystown (B)	266	$142,664,600	266	100.0%	$142,664,600	100.0%
Summit (T)	3,085	$1,765,406,355	1,593	51.6%	$1,010,730,003	57.3%
Upper Turkeyfoot (T)	2,126	$1,035,009,396	1	0.0%	$215,872	0.0%
Ursina (B)	279	$118,221,649	0	0.0%	$0	0.0%
Wellersburg (B)	261	$117,923,548	255	97.7%	$107,391,888	91.1%
Windber (B)	2,673	$1,756,688,270	732	27.4%	$469,605,890	26.7%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**34,226**	40.2%	**$19,435,438,660**	**38.8%**

Source: Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024; RS Means 2024
Note: % = Percent

Impacts on Critical Facilities

Potential losses of critical facilities caused by a coal mining incident are difficult to quantify. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion, collapse, or subsidence occurs. The tables below summarize critical facilities and lifelines located within the coal mining operation area. A total of 713 critical facilities are located in Somerset County. Overall, 990 critical facilities are exposed to an active or abandoned hazardous material event, as shown in Table 4.3.4-3.

Table 4.3.4-3 Lifeline Facility Exposure to Coal Mine Operations

FEMA Lifeline Category	Number of Lifelines	Number of Lifelines Located within 1.5 Miles of Active Coal Mine	Number of Lifelines Located within 1.5 Miles of Abandoned Coal Mine
Communications	54	12	2
Energy	14	8	0
Food, Water, Shelter	0	0	0
Hazardous Materials	82	40	9
Health and Medical	3	1	0
Safety and Security	134	43	9
Transportation	390	167	37
Water Systems	0	0	0

FEMA Lifeline Category	Number of Lifelines	Number of Lifelines Located within 1.5 Miles of Active Coal Mine	Number of Lifelines Located within 1.5 Miles of Abandoned Coal Mine
Other Critical Facilities	36	4	3
Somerset County (Total)	713	275	60

Source: Somerset County 2024; USACE 2022

Impact on the Economy

If a significant coal mining operation incident occurred, not only would life, safety, and building stock be at risk, but the economy of Somerset County would also be affected. Exact impacts on the economy are difficult to predict, given the uncertainty of the size and scope of potential incidents.

Impact on the Environment

Coal mine operations near bodies of water are at high risk in the event of subsidence, collapse, or acid mine drainage. Such events could release toxins, waste, and other pollutants into the water and greatly impact surrounding habitats.

Future Growth and Development

Estimated population projections provided by the Center of Rural Pennsylvania indicate that Somerset County's population will continue to decrease into 2040, decreasing total population to approximately 68,632 persons (Center of Rural Pennsylvania 2013). There may be fewer residents living in coal mining operation areas.

Effect of Climate Change on Vulnerability

Coal mining operations located in or near the floodplain may experience an increase in flood events due to the projected changes in increased precipitation events, magnitude, and frequency.

4.3.4.7 Additional Data and Next Steps

The assessment above identifies vulnerable populations and potential structural and economic losses associated with this hazard of concern. Collection of additional information and actual loss data specific to the plan participants will further enhance Somerset County's vulnerability assessment.

4.3.5 Environmental Hazards – Gas and Liquid Pipelines

4.3.5.1 Hazard Description

Pipeline systems consist of the pipelines that convey a liquid or gas, along with all associated equipment such as valves, pumps, compressors, meters, delivery stations, storage, and breakout tanks (PEMA 2023). Pipelines are typically underground but may be aboveground when dictated by operational considerations (such as connections to pump and compressor stations) or environmental conditions (such as geological characteristics).

Natural gas pipelines, the most common type of pipeline in the United States, transport natural gas from the point of production to the point of use. Figure 4.3.5-1 shows the supply chain from gathering to distribution. Three major types of pipelines move natural gas (PEMA 2023):

Gas gathering pipelines move unprocessed natural gas away from the point of production to a facility for further refinement or to a transmission pipeline. Historically, gathering lines were small-diameter, low-pressure pipelines that posed a relatively small threat to people. However, as the shale and fracking boom took hold, gathering pipelines grew in size and pressure and are now at times difficult to distinguish from large gas transmission pipelines. (Pipeline Safety Trust, 2022)
Gas transmission lines are large pipelines (6 to 48 inches in diameter) designed to transport natural gas long distances at high pressures (often 200 to 1,500 pounds per square inch).
Gas distribution lines are smaller (1/2 to 2 inches in diameter) and transport natural gas shorter distances at relatively low pressures (Pipeline Safety Trust, 2015).

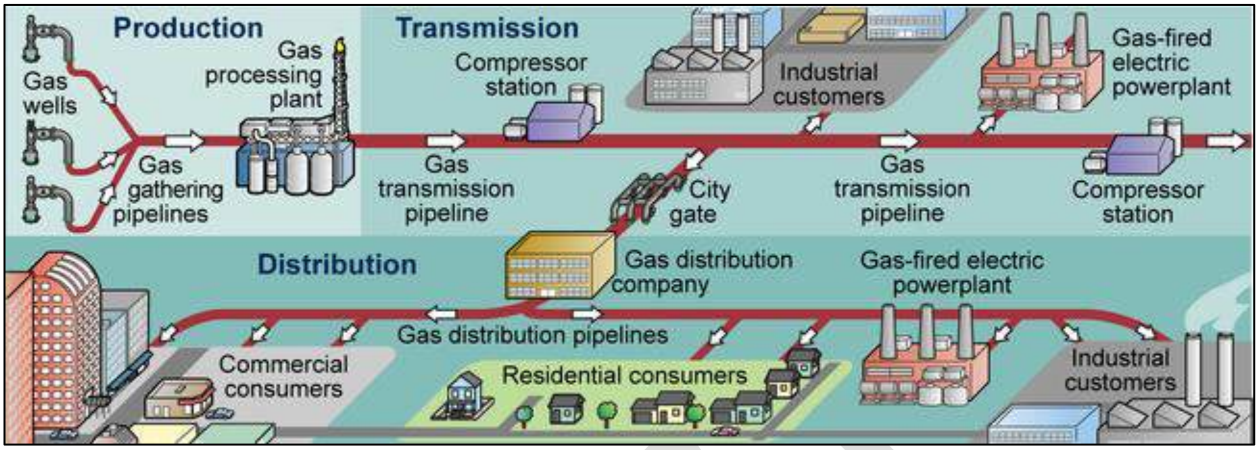
Liquid petroleum pipelines, the second most common type of pipeline in the United States, transport crude oil, refined product, and highly volatile liquids to local distribution networks (PEMA 2023). The system for doing so has the same three categories of pipelines as gas pipeline systems, as shown in Figure 4.3.5-2. Gathering lines are typically 2 to 8 inches in diameter, transmission lines are larger, cross-country pipelines (8 to 48 inches in diameter), and refined product lines are smaller than transmission ones at 8 to 42 inches in diameter (PEMA 2023). Tanker trucks take the refined petroleum products the last few miles from the storage terminals to gas stations and homes.

Pipeline failures are low-probability, potentially high-consequence events. Although gas and liquid pipeline failures are infrequent, the hazardous and inflammable materials released by these events can pose a significant threat to public safety and the built and natural environment. Explosions associated with pipeline failures, for example, can cause severe injury to nearby residents and destroy homes and other property (PEMA 2023).

Product release into the local environment can derive from a fixed facility or occur at any location along a pipeline route and may be the result of carelessness, technical failure, external incidents, or an intentional act against the facility or container. Release of hazardous materials can immediately and adversely impact the general population, causing effects ranging from inconvenient evacuations to personal injury and even death. Such releases also can compromise the environment through contamination of soil, groundwater, or local flora and fauna.

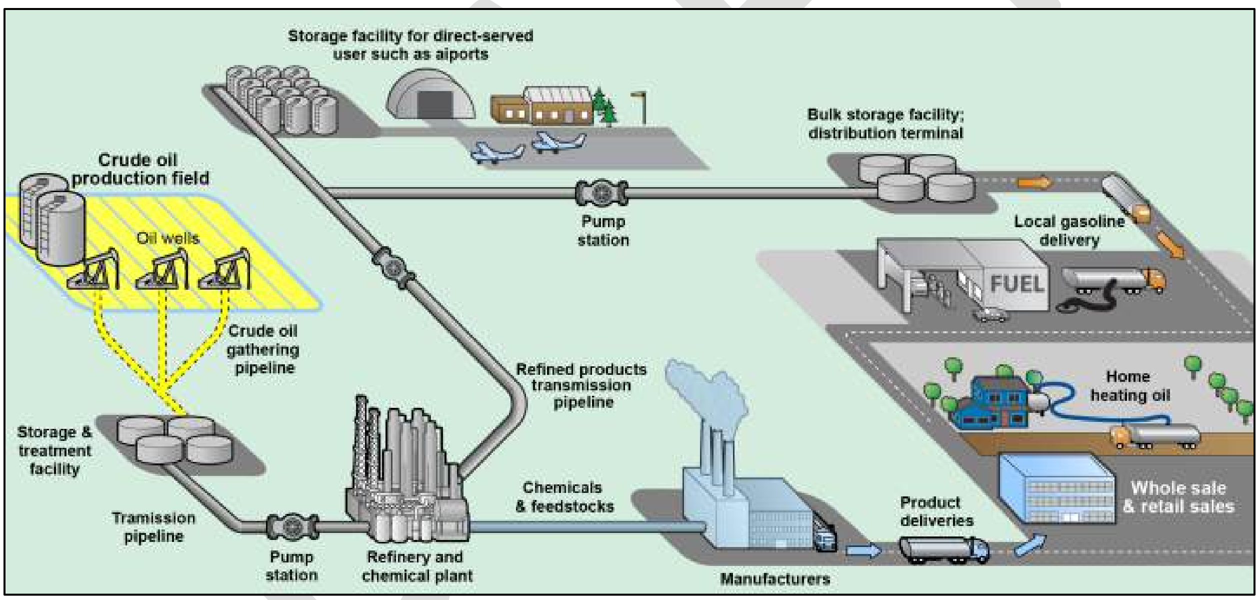
Pipelines in Pennsylvania are regulated by several agencies. Counties have no regulatory authority over pipeline operators but can be engaged in the environmental review of proposals and coordinating emergency services response. Some of the involved county-level departments in Somerset County are the Planning Commission, Water Resources Authority, Conservation District, Facility and Parks, and Department of Emergency Services.

Figure 4.3.5-1 Diagram of Natural Gas Pipeline System



Source: (GAO, 2020)

Figure 4.3.5-2 Diagram of Liquid Petroleum Pipeline System



Source: (GAO, 2021)

Federal and state agencies involved in pipeline safety and regulations include the following:

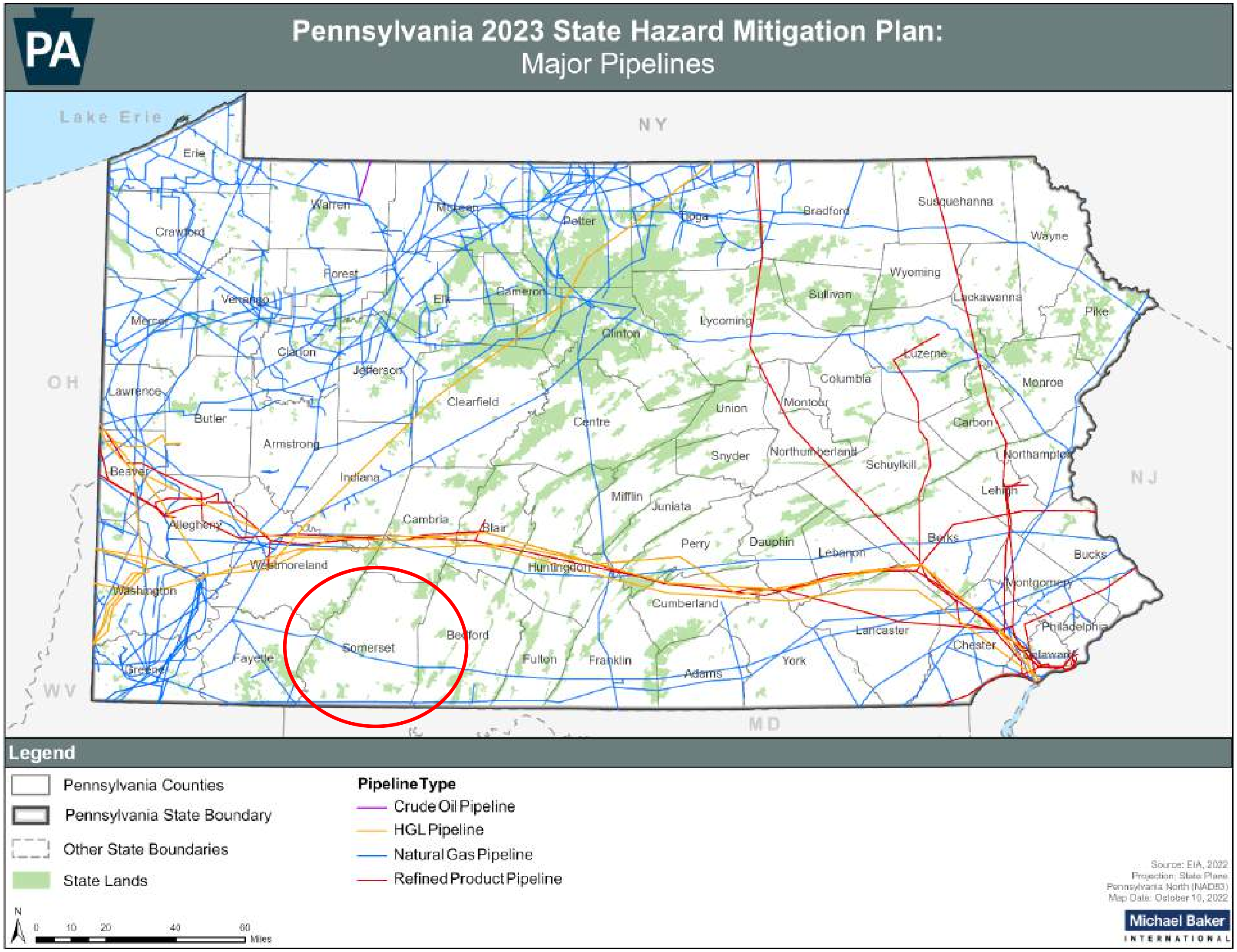
Federal Emergency Regulatory Commission (FERC) is an agency of the United States that regulates the interstate transmission of electricity, natural gas, and oil and reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines.
U.S. Department of Transportation (USDOT) oversees the safety of pipelines and transportation infrastructure.
Pipeline and Hazardous Materials Safety Administration (PHMSA) develops and enforces regulations for a safe, reliable, and environmentally sound pipeline transportation system.
Public Utility Commission (PUC) enforces safety standards for pipeline facilities.

Pennsylvania Department of Environmental Protection (DEP) has regulatory authority over any crossing of a wetland or waterway by a pipeline.

4.3.5.2 Location and Extent

Locations of major pipelines in Pennsylvania are compiled by the U.S. Energy Information Administration (EIA) based on data from FERC, industry sources, and other publicly available sources (PEMA 2023). The EIA defines major pipelines as interstate trunk lines and selected intrastate lines (as well as gathering lines for natural gas). The EIA pipeline locations are shown in Figure 4.3.5-3. Somerset County has 150 miles of natural gas transmission pipelines and no liquid petroleum lines.

Figure 4.3.5-3. Major Pipelines of Pennsylvania



Source: (PEMA 2023)
Note: Somerset County indicated by the red oval

4.3.5.3 Range of Magnitude

Many factors determine the magnitude of the hazard posed by pipeline failures, including the chemicals released, the failure mode of the pipeline, the operating conditions of the pipeline at the time of the incident, and the characteristics of the surrounding area. Impacts to life and property can result from inhalation or ingestion of toxins, exposure to a fire or explosion, or exposure to contaminated soils or drinking water. These impacts may include:

- Serious injuries or fatalities
- Damage to buildings and infrastructure
- Disruptions and closures to critical infrastructure and services, including transportation routes and emergency medical services
- Residential, commercial, and industrial energy supply losses
- Disruption of local businesses and regional economies
- Displacement of residential communities or businesses

4.3.5.4 Past Occurrence

There have been no recorded pipeline incidents in Somerset County.

4.3.5.5 Future Occurrence

Because of the wide scope of the definition of environmental hazards, ranging from a small spill to a large release of a highly volatile or toxic hazardous material, incidents can and will happen at any time. Although these facilities follow applicable safety and health regulations and best practices, the proximity of facilities to population centers is a concern for the county.

Effects of Climate Change

Climate change is expected to impact gas and liquid pipelines in Somerset County, in several ways. Stricter climate policies will likely increase regulations on pipeline construction and operation to minimize environmental impacts. Extreme weather events, such as heavy rainfall and flooding, can damage pipeline infrastructure, leading to higher maintenance costs and potential disruptions. Rising temperatures and changing precipitation patterns may affect ground stability, causing soil erosion and landslides that can threaten infrastructure, such as pipeline integrity (PA DEP, n.d.). Additionally, the transition to renewable energy sources may reduce the demand for fossil fuels, impacting the economic viability of new pipeline projects.

4.3.5.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets exposed and vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the hazardous materials release hazard on the county, including:

- Impact on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist in understanding this hazard over time.

Impact on Life, Health, and Safety

Much of the population in Somerset County is exposed to the consequences of a pipeline failure (Table 4.3.5-1).

Table 4.3.5-1. Estimated Somerset County Population Vulnerable to Gas and Liquid Pipeline Incidents

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population within 1- mile of Hazardous Materials Pipelines	
		Number of Persons	% of Jurisdiction Total
Addison (B)	272	0	0.0%
Addison (T)	945	100	10.6%
Allegheny (T)	669	136	20.3%
Benson (B)	139	120	86.3%
Berlin (B)	2,297	1,428	62.2%
Black (T)	868	203	23.4%
Boswell (B)	1,411	0	0.0%
Brothersvalley (T)	2,002	597	29.8%
Callimont (B)	52	0	0.0%
Casselman (B)	64	0	0.0%
Central City (B)	1,045	603	57.7%
Conemaugh (T)	6,759	3,642	53.9%
Confluence (B)	596	0	0.0%
Elk Lick (T)	2,423	506	20.9%
Fairhope (T)	85	0	0.0%
Garrett (B)	409	0	0.0%
Greenville (T)	865	381	44.0%
Hooversville (B)	722	0	0.0%
Indian Lake (B)	314	0	0.0%
Jefferson (T)	1,313	192	14.6%
Jenner (T)	3,713	321	8.6%
Jennerstown (B)	1,182	0	0.0%
Larimer (T)	536	0	0.0%
Lincoln (T)	1,305	0	0.0%
Lower Turkeyfoot (T)	425	25	5.9%
Meyersdale (B)	2,118	0	0.0%

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population within 1- mile of Hazardous Materials Pipelines	
		Number of Persons	% of Jurisdiction Total
Middlecreek (T)	644	94	14.6%
Milford (T)	1,428	673	47.1%
New Baltimore (B)	147	0	0.0%
New Centerville (B)	118	118	100.0%
Northampton (T)	282	0	0.0%
Ogle (T)	493	13	2.6%
Paint (B)	1,122	0	0.0%
Paint (T)	3,038	239	7.9%
Quemahoning (T)	1,661	205	12.3%
Rockwood (B)	816	0	0.0%
Salisbury (B)	619	0	0.0%
Seven Springs (B)	7	0	0.0%
Shade (T)	2,342	936	40.0%
Shanksville (B)	166	0	0.0%
Somerset (B)	6,030	9	0.1%
Somerset (T)	11,775	3,345	28.4%
Southampton (T)	628	47	7.5%
Stonycreek (T)	2,271	14	0.6%
Stoystown (B)	410	0	0.0%
Summit (T)	1,911	0	0.0%
Upper Turkeyfoot (T)	1,073	261	24.3%
Ursina (B)	214	0	0.0%
Wellersburg (B)	148	146	98.6%
Windber (B)	3,930	0	0.0%
Somerset County (Total)	**73,802**	**14,354**	**19.4%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; Pipeline and Hazardous Materials Safety Administration 2024
Notes: % = Percent

Impacts on Socially Vulnerable Populations

Some populations may be more vulnerable to pipeline incidents. For example, if an evacuation is ordered, individuals who do not speak English very well may be unaware of the potential hazard or danger. The elderly and those with disabilities may encounter mobility issues during an evacuation or getting to a safe location.

Impacts on General Building Stock

Potential losses to the general building stock caused by a pipeline incident is difficult to quantify. The degree of damage to the general building stock depends on the scale of the incident. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion occurs. The closure of waterways, railroads, airports, and highways as a result of a pipeline incident has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may have local, regional, or statewide effects depending on the magnitude of the event and level of service disruptions.

Table 4.3.5-2. Total Building Exposed to Gas or Liquid Pipeline Incident

Jurisdiction	Jurisdiction Total Buildings		Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,465	0	0.0%	$0	0.0%
Addison (T)	2,429	$1,136,703,437	362	14.9%	$174,082,221	15.3%
Allegheny (T)	1,509	$781,809,472	384	25.4%	$255,262,391	32.7%
Benson (B)	173	$89,274,721	152	87.9%	$82,619,654	92.5%
Berlin (B)	1,392	$895,269,284	904	64.9%	$662,222,235	74.0%
Black (T)	1,515	$834,474,737	373	24.6%	$181,526,579	21.8%
Boswell (B)	826	$474,400,294	0	0.0%	$0	0.0%
Brothersvalley (T)	3,330	$2,064,465,986	1,027	30.8%	$637,382,110	30.9%
Callimont (B)	55	$30,930,873	0	0.0%	$0	0.0%
Casselman (B)	119	$41,086,890	0	0.0%	$0	0.0%
Central City (B)	912	$442,954,504	515	56.5%	$231,882,888	52.3%
Conemaugh (T)	6,338	$3,880,986,714	3,296	52.0%	$1,952,381,845	50.3%
Confluence (B)	753	$379,399,641	0	0.0%	$0	0.0%
Elk Lick (T)	3,334	$1,853,364,019	695	20.8%	$386,999,844	20.9%
Fairhope (T)	304	$114,953,744	0	0.0%	$0	0.0%
Garrett (B)	377	$163,199,308	0	0.0%	$0	0.0%
Greenville (T)	1,145	$619,817,620	441	38.5%	$219,109,408	35.4%

Jurisdiction	Jurisdiction Total Buildings		Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Hooversville (B)	581	$284,259,840	0	0.0%	$0	0.0%
Indian Lake (B)	1,148	$775,063,497	0	0.0%	$0	0.0%
Jefferson (T)	3,395	$1,763,883,579	373	11.0%	$170,036,217	9.6%
Jenner (T)	5,016	$2,687,221,806	345	6.9%	$148,105,629	5.5%
Jennerstown (B)	641	$404,635,410	0	0.0%	$0	0.0%
Larimer (T)	839	$411,045,802	0	0.0%	$0	0.0%
Lincoln (T)	1,981	$1,209,799,393	6	0.3%	$730,976	0.1%
Lower Turkeyfoot (T)	1,168	$528,650,209	149	12.8%	$48,065,812	9.1%
Meyersdale (B)	1,529	$888,796,373	0	0.0%	$0	0.0%
Middlecreek (T)	2,860	$1,361,478,007	801	28.0%	$358,996,681	26.4%
Milford (T)	2,434	$1,414,705,761	1,248	51.3%	$712,535,021	50.4%
New Baltimore (B)	174	$77,842,527	0	0.0%	$0	0.0%
New Centerville (B)	171	$104,468,378	171	100.0%	$104,468,378	100.0%
Northampton (T)	763	$355,524,703	0	0.0%	$0	0.0%
Ogle (T)	687	$335,973,192	34	4.9%	$14,593,958	4.3%
Paint (B)	553	$294,837,290	0	0.0%	$0	0.0%
Paint (T)	3,474	$2,072,241,492	281	8.1%	$155,931,254	7.5%
Quemahoning (T)	2,464	$1,472,027,871	260	10.6%	$301,398,532	20.5%

Jurisdiction	Jurisdiction Total Buildings		Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Rockwood (B)	619	$349,683,802	0	0.0%	$0	0.0%
Salisbury (B)	639	$345,399,685	0	0.0%	$0	0.0%
Seven Springs (B)	82	$139,517,399	0	0.0%	$0	0.0%
Shade (T)	3,461	$1,759,474,604	1,194	34.5%	$622,675,104	35.4%
Shanksville (B)	178	$97,994,103	0	0.0%	$0	0.0%
Somerset (B)	3,433	$3,277,246,043	4	0.1%	$175,115,635	5.3%
Somerset (T)	8,899	$6,489,508,286	2,508	28.2%	$2,110,693,485	32.5%
Southampton (T)	1,001	$469,896,734	94	9.4%	$44,186,433	9.4%
Stonycreek (T)	3,547	$1,868,134,699	35	1.0%	$40,378,646	2.2%
Stoystown (B)	266	$142,664,600	0	0.0%	$0	0.0%
Summit (T)	3,085	$1,765,406,355	0	0.0%	$0	0.0%
Upper Turkeyfoot (T)	2,126	$1,035,009,396	389	18.3%	$176,353,577	17.0%
Ursina (B)	279	$118,221,649	0	0.0%	$0	0.0%
Wellersburg (B)	261	$117,923,548	259	99.2%	$117,724,025	99.8%
Windber (B)	2,673	$1,756,688,270	0	0.0%	$0	0.0%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**16,300**	**19.1%**	**$10,085,458,538**	**20.1%**

Sources: Somerset County 2024; USACE 2022; Pipeline and Hazardous Materials Safety Administration 2024; RS Means 2024, Notes: % = Percent

Impacts on Critical Facilities

Potential losses of critical facilities caused by a pipeline incident are difficult to quantify. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if a failure occurs.

Table 4.3.5-3. Critical Facility Exposure to Gas and Liquid Pipelines

Jurisdiction	Total Lifeline Facilities Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Pipelines, by Lifeline Category	% of Jurisdction Total
Addison Borough	2	0	0.0%
Addison Township	14	0	0.0%
Allegheny Township	15	3	20.0%
Benson Borough	2	2	100.0%
Berlin Borough	10	10	100.0%
Black Township	20	4	20.0%
Boswell Borough	8	0	0.0%
Brothersvalley Township	33	5	15.2%
Callimont Borough	1	0	0.0%
Casselman Borough	1	0	0.0%
Central City Borough	7	2	28.6%
Conemaugh Township	50	30	60.0%
Confluence Borough	9	0	0.0%
Elk Lick	26	2	7.7%
Fairhope Township	4	0	0.0%
Garrett Borough	5	0	0.0%
Greenville Township	7	2	28.6%
Hooversville Borough	7	0	0.0%
Indian Lake Borough	1	0	0.0%
Jefferson Township	20	4	20.0%
Jenner Township	39	1	2.6%
Jennerstown Borough	9	0	0.0%
Larimer Township	4	0	0.0%

Jurisdiction	Total Lifeline Facilities Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Pipelines, by Lifeline Category	% of Jurisdction Total
Lincoln Township	20	0	0.0%
Lower Turkeyfoot Township	10	0	0.0%
Meyersdale Borough	12	0	0.0%
Middlecreek Township	9	3	33.3%
Milford Township	21	14	66.7%
New Baltimore Borough	2	0	0.0%
New Centerville Borough	1	1	100.0%
Northampton Township	12	0	0.0%
Ogle Township	5	1	20.0%
Paint Borough	5	0	0.0%
Paint Township	22	3	13.6%
Quemahoning Township	23	2	8.7%
Rockwood Borough	10	0	0.0%
Salisbury Borough	4	0	0.0%
Seven Springs Borough	5	0	0.0%
Shade Township	33	11	33.3%
Shanksville Borough	3	0	0.0%
Somerset Borough	33	0	0.0%
Somerset Township	71	19	26.8%
Southampton Township	8	0	0.0%
Stonycreek Township	42	0	0.0%
Stoystown Borough	3	0	0.0%
Summit Township	35	0	0.0%
Upper Turkeyfoot Township	10	0	0.0%
Ursina Borough	4	0	0.0%
Wellersburg Borough	2	2	100.0%

Jurisdiction	Total Lifeline Facilities Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Pipelines, by Lifeline Category	% of Jurisdction Total
Windber Borough	14	0	0.0%
Somerset County	**713**	**121**	**17.0%**

Source: Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021, Pipeline and Hazardous Materials Safety Administration 2024

Notes: % = Percent

Impact on the Economy

If a significant pipeline incident occurs, not only would life, safety, and building stock be at risk, but the economy of Somerset County would also be affected. A significant incident within an urban area may force businesses to close for an extended period of time because of contamination or because of direct damage caused by an explosion. Exact impacts on the economy are difficult to predict, given the uncertainty of the size and scope of potential incidents.

Impact on the Environment

Should a pipeline failure occur during a natural disaster, access to the pipeline may be restricted, waterlines for fire suppression may be compromised, and response personnel and resources may be limited. In addition, the potential threat of a pipeline failure can be amplified by natural hazard events that are accompanied by winds, thunderstorms, or floods. These conditions can spread contamination more quickly and exacerbate the threat to local water supplies, air quality, soil, and agriculture (PEMA 2023).

Future Changes that May Impact Vulnerability

Understanding future changes that impact vulnerability in the County can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The County considered the following factors to examine potential conditions that may affect hazard vulnerability:

Potential or projected development.
Projected changes in population.
Other identified conditions as relevant and appropriate, including the impacts of climate change.

Future Growth and Development

An increase in development and population can increase the likelihood of a pipeline incident if development occurs in the vicinity of pipeline infrastructure. The tables and hazard maps included in the jurisdictional annexes in this HMP contain additional information regarding the specific areas of development that would increase county vulnerability to the pipeline incident hazard.

Projected Changes in Population

Estimated population projections provided by the Department of Environmental Protection indicate that Somerset's population may continue to shrink, and by 2050, total population is projected to be approximately 65,754 persons (PADEP n.d.). Fewer residents could mean that fewer community members would be impacted by future pipeline incidents.

Effect of Climate Change on Vulnerability

As temperatures change, excessive heat on pipelines may alter the material properties. In addition, pipeline locations in the floodplain may experience an increase in flood events due to the project changes in increased precipitation events, magnitude, and frequency. Increased precipitation could accelerate the rate of corrosion of pipelines, resulting in leakage incidents.

4.3.5.7 Additional Data and Next Steps

The assessment above identifies vulnerable populations and potential structural and economic losses associated with this hazard of concern. Collection of additional information and actual loss data specific to the plan participants will further enhance Somerset County's vulnerability assessment.

4.3.6 Environmental Hazards – Hazardous Materials Releases

4.3.6.1 Hazard Description

Hazardous materials can be released to the environment from a fixed facility or from a transport vehicle moving along a highway, railroad, or other transportation route. A "release" of a chemical means emission to the air or water, or placement in some type of land disposal. Such releases may be the result of carelessness, technical failure, external incidents, or an intentional act against the facility or container. Transportation of hazardous materials on highways involves tanker trucks or trailers, which are responsible for the greatest number of hazardous material release (hazmat) incidents. Volatility of products stored or transported, along with potential impact on a local community, may increase the risk of intentional acts against a facility or transport vehicle.

Release of certain products considered hazardous materials can immediately and adversely impact the general population, ranging from the inconvenience of evacuations to personal injury and even death. Moreover, any release can compromise the local environment through contamination of soil, groundwater, or local flora and fauna. The U.S. Department of Transportation categorizes hazardous materials into classes based on the materials involved:

- Class 1: Explosives
- Class 2: Gases
- Class 3: Flammable liquids
- Class 4: Flammable solids
- Class 5: Oxidizers and organic pesticides
- Class 6: Poisons and etiologic materials
- Class 7: Radioactive materials
- Class 8: Corrosives
- Class 9: Miscellaneous

A release of any of these products in large quantity would pose a threat to the local population, economy, and environment, resulting in lost revenue, injuries, and deaths. The U.S. Environmental Protection Agency (EPA) tracks over 650 toxic chemicals that pose a threat to human health and the environment through the Toxic Release Inventory (TRI). EPA publishes all TRI data in a publicly accessible database at its Envirofacts website.

Facilities that use, manufacture, or store hazardous materials in Pennsylvania must comply with both Title III of the federal Superfund Amendments and Reauthorization Act (SARA, also known as the Emergency Planning and Community Right-to-Know Act), and Pennsylvania's reporting requirements under the Hazardous Materials Emergency Planning and Response Act (1990-165). Under SARA, facilities in certain industries that use or house these chemicals in amounts exceeding specified levels must submit annual reports on how each chemical is managed through recycling, energy recovery, treatment, and releases to the environment. Facilities subject to this reporting requirement are called Tier II facilities.

4.3.6.2 Location and Extent

Across the County, hazardous materials releases are logged with the US Environmental Agency (EPA) Toxic Release Inventory (TRI) dataset. As of October 2024, when reports were last compiled, Somerset County was shown to have 34 facilities registered on the TRI report. This data reflects releases and other waste management activities of chemicals, not whether (or to what degree) the public has been exposed to those chemicals. stored with the United States Environmental Protection Agency (EPA) shows 34 TRI facilities being located in Somerset County, PA (EPA 2024).

Somerset County is home to 1,988 miles of roadways, including 81 miles of interstate, 205 miles of state highway, 107 miles of federal highways, and 1,595 miles of secondary and tertiary roads. With a variety of roadways linking more-populated areas with rural communities, the gridwork of roadways facilitates free movement of HazMat throughout the region.

While permitted, identified hazardous substance travel routes are not maintained by the county or regional planning entities. The primary roadways in Somerset County are listed as follows and can be found in Figure 4.3.6-1

- Pennsylvania Turnpike (I-76)
- U.S. Highway 30 (US-30)
- U.S. Highway 40 (US-40)
- U.S. Highway 219 (US-219)
- State Highway 31 (PA-31)
- State Highway 56 (PA-56)
- State Highway 160 (PA-160)
- State Highway 271 (PA-271)
- State Highway 281 (PA-281)
- State Highway 403 (PA-403)
- State Highway 523 (PA-523)
- State Highway 601 (PA-601)
- State Highway 653 (PA-653)
- State Highway 669 (PA-669)
- State Highway 985 (PA-985)

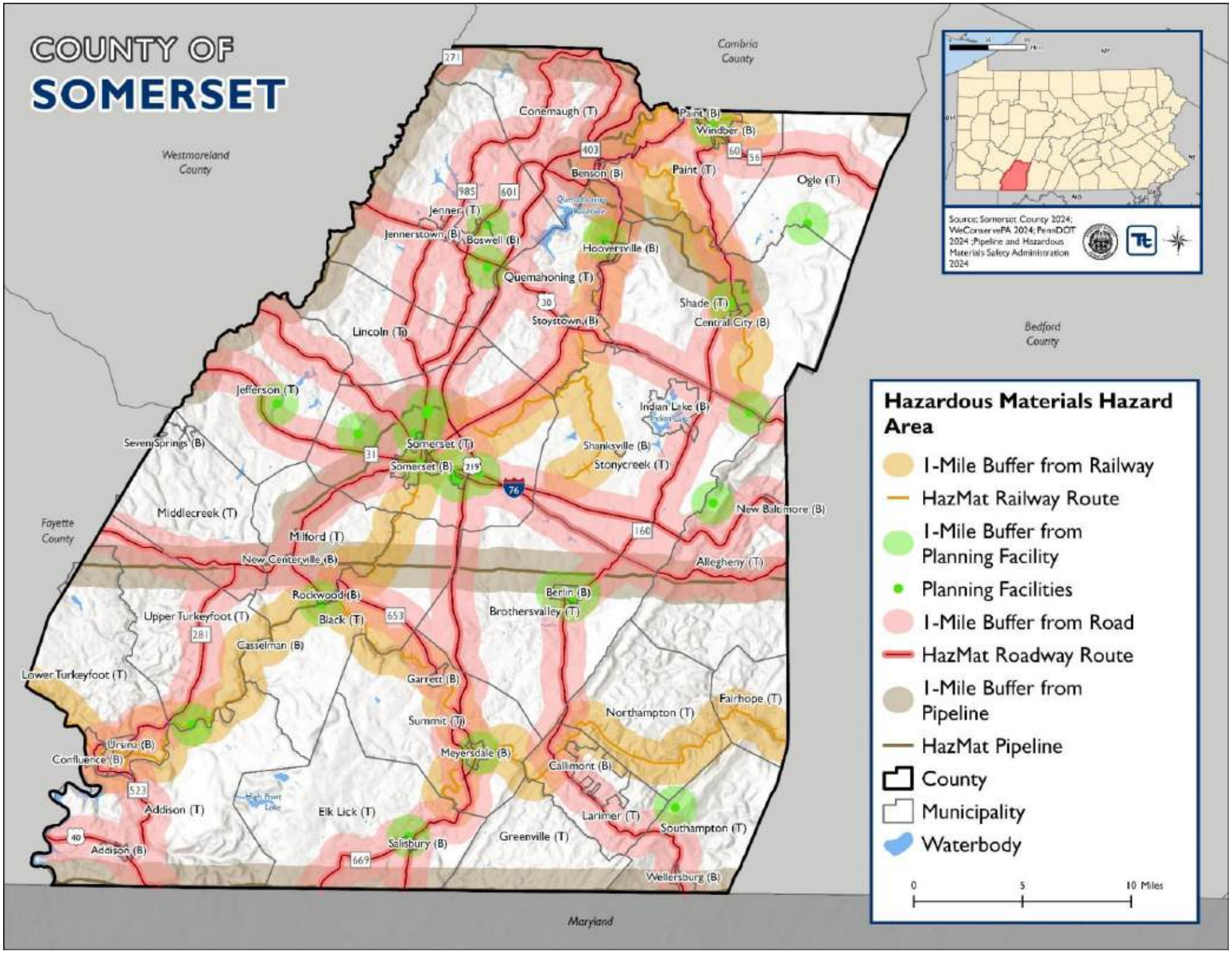
Three rain lines carry a variety of cargo across Somerset County. CSX Transportation has rail lines cross the southern part of the County along the Casselman River. Other CSX lines run alongside and east of US-219, from neighboring Cambria County southward through Somerset. The third primary rail line is the Norfolk Southern Railway, which enters the County near Paint, PA, and extends southward along the Stonycreek River and Dark Shade Creek.

Buffer areas around potential hazmat release sites have been defined as follows for this HMP update:

- 1.0 mile on either side of major highways
- 1.0 mile on either side of rail lines
- Unique radius around each SARA Type II facility, depending on the materials kept at the site

If a hazardous material incident occurred in or on the facility, pipeline, or transportation network, these buffers would represent the toxin or radiation release area. The buffer areas are shown on Figure 4.3.6-1.

Figure 4.3.6-1. Major Transportation Routes and Railways with Buffer in Somerset County, Pennsylvania



4.3.6.3 Range of Magnitude

Hazardous materials incidents in Somerset County could range from minor petroleum spills to large facility-based incidents that could lead to loss of life and damage to property, environment, and economy. Severity of an incident varies with type of material released and distance and related response time for emergency response teams. Areas closest to the releases are generally at the greatest risk; however, depending on the material, a release can travel great distances or persist over a long time (e.g., nuclear radiation), resulting in far-reaching effects on people and the environment. A hazmat release can be exacerbated or mitigated by specific circumstances such as the following:

- **Noncompliance with applicable codes (e.g., fire and building codes) and maintenance failures (e.g., fire protection and containment features)**—Can substantially increase damage to a facility and to surrounding buildings.
- **Geographic location of hazmat site**—If occurring within a Special Flood Hazard Area (SFHA), a materials release could cause large-scale water contamination during a flood incident, or a flood incident could compromise production and storage of hazardous chemicals. Stormwaters and floodwaters can also move toxic chemicals swiftly across great distances.
- **Weather conditions**—Affect how the hazard develops.
- **Micro-meteorological effects of buildings and terrain**—Alter dispersion of materials.
- **Shielding in the form of sheltering-in-place**—Protects people and property from harmful effects.

The extent of hazardous materials release incidents in Somerset County can vary from minor spills to significant releases posing serious risks to public health and the environment. Historical data indicates that petroleum products, industrial chemicals, and agricultural pesticides are the most common types of hazardous materials involved in incidents.

A worst-case hazardous materials release scenario in Somerset County would involve the overturn of a tractor-trailer carrying an extremely hazardous substance, resulting in a massive release of its cargo on a major roadway. Such an incident could block traffic on the county's major transportation routes and threaten the health and safety of individuals on the roadways and in surrounding neighborhoods. Additionally, a release could necessitate the closure of critical county facilities near the accident site. A hazardous material release could impact air, soil, groundwater, and surface water quality.

4.3.6.4 Past Occurrence

Somerset County has experienced hazmat incidents at fixed sites and along roadways:

- As of February 2025, Somerset County had 1,317 facilities registered on the EPA Envirofacts Multisystem Search (EPA 2025). This data reflects releases and other waste management activities of chemicals but does not indicate whether or to what degree the public has been exposed to those chemicals.
- Over the past three years, environmental violations were reported at 219 facilities in the county (EPA 2025).
- According to the 2023 State Hazard Mitigation Plan, Somerset County reported 21 hazardous materials incidents to PEMA's incident management system, PEMA-KC, between 2018 and April 2023 (PEMA, 2023).
- Table 4-24 summarizes events recorded in the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) incident report database.

Somerset has not been included in any major disaster (DR) or emergency (EM) declarations for hazardous material release-related events (FEMA, 2024a). Past hazmat instances in Somerset County have been accidental and not considered terrorist or criminal acts.

Table 4.3.6-1 Hazardous Material Releases in Somerset County, 1950 to 2024

Event Date	Location Impacted	Event Description
6/17/1992	Somerset	Driver pulled in lot to make delivery. He noticed that material was leaking from the truck. He diked the area to prevent spread of material. somerset haz-mat team cleaned up the spill. The remaining material was transferred to another container.
4/28/1993	Somerset	The pressure relief valve failed on our cargo tank truck causing a leak and nitric acid to fume. Somerset volunteer fire dept evacuated residences and driver was taken to hospital due to inhalation of fumes. Fire company supplied a stainless-steel plug relief valve opening then deconned the trailer and moved it to isolated area of rt. 219. The spill was cleaned up by fire dept. Safety and Maintenance coordinator and mechanic went to scene with new pressure relief valve and made the necessary repairs.
2/17/1994	Somerset	Drumming off into 55-gallon totes. No gauge & one overflowed. Cleaned up with oil dry.
9/22/1994	Stonycreek	On September 22, 1994, unit was stopped by the state police for inspection. A drip at the discharge valve was noticed. The hazmat response team was called. The outlet cover was removed. Three or four drops of acid were released into a bucket. The outlet gasket was replaced and re-sealed.
8/8/1996	Somerset	Driver enroute to destination, discovered leaking drum while at truck stop. Upon discovery, contacted an emergency response contractor, who responded to scene, contained leaking drum, placed in recovery drum and neutralized the trailer floor. Freight was unloaded and placed on another trailer to continue the trip. The damaged drum was left on the initial trailer and taken to the Irwin terminal. Proper disposal being arranged.
9/25/1997	Somerset	Driver unloading into customers tank - customers tank would not hold on to the product - causing over flow.
7/31/1998	Elk Lick Township	Rail: During inspection acfx 79908, was discovered leaking a small amount of methanol from the bottom outlet valve. CPR hazardous materials response coordinator was notified, who responded to tighten the bottom valve and cap securing the leak. The leak was repaired. There was no clean up necessary in connection with this incident.
3/8/2000	Somerset	The driver lost control of vehicle coming down a hill. The driver ran the vehicle off of the road instead of rear ending another vehicle. After the vehicle ran off of the road, approximately 15 additional gallons were lost during the transfer due to the transfer taking place on a hill. Local police and fire departments were notified. An environmental contractor was also called to secure the scene. This was a case of driver error.
4/27/2000	Stoyestown	After unloading the driver noticed a drip coming from a pump on customer tank. Maintenance repaired. Spill cleaned up with spill pads.
3/13/2003	Somerset	The driver noticed the product on side of trailer. Stopped on roadway to check the turnpike authority on site. The driver had a leaking wash out cap, changed gasket, cleaned up spilled product and police released him.

Event Date	Location Impacted	Event Description
9/9/2003	Somerset	This Derakane 400 lined trailer was loaded in Detroit, MI and while enroute through Pennsylvania a leak developed releasing the lading to the exterior.
9/23/2010	Somerset	Lid came off the top of the tote and product sloshed out.
4/8/2014	Meyersdale	Rail: on 04/08/2014 at approximately 15:00 personnel working on CSXT mainline discovered CTCX 732143 leaking on passing train. CSXT workers radioed train crew who brought the train to a safe stop. It was discovered that CTCX 732143, a loaded tank car of alcohols nos had been leaking from top of the car. The shipper flint hills resources 316-828-2749, local, state and/or federal agencies as applicable were notified chemtrec report # 2014 0408 00189. SPSI, a CSXT response contractor, was dispatched to the scene and found that the vapor valve was less than tool tight on the threaded nipple with the operating handle bent to fit under the bread box. SPSI contractor personnel tightened the vapor valve tool tight and secured the car. Since the car was located in a mainline train it was safely moved to the closest CSXT rail yard which was Cumberland, MD. The shipper was contacted and will obtain a otma to move the car to consignee to be offloaded than onto a home shop to have vapor valve replaced and tank car bubble leak tested.
2/24/2016	Somerset	Driver was involved in a preventable roll-over accident while carrying 19232.55 kg of un2794. As a result of the roll-over, multiple batteries were cracked and leaked. The leaking corrosive was contained within the vehicle.
4/27/2017	Chemstream	Event/claim # 64389. The driver was preparing to unload the CTMV. They took the cap off the unloading hose and the product began leaking out. They shut down the pump and put a bucket underneath the hose. There was no package failure. The release lasted no more than two (2) minutes. A bucket was put under the hose and the product was disposed of by the consignee employees. Some products did get on the gravel, and this was cleaned up and disposed of as well by the consignee employees.
1/13/2018	Davidsville	The advantage tank lines, LLC driver was attempting to deliver gasoline into the customer's storage tank. In the course of doing so, it appears that the storage tank over-pressured due to the driver not properly venting the tank. This caused approximately 100-150 gallons of gasoline to be released from the storage tank. Sugar run spills responded to the scene and handled the remediation. No further environmental impact is anticipated.
2/28/2018	Stoystown	5 drops of product spilled into a bucket. Nothing hit the ground. Carrier tanker was leaking from seam under the belly towards the rear. This occurred during offloading at consignee. Consignee disposed of product in a bucket. The tanker seam was repaired on 2/27/18. Event 68264
8/23/2019	Confluence	The advantage tank lines, LLC driver was attempting to deliver fuel oil into the customer's storage tank. In the course of doing so, he overfilled the storage tank and approximately 1500 gallons of fuel oil was released. Enviroserve responded to the scene and handled the remediation. No further environmental impact is anticipated.
8/31/2019	Hollsopple	The package was dropped in handling. Examination of the inner container revealed a ruptured seam which allowed the contents to

Event Date	Location Impacted	Event Description
		escape. The leakage was contained. The undamaged portion of the package was repacked for return to shipper.
2/3/2020	Somerset	A reported fuel overfills resulted in the release of approximately 100 liquid gallons of a un1203 gasoline to an asphalt parking lot. The release migrated to a section of soil adjacent to the asphalt. Site personnel contained the release initially assisted with containment of the release. An environmental contractor (HEPACO) was dispatched to perform the cleanup and remedial operations. Granular absorbents and pads were used to clean the impacted asphalt. The impacted soil site was secured with boom and poly sheeting pending near future remediation ad restoration.
1/3/2023	Hooversville	The driver's passenger tire drifted onto the roadway shoulder. The shoulder was unable to support the weight of the vehicle and gave way. There are no guard rails on this portion of the roadway, so the vehicle continued down about a 25-foot embankment, rolling 90 degrees onto its passenger side and stopping. We were able to unload the cargo tank and tow the vehicle to our plant facility. The package (cargo tank) remained intact, and all of the product was retained in the package. All the motive fluids were retained within their systems.
6/23/2023	Boswell	On June 23, 2023, one (1) 50-pound bag of potassium hydroxide was damaged by a forklift and released approximately one (1) pound of product to the loading dock floor. R+l carriers retained cura emergency services, lc who dispatched a crew from enviroservce (es) to remediate the impacted surface. Crews collected the damaged bag for disposal. Es personnel utilized hand tools to cut up the damaged pallet. Crews deployed a neutralizing agent to the impacted area. Once neutralized, es personnel re-stacked the undamaged cargo for normal transport. All potassium hydroxide impacted material and damaged products were collected and containerized in two (2) 55-gallon drums and rlc personnel took possession of the waste to be added to the facility waste stream.
9/3/2023	Friedens	During transit portion of load movement pressure build up due to temperature and product movement caused PRV to vent some material into dome cover area of CTMV. Release discovered by driver during unit inspection enroute. Prv reclosed and released cleaned properly. No additional incidents and material unloaded safely at consignee.

Source: *PHMSA 2024*
Note: *The database was used was queried for events dated back to 1950, however, results produced and shown in table only reflect those from, 1990 through 2024.*

4.3.6.5 Future Occurrence

Information from PHMSA and the 2023 State HMP were used to identify the number of events between 1950 and 2024. Table 4.3.6-2 shows these statistics, as well as the estimated percent chance of an incident occurring in a given year. Smaller incidents, such as fuel spills, will affect the county many times each year, most likely along major highways or during refilling of home heating oil tanks, and may not be reported. Although the county does not anticipate severe releases on any regular basis, the possibility of a significant release should not be discounted. For this HMP, future occurrences in Somerset County are considered *highly likely*.

Table 4.3.6-2 Probability of Future Hazardous Material Release Events in Somerset County

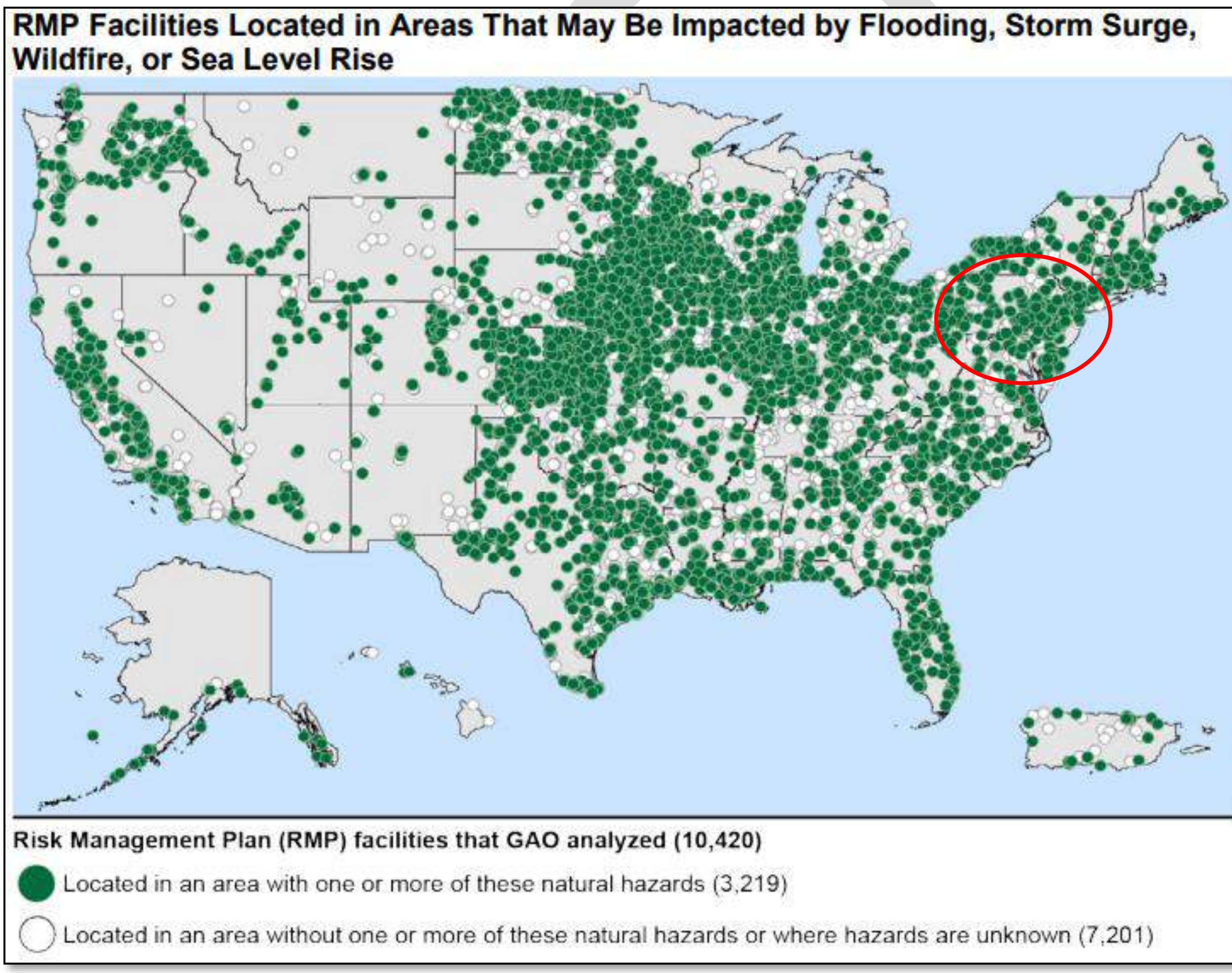
Hazard Type	Number of Occurrences Between 1950 and 2024	% Chance of Occurrence in Any Year
Hazardous Material Release	166	100%

Source: *PEMA 2023, PHMSA 2024*

Effects of Climate Change

The EPA regulates facilities that make, use, or store hazardous chemicals. Nationwide, about 31 percent of these facilities are in areas with at least one natural hazard that may be accelerated by climate change, including the following: flooding, storm surge, wildfire, or sea-level rise (GAO, 2022). Figure 4.3.6-2 shows the distribution of facilities and natural hazard exposure across the U.S., with a significant number of facilities near Somerset County. Increases in the frequency of these natural hazard events could increase the probability and frequency of cascading events, including hazardous materials releases.

Figure 4.3.6-2 Chemical Facility Locations Threatened by Climate Change-Accelerated Hazards



Source: (GAO, 2022)
Note: Pennsylvania indicated by red oval.

4.3.1.1 Vulnerability Assessment

A spatial analysis was conducted using the buffer areas around hazardous material facilities and transportation networks shown in Figure 4.3.6-1. For the purposes of the assessment, an asset (population, structures, critical facilities, and lifelines) is considered exposed and potentially vulnerable to the hazardous materials hazard if it is located within these hazardous material buffer areas.

Impact on Life, Health, and Safety

Much of the population in Somerset County is exposed to some kind of environmental hazard (Table 4.3.6-3). First responders' safety may also be at risk during on-scene operations and may have difficulty traveling to incidents due to limited access to roads. First responder resources may be exhausted during environmental hazard events due to a lack of personnel and a higher-than-normal call volume/demand.

Table 4.3.6-3. Estimated Somerset County Population Vulnerable to Environmental Hazards

Jurisdiction *(B=Borough T=Township)*	**Total Population** *(2022 ACS 5-Year Estimates)*	**Estimated Population Located in the Hazardous Materials Hazard Areas**					
		Number of Persons Located within 1 Mile of Hazardous Materials Roadway Routes	% of Jurisdiction Total	Number of Persons Located within 1 Mile of Hazardous Materials Rail Routes	% of Jurisdiction Total	Number of Persons Located within Selected Buffer of Hazardous Materials SARA Sites	% of Jurisdiction Total
Addison (B)	272	272	100.0%	0	0.0%	0	0.0%
Addison (T)	945	561	59.4%	58	6.1%	19	2.0%
Allegheny (T)	669	373	55.8%	0	0.0%	32	4.8%
Benson (B)	139	139	100.0%	139	100.0%	0	0.0%
Berlin (B)	2,297	2,297	100.0%	0	0.0%	2,297	100.0%
Black (T)	868	386	44.5%	447	51.5%	91	10.5%
Boswell (B)	1,411	1,411	100.0%	0	0.0%	1,411	100.0%
Brothersvalley (T)	2,002	1,069	53.4%	0	0.0%	379	18.9%
Callimont (B)	52	51	98.1%	0	0.0%	0	0.0%
Casselman (B)	64	0	0.0%	63	98.4%	0	0.0%
Central City (B)	1,045	1,045	100.0%	1,045	100.0%	1,045	100.0%
Conemaugh (T)	6,759	6,264	92.7%	1,036	15.3%	0	0.0%
Confluence (B)	596	596	100.0%	596	100.0%	0	0.0%
Elk Lick (T)	2,423	1,647	68.0%	71	2.9%	516	21.3%
Fairhope (T)	85	0	0.0%	50	58.8%	0	0.0%

Jurisdiction (B=Borough T=Township)	Total Population (2022 ACS 5-Year Estimates)	Estimated Population Located in the Hazardous Materials Hazard Areas					
		Number of Persons Located within 1 Mile of Hazardous Materials Roadway Routes	% of Jurisdiction Total	Number of Persons Located within 1 Mile of Hazardous Materials Rail Routes	% of Jurisdiction Total	Number of Persons Located within Selected Buffer of Hazardous Materials SARA Sites	% of Jurisdiction Total
Garrett (B)	409	408	99.8%	408	99.8%	0	0.0%
Greenville (T)	865	0	0.0%	11	1.3%	0	0.0%
Hooversville (B)	722	722	100.0%	722	100.0%	666	92.2%
Indian Lake (B)	314	140	44.6%	0	0.0%	0	0.0%
Jefferson (T)	1,313	696	53.0%	0	0.0%	124	9.4%
Jenner (T)	3,713	3,163	85.2%	0	0.0%	348	9.4%
Jennerstown (B)	1,182	1,182	100.0%	0	0.0%	0	0.0%
Larimer (T)	536	432	80.6%	311	58.0%	0	0.0%
Lincoln (T)	1,305	962	73.7%	0	0.0%	0	0.0%
Lower Turkeyfoot (T)	425	120	28.2%	177	41.6%	0	0.0%
Meyersdale (B)	2,118	2,118	100.0%	2,118	100.0%	2,118	100.0%
Middlecreek (T)	644	123	19.1%	0	0.0%	0	0.0%
Milford (T)	1,428	619	43.3%	545	38.2%	128	9.0%
New Baltimore (B)	147	147	100.0%	0	0.0%	0	0.0%
New Centerville (B)	118	118	100.0%	0	0.0%	0	0.0%
Northampton (T)	282	12	4.3%	95	33.7%	0	0.0%
Ogle (T)	493	372	75.5%	0	0.0%	0	0.0%
Paint (B)	1,122	1,122	100.0%	1,122	100.0%	532	47.4%
Paint (T)	3,038	2,813	92.6%	1,565	51.5%	204	6.7%
Quemahoning (T)	1,661	1,419	85.4%	995	59.9%	90	5.4%
Rockwood (B)	816	815	99.9%	815	99.9%	815	99.9%
Salisbury (B)	619	618	99.8%	0	0.0%	618	99.8%
Seven Springs (B)	7	0	0.0%	0	0.0%	0	0.0%
Shade (T)	2,342	1,956	83.5%	1,633	69.7%	809	34.5%

Jurisdiction *(B=Borough T=Township)*	**Total Population** *(2022 ACS 5-Year Estimates)*	**Estimated Population Located in the Hazardous Materials Hazard Areas**					
		Number of Persons Located within 1 Mile of Hazardous Materials Roadway Routes	% of Jurisdiction Total	Number of Persons Located within 1 Mile of Hazardous Materials Rail Routes	% of Jurisdiction Total	Number of Persons Located within Selected Buffer of Hazardous Materials SARA Sites	% of Jurisdiction Total
Shanksville (B)	166	0	0.0%	161	97.0%	0	0.0%
Somerset (B)	6,030	5,905	97.9%	5,612	93.1%	5,484	90.9%
Somerset (T)	11,775	10,577	89.8%	6,326	53.7%	4,936	41.9%
Southampton (T)	628	210	33.4%	0	0.0%	20	3.2%
Stonycreek (T)	2,271	1,195	52.6%	378	16.6%	38	1.7%
Stoystown (B)	410	409	99.8%	400	97.6%	0	0.0%
Summit (T)	1,911	1,063	55.6%	1,255	65.7%	474	24.8%
Upper Turkeyfoot (T)	1,073	711	66.3%	152	14.2%	36	3.4%
Ursina (B)	214	214	100.0%	214	100.0%	0	0.0%
Wellersburg (B)	148	147	99.3%	0	0.0%	0	0.0%
Windber (B)	3,930	3,927	99.9%	3,929	100.0%	3,804	96.8%
Somerset County	**73,802**	**60,546**	**82.0%**	**32,449**	**44.0%**	**27,034**	**36.6%**

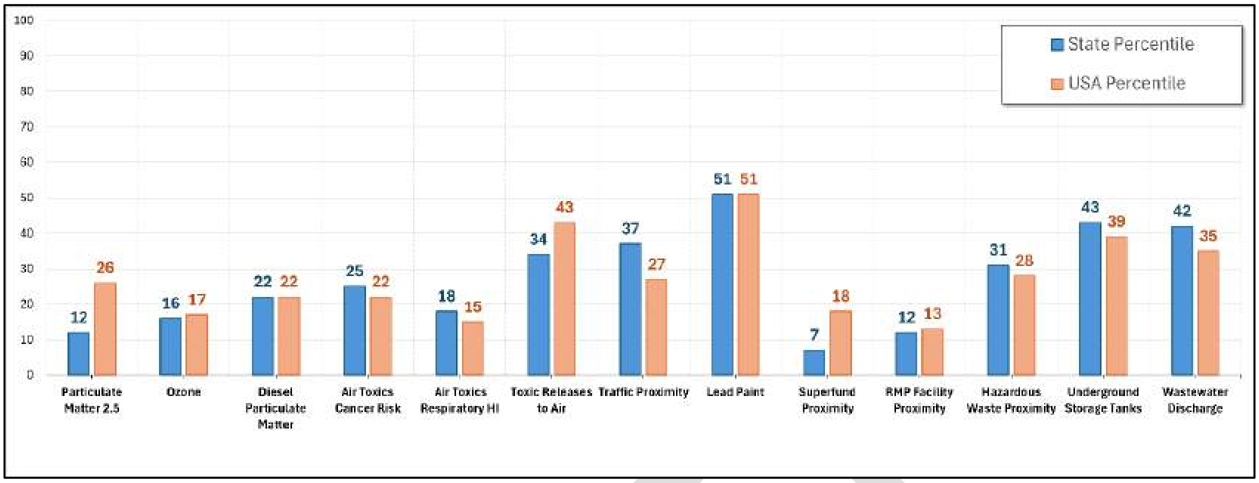
***Source**: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; Pennsylvania Department of Transportation 2024; RS Means 2024*
***Notes**: % = Percent; SARA = Superfund Amendments and Reauthorization Act*

Impacts on Socially Vulnerable Populations

Socially vulnerable and underserved communities, including low-income communities and communities of color, have historically been the most impacted by hazardous material releases and environmental pollution (EPA 2023). Somerset County has a number of socially vulnerable population groups, including the elderly (over 65), the young (less than 5), those that do not speak English, those with a disability, as well as those living in poverty (see Section 2 – Community Profile). Of these sub-groups, the elderly comprise 10.1% of the County population. Geographically, there are communities in the County that may be at higher risk of hazardous materials releases or near hazardous material storage sites.

The EPA's EJScreen tool is an environmental justice mapping and screening tool that provides a nationally consistent dataset and approach for combining environmental and demographic socioeconomic indicators (EPA 2023). The tool combines data on low-income and people of color populations with a single environmental indicator to produce an EJ Index. The County's EJ Index shows it is in a low-to-moderate percentile for most indicators with each EJ index for Somerset County shown in Figure 4.3.6-3.

Figure 4.3.6-3 EJ Indexes for Somerset County, PA



Source: EPA 2023

Impacts on General Building Stock

Potential losses to the general building stock caused by a HazMat incident is difficult to quantify. The degree of damages to the general building stock depends on the scale of the incident. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion occurs. The closure of waterways, railroads, airports, and highways as a result of a HazMat incident has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may have local, regional, or statewide effects depending on the magnitude of the event and level of service disruptions.

To estimate the buildings exposed to a hazardous material event, the HazMat buffer areas were overlaid upon the building level. The replacement cost value of the structures with their center in the buffer areas were totaled (Table 4.3.6-4). The area with the largest exposure to replacement cost value are those buffer areas that extend out along highways. However, if a HazMat release were to occur, the incident would not be located along all highways in the county but instead only a section of the total HazMat exposure area. Similarly, a railway or SARA site hazardous material incident would not occur in all areas of the structure but instead only along one section or within one site. Therefore, the total exposure does not represent complete vulnerability should a hazard event occur.

Table 4.3.6-4. Total Buildings Exposed to a Roadway, Rail Route, or SARA Site Hazardous Material Incident

Jurisdiction *B=Borough T=Township*	Total Number of Buildings	Estimated Building Stock Located within 1 Mile of Hazardous Materials Roadway Routes		Estimated Building Stock Located within 1 Mile of Hazardous Materials Rail Routes		Estimated Building Stock Located within the Selected Buffer of SARA Sites	
		Number of Buildings	% of Jurisdiction Total	Number of Buildings	% of Jurisdiction Total	Number of Buildings	% of Jurisdiction Total
Addison (B)	255	255	100.0%	0	0.0%	0	0.0%
Addison (T)	2,429	1,395	57.4%	226	9.3%	75	3.1%
Allegheny (T)	1,509	817	54.1%	0	0.0%	43	2.8%
Benson (B)	173	173	100.0%	173	100.0%	0	0.0%
Berlin (B)	1,392	1,392	100.0%	0	0.0%	1,392	100.0%
Black (T)	1,515	610	40.3%	811	53.5%	128	8.4%
Boswell (B)	826	826	100.0%	0	0.0%	826	100.0%
Brothersvalley (T)	3,330	1,764	53.0%	0	0.0%	576	17.3%
Callimont (B)	55	54	98.2%	3	5.5%	0	0.0%
Casselman (B)	119	0	0.0%	119	100.0%	0	0.0%
Central City (B)	912	912	100.0%	912	100.0%	912	100.0%
Conemaugh (T)	6,338	5,717	90.2%	974	15.4%	0	0.0%
Confluence (B)	753	753	100.0%	753	100.0%	0	0.0%
Elk Lick (T)	3,334	1,984	59.5%	88	2.6%	478	14.3%
Fairhope (T)	304	0	0.0%	178	58.6%	0	0.0%
Garrett (B)	377	377	100.0%	377	100.0%	0	0.0%
Greenville (T)	1,145	0	0.0%	18	1.6%	0	0.0%

Jurisdiction *B=Borough* *T=Township*	Total Number of Buildings	Estimated Building Stock Located within 1 Mile of Hazardous Materials Roadway Routes		Estimated Building Stock Located within 1 Mile of Hazardous Materials Rail Routes		Estimated Building Stock Located within the Selected Buffer of SARA Sites	
		Number of Buildings	% of Jurisdiction Total	Number of Buildings	% of Jurisdiction Total	Number of Buildings	% of Jurisdiction Total
Hooversville (B)	581	581	100.0%	581	100.0%	520	89.5%
Indian Lake (B)	1,148	470	40.9%	0	0.0%	0	0.0%
Jefferson (T)	3,395	2,055	60.5%	0	0.0%	429	12.6%
Jenner (T)	5,016	4,192	83.6%	0	0.0%	494	9.8%
Jennerstown (B)	641	641	100.0%	0	0.0%	0	0.0%
Larimer (T)	839	676	80.6%	449	53.5%	0	0.0%
Lincoln (T)	1,981	1,366	69.0%	0	0.0%	0	0.0%
Lower Turkeyfoot (T)	1,168	384	32.9%	499	42.7%	0	0.0%
Meyersdale (B)	1,529	1,529	100.0%	1,529	100.0%	1,529	100.0%
Middlecreek (T)	2,860	982	34.3%	0	0.0%	0	0.0%
Milford (T)	2,434	1,046	43.0%	831	34.1%	163	6.7%
New Baltimore (B)	174	174	100.0%	0	0.0%	0	0.0%
New Centerville (B)	171	171	100.0%	0	0.0%	0	0.0%
Northampton (T)	763	34	4.5%	233	30.5%	1	0.1%
Ogle (T)	687	479	69.7%	0	0.0%	6	0.9%
Paint (B)	553	553	100.0%	553	100.0%	243	43.9%
Paint (T)	3,474	3,081	88.7%	1,842	53.0%	190	5.5%
Quemahoning (T)	2,464	2,086	84.7%	1,344	54.5%	136	5.5%

Jurisdiction *B=Borough* *T=Township*	Total Number of Buildings	Estimated Building Stock Located within 1 Mile of Hazardous Materials Roadway Routes		Estimated Building Stock Located within 1 Mile of Hazardous Materials Rail Routes		Estimated Building Stock Located within the Selected Buffer of SARA Sites	
		Number of Buildings	% of Jurisdiction Total	Number of Buildings	% of Jurisdiction Total	Number of Buildings	% of Jurisdiction Total
Rockwood (B)	619	619	100.0%	619	100.0%	619	100.0%
Salisbury (B)	639	639	100.0%	0	0.0%	639	100.0%
Seven Springs (B)	82	0	0.0%	0	0.0%	0	0.0%
Shade (T)	3,461	2,581	74.6%	2,023	58.5%	888	25.7%
Shanksville (B)	178	0	0.0%	176	98.9%	0	0.0%
Somerset (B)	3,433	3,365	98.0%	3,184	92.7%	3,171	92.4%
Somerset (T)	8,899	7,780	87.4%	4,278	48.1%	3,248	36.5%
Southampton (T)	1,001	324	32.4%	0	0.0%	53	5.3%
Stonycreek (T)	3,547	1,942	54.8%	671	18.9%	36	1.0%
Stoystown (B)	266	266	100.0%	258	97.0%	0	0.0%
Summit (T)	3,085	1,516	49.1%	1,764	57.2%	542	17.6%
Upper Turkeyfoot (T)	2,126	1,291	60.7%	382	18.0%	89	4.2%
Ursina (B)	279	279	100.0%	279	100.0%	0	0.0%
Wellersburg (B)	261	261	100.0%	0	0.0%	0	0.0%
Windber (B)	2,673	2,668	99.8%	2,673	100.0%	2,604	97.4%
Somerset County	**85,193**	**61,060**	**71.7%**	**28,800**	**33.8%**	**20,030**	**23.5%**

Sources: Somerset County 2024; USACE 2022; Pennsylvania Department of Transportation 2024; RS Means 2024
Notes: % = Percent

Impacts on Critical Facilities

Potential losses of critical facilities caused by a HazMat incident are difficult to quantify. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion occurs. The tables below summarize critical facilities and lifelines located within the HazMat buffer area. A total of 713 critical facilities are located in Somerset County. Overall, 527 critical facilities are exposed to a roadway hazardous material event, 811 critical facilities are exposed to a rail line hazardous material event, and 1,273 critical facilities are exposed to a SARA site hazardous material facility event, as shown in Table 4.3.6-5 through Table 4.3.6-6.

Table 4.3.6-5. Critical Facility Exposure to a SARA Site Hazardous Material Facility Buffer Areas

Jurisdiction *B=Borough* *T=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located within the Selected Buffer of SARA Sites			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Addison (B)	2	2	0	0.0%	0	0%
Addison (T)	14	14	1	7.1%	1	7%
Allegheny (T)	15	15	0	0.0%	0	0%
Benson (B)	2	2	0	0.0%	0	0%
Berlin (B)	10	9	10	100.0%	9	100%
Black (T)	20	20	3	15.0%	3	15%
Boswell (B)	8	7	8	100.0%	7	100%
Brothersvalley (T)	33	32	0	0.0%	0	0%
Callimont (B)	1	1	0	0.0%	0	0%
Casselman (B)	1	1	0	0.0%	0	0%
Central City (B)	7	6	7	100.0%	6	100%
Conemaugh (T)	50	46	0	0.0%	0	0%
Confluence (B)	9	9	0	0.0%	0	0%
Elk Lick (T)	26	26	8	30.8%	8	31%
Fairhope (T)	4	4	0	0.0%	0	0%
Garrett (B)	5	5	0	0.0%	0	0%
Greenville (T)	7	7	0	0.0%	0	0%
Hooversville (B)	7	7	6	85.7%	6	86%
Indian Lake (B)	1	1	0	0.0%	0	0%
Jefferson (T)	20	20	8	40.0%	8	40%
Jenner (T)	39	39	5	12.8%	5	13%
Jennerstown (B)	9	8	0	0.0%	0	0%
Larimer (T)	4	4	0	0.0%	0	0%
Lincoln (T)	20	18	0	0.0%	0	0%
Lower Turkeyfoot (T)	10	10	0	0.0%	0	0%
Meyersdale (B)	12	9	12	100.0%	9	100%

Jurisdiction *B=Borough* *T=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located within the Selected Buffer of SARA Sites			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Middlecreek (T)	9	9	0	0.0%	0	0%
Milford (T)	21	21	1	4.8%	1	5%
New Baltimore (B)	2	2	0	0.0%	0	0%
New Centerville (B)	1	1	0	0.0%	0	0%
Northampton (T)	12	12	0	0.0%	0	0%
Ogle (T)	5	5	0	0.0%	0	0%
Paint (B)	5	4	0	0.0%	0	0%
Paint (T)	22	20	1	4.5%	1	5%
Quemahoning (T)	23	22	2	8.7%	2	9%
Rockwood (B)	10	9	10	100.0%	9	100%
Salisbury (B)	4	4	4	100.0%	4	100%
Seven Springs (B)	5	5	0	0.0%	0	0%
Shade (T)	33	30	10	30.3%	10	33%
Shanksville (B)	3	3	0	0.0%	0	0%
Somerset (B)	33	27	33	100.0%	27	100%
Somerset (T)	71	64	37	52.1%	33	52%
Southampton (T)	8	8	1	12.5%	1	13%
Stonycreek (T)	42	42	1	2.4%	1	2%
Stoystown (B)	3	3	0	0.0%	0	0%
Summit (T)	35	35	4	11.4%	4	11%
Upper Turkeyfoot (T)	10	10	4	40.0%	4	40%
Ursina (B)	4	3	0	0.0%	0	0%
Wellersburg (B)	2	2	0	0.0%	0	0%
Windber (B)	14	14	14	100.0%	14	100%
Somerset County	**713**	**677**	**190**	**26.6%**	**173**	**26%**

Source: *Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021, United States Geological Survey 2021; Tetra Tech 2024*
Note: *% = Percent*

Table 4.3.6-6. Critical Facilities within 1-mile of Hazardous Materials Rail Routes

Jurisdiction *B=Borough T=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Rail Routes			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Addison (B)	2	2	0	0.0%	0	0%
Addison (T)	14	14	5	35.7%	5	36%
Allegheny (T)	15	15	0	0.0%	0	0%
Benson (B)	2	2	2	100.0%	2	100%
Berlin (B)	10	9	0	0.0%	0	0%
Black (T)	20	20	11	55.0%	11	55%
Boswell (B)	8	7	0	0.0%	0	0%
Brothersvalley (T)	33	32	1	3.0%	1	3%
Callimont (B)	1	1	0	0.0%	0	0%
Casselman (B)	1	1	1	100.0%	1	100%
Central City (B)	7	6	7	100.0%	6	100%
Conemaugh (T)	50	46	10	20.0%	8	17%
Confluence (B)	9	9	9	100.0%	9	100%
Elk Lick (T)	26	26	1	3.8%	1	4%
Fairhope (T)	4	4	3	75.0%	3	75%
Garrett (B)	5	5	5	100.0%	5	100%
Greenville (T)	7	7	0	0.0%	0	0%
Hooversville (B)	7	7	7	100.0%	7	100%
Indian Lake (B)	1	1	0	0.0%	0	0%
Jefferson (T)	20	20	0	0.0%	0	0%
Jenner (T)	39	39	0	0.0%	0	0%
Jennerstown (B)	9	8	0	0.0%	0	0%
Larimer (T)	4	4	1	25.0%	1	25%
Lincoln (T)	20	18	0	0.0%	0	0%
Lower Turkeyfoot (T)	10	10	4	40.0%	4	40%

Jurisdiction *B=Borough* *T=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Rail Routes			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Meyersdale (B)	12	9	12	100.0%	9	100%
Middlecreek (T)	9	9	0	0.0%	0	0%
Milford (T)	21	21	6	28.6%	6	29%
New Baltimore (B)	2	2	0	0.0%	0	0%
New Centerville (B)	1	1	0	0.0%	0	0%
Northampton (T)	12	12	5	41.7%	5	42%
Ogle (T)	5	5	1	20.0%	1	20%
Paint (B)	5	4	5	100.0%	4	100%
Paint (T)	22	20	13	59.1%	13	65%
Quemahoning (T)	23	22	15	65.2%	14	64%
Rockwood (B)	10	9	10	100.0%	9	100%
Salisbury (B)	4	4	0	0.0%	0	0%
Seven Springs (B)	5	5	0	0.0%	0	0%
Shade (T)	33	30	20	60.6%	19	63%
Shanksville (B)	3	3	3	100.0%	3	100%
Somerset (B)	33	27	29	87.9%	24	89%
Somerset (T)	71	64	33	46.5%	30	47%
Southampton (T)	8	8	0	0.0%	0	0%
Stonycreek (T)	42	42	15	35.7%	15	36%
Stoystown (B)	3	3	3	100.0%	3	100%
Summit (T)	35	35	21	60.0%	21	60%
Upper Turkeyfoot (T)	10	10	5	50.0%	5	50%
Ursina (B)	4	3	4	100.0%	3	100%
Wellersburg (B)	2	2	0	0.0%	0	0%
Windber (B)	14	14	14	100.0%	14	100%
Somerset County	**713**	**677**	**281**	**39.4%**	**262**	**39%**

Source: *Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021*
Note: *% = Percent*

Table 4.3.6-7. Critical Facilities within 1-mile of Hazardous Materials Roadway Routes, by Lifeline Category

Jurisdiction	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Roadway Routes, by Lifeline Category			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Addison (B)	2	2	2	100.0%	2	100%
Addison (T)	14	14	9	64.3%	9	64%
Allegheny (T)	15	15	8	53.3%	8	53%
Benson (B)	2	2	2	100.0%	2	100%
Berlin (B)	10	9	10	100.0%	9	100%
Black (T)	20	20	12	60.0%	12	60%
Boswell (B)	8	7	8	100.0%	7	100%
Brothersvalley (T)	33	32	14	42.4%	14	44%
Callimont (B)	1	1	1	100.0%	1	100%
Casselman (B)	1	1	0	0.0%	0	0%
Central City (B)	7	6	7	100.0%	6	100%
Conemaugh (T)	50	46	48	96.0%	44	96%
Confluence (B)	9	9	9	100.0%	9	100%
Elk Lick (T)	26	26	14	53.8%	14	54%
Fairhope (T)	4	4	0	0.0%	0	0%
Garrett (B)	5	5	5	100.0%	5	100%
Greenville (T)	7	7	0	0.0%	0	0%
Hooversville (B)	7	7	7	100.0%	7	100%
Indian Lake (B)	1	1	0	0.0%	0	0%
Jefferson (T)	20	20	17	85.0%	17	85%
Jenner (T)	39	39	31	79.5%	31	79%
Jennerstown (B)	9	8	9	100.0%	8	100%

Jurisdiction	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Roadway Routes, by Lifeline Category			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Larimer (T)	4	4	4	100.0%	4	100%
Lincoln (T)	20	18	15	75.0%	13	72%
Lower Turkeyfoot (T)	10	10	3	30.0%	3	30%
Meyersdale (B)	12	9	12	100.0%	9	100%
Middlecreek (T)	9	9	5	55.6%	5	56%
Milford (T)	21	21	11	52.4%	11	52%
New Baltimore (B)	2	2	2	100.0%	2	100%
New Centerville (B)	1	1	1	100.0%	1	100%
Northampton (T)	12	12	4	33.3%	4	33%
Ogle (T)	5	5	5	100.0%	5	100%
Paint (B)	5	4	5	100.0%	4	100%
Paint (T)	22	20	16	72.7%	14	70%
Quemahoning (T)	23	22	21	91.3%	20	91%
Rockwood (B)	10	9	10	100.0%	9	100%
Salisbury (B)	4	4	4	100.0%	4	100%
Seven Springs (B)	5	5	0	0.0%	0	0%
Shade (T)	33	30	22	66.7%	21	70%
Shanksville (B)	3	3	0	0.0%	0	0%
Somerset (B)	33	27	33	100.0%	27	100%
Somerset (T)	71	64	64	90.1%	57	89%
Southampton (T)	8	8	2	25.0%	2	25%
Stonycreek (T)	42	42	24	57.1%	24	57%
Stoystown (B)	3	3	3	100.0%	3	100%
Summit (T)	35	35	21	60.0%	21	60%
Upper Turkeyfoot (T)	10	10	7	70.0%	7	70%
Ursina (B)	4	3	4	100.0%	3	100%

Jurisdiction	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities within 1-mile of Hazardous Materials Roadway Routes, by Lifeline Category			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Wellersburg (B)	2	2	2	100.0%	2	100%
Windber (B)	14	14	14	100.0%	14	100%
Somerset County	**713**	**677**	**527**	**73.9%**	**494**	**73%**

Source: *Somerset County 2022, 2024; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021*
Note: *% = Percent*

Of the 677 lifeline facilities in Somerset County located in hazardous material buffer areas, 494 are located within a 1 mile of hazardous materials roadway routes, 262 are located within 1 mile of hazardous material rail routes, and 173 are located within the SARA sites buffer. The breakdown of exposure by lifeline categories is displayed in Table 4.3.6-8.

Table 4.3.6-8. Lifeline Facility Exposure to Hazardous Material Facility Buffer Areas

FEMA Lifeline Category	Number of Lifelines	Number of Lifelines Located within 1 Mile of Hazardous Materials Roadway Routes	Number of Lifelines Located within 1 Mile of Hazardous Materials Rail Routes	Number of Lifelines Located within the Selected Buffer of SARA Sites
Communications	54	45	26	28
Energy	14	7	2	2
Food, Water, Shelter	0	0	0	0
Hazardous Materials	82	64	34	28
Health and Medical	3	3	3	3
Safety and Security	134	119	65	59
Transportation	390	256	132	53
Water Systems	0	0	0	0
Somerset County (Total)	**677**	**494**	**262**	**173**

Source: *Somerset County 2022, 2024; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021*

Impact on the Economy

A significant hazmat incident within an urban area may force businesses to close for an extended period of time because of contamination or because of direct damage caused by an explosion. As businesses close and tourists are prohibited from entering the affected area, tourism may decline, and public perception of the area may be permanently affected. Closures may prevent workers from commuting or consumers from traveling to businesses. The closure of waterways, railroads, airports, and highways as a result of a hazmat incident has the potential to impact the ability to deliver goods and services efficiently. Potential impacts may have local, regional, or statewide effects depending on the magnitude of the event and level of service disruptions.

Hazardous material incidents impact companies transporting the materials and facilities surrounding the location of the incident. A hazardous materials event can become costly quickly due to the cost of responders, response equipment, and clean-up.

Impact on the Environment

Release of toxins, waste, and other pollutants into water bodies can greatly impact surrounding habitats. Many hazmat sites were intentionally constructed in locations believed to be removed from exposure-increasing factors, but floodplain boundary changes increase the likelihood that water may reach hazardous material and waste sites. Certain chemicals and hazardous materials can be toxic to plants and animals, damaging their habitats and food sources.

Future Changes that May Impact Vulnerability

As communities grow, the transportation and storage of hazardous materials often increase, leading to a higher risk of incidents. Additionally, new infrastructure projects and industrial activities can introduce more potential sources of hazardous materials, further elevating the risk. As urban areas expand, the density of hazardous materials in transit and storage rises, increasing the chances of accidents. Moreover, the construction of new facilities and the expansion of existing ones can lead to more frequent handling and transportation of hazardous substances, heightening the potential for incidents.

Effects of Climate Change on Vulnerability

As temperatures change, excessive heat on containers that contain hazardous materials may alter the material properties. In addition, hazardous substances stored at fixed locations in a floodplain may experience an increase in flooding due to the projected increases in the magnitude and frequency of precipitation events.

4.3.1.2 Additional Data and Next Steps

The assessment above identifies vulnerable populations and potential structural and economic losses associated with this hazard of concern. Collection of additional information and actual loss data specific to the plan participants will further enhance Somerset County's vulnerability assessment.

4.3.7 Flood, Flash Flood, Ice Jam

4.3.7.1 Hazard Description

This section provides a profile and vulnerability assessment of the flood, flash flood, and ice jam hazard in Somerset County. Floods are one of the most common natural hazards in the United States and are the most prevalent type of natural disaster occurring in Pennsylvania. Over 94 percent of the Commonwealth's municipalities have been designated as flood-prone areas. Both seasonal and flash floods have been causes of millions of dollars in annual property damage, loss of lives, and disruption of economic activities (Pennsylvania Emergency Management Agency (PEMA 2023).

The Federal Emergency Management Agency (FEMA) definition of flooding is "a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from the overflow of inland or tidal waters or the rapid accumulation of runoff of surface waters from any source" (FEMA 2020).

Most floods fall into three categories: riverine, coastal, and shallow (FEMA 2020). Other types of floods may include ice jam floods, flash floods, stormwater floods, alluvial fan floods, dam failure floods, and floods associated with local drainage or high groundwater (as indicated in the previous flood definition). For the purpose of this plan and as deemed appropriate by the Planning Team, riverine, flash, ice jam, and stormwater flooding are the main flood types of concern for Somerset County. These types of floods are further discussed below. Flooding caused by dam failure is addressed in Section 4.3.1 of this plan.

Riverine Floods

Riverine floods are the most common flood type and occur along a channel. Channels are defined features on the ground that carry water through and out of a watershed. They may also be called rivers, creeks, streams, or ditches. When a channel receives too much water, the excess water flows over its banks and inundates low-lying areas. These floods usually occur after heavy rains, heavy thunderstorms, or snowmelt, and can be slow or fast-rising, and generally develop over a period of hours to days (FEMA n.d.)

Flash Floods

According to the National Weather Service (NWS), flash floods are a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within 6 hours of the causative event (e.g., intense rainfall, dam failure, or ice jam) (NOAA/NWS 2015)

Flash floods can occur very quickly and with very little warning. This type of flood can be deadly because it produces rapid rises in water levels and has devastating flow velocities. Urban areas are more susceptible to flash floods because a high percentage of the surface area is impervious (PEMA 2023). The elapsed time before flash flooding occurs may vary in different parts of the country. Ongoing flooding can intensify to flash flooding, where intense rainfall results in a rapid surge of rising floodwaters (NOAA/NWS 2015). A flash flood can have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Flash floods usually result from intense storms dropping large amounts of rain within a brief period with little or no warning and can reach their peak within only a few minutes. They normally occur in the summer during the thunderstorm season. The most severe flooding conditions usually occur when direct rainfall is augmented by snowmelt. If the soil is saturated or frozen, stream flow may increase because of the inability of the soil to absorb additional precipitation (NOAA/NSSL 2023).

Ice Jam Floods

An ice jam is an accumulation of ice that acts as a natural dam and restricts the flow of a body of water. Ice jams occur when warm temperatures and heavy rains cause rapid snow melt. The melting snow, combined with the heavy rain, causes frozen rivers to swell. The rising water breaks the ice layers into large chunks, which float downstream and often pile up near narrow passages and obstructions (bridges and dams). Ice jams may build up to a thickness great enough to raise the water level and cause flooding (NOAA SciJinks 2024)

Ice jams are of two different types: freeze-up and breakup. Freeze-up jams occur in the early to mid-winter when floating ice may slow or stop due to a change in water slope as it reaches an obstruction to movement. Breakup jams occur during periods of thaw, generally in late winter and early spring. The ice cover breakup is usually associated with a rapid increase in runoff and corresponding river discharge caused by heavy rainfall, snowmelt, or warmer temperatures (PEMA 2023).

Stormwater and Shallow Flooding

Stormwater flooding described below is caused by local drainage issues and high groundwater levels. Heavy precipitation may produce flooding in areas other than delineated floodplains or along recognizable channels. According to PEMA, since 1993, 96 percent of flooding reported to the NWS in Pennsylvania occurred outside of the 100-year floodplain (PEMA 2023).

If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems. During winter and spring, frozen ground and snow accumulations may contribute to inadequate drainage and localized ponding. Flooding issues of this nature generally occur in areas with flat gradients and generally increase with urbanization, which speeds the accumulation of floodwaters because of impervious areas. Shallow street flooding can occur unless channels have been improved to account for increased flows (FEMA P-2181 2022).

High groundwater levels can be a concern and cause problems even without surface flooding. Basements are susceptible to high groundwater levels. Seasonally high groundwater is common in many areas, while elsewhere high groundwater occurs only after long periods of above-average precipitation (FEMA P-2181 2022).

Urban drainage flooding is caused by increased water runoff due to urban development and drainage systems. Drainage systems are designed to remove surface water from developed areas as quickly as possible to prevent localized flooding on streets and other urban areas. They make use of a closed conveyance system that channels water away from an urban area to surrounding streams. This bypasses the natural processes of water filtration through the ground, containment, and evaporation of excess water. Since drainage systems reduce the amount of time the surface water takes to reach surrounding streams, flooding in those streams can occur more quickly and reach greater depths than those prior to development in that area (FEMA 511 2005)

4.3.7.2 Location and Extent

Flooding in Somerset County can occur anywhere, and this hazard location encompasses the entire planning area. This hazard is typically associated with abnormally high or intense rainfall amounts. It can also be caused by sudden snowmelt, landslides, or dam failures. In Pennsylvania, flooding usually occurs in the summer; however, it occurs during the winter months as well.

Floodplains are found in lowland areas adjacent to rivers, streams, creeks, lakes, or other bodies of water that become inundated during a flood. The size of a floodplain depends on the recurrence interval of a given flood. A 1 percent annual chance floodplain is smaller than the floodplain associated with a flood that has a 0.2 percent annual chance of occurring (PEMA 2023).

Figure 4.3.7-4 provides an overview of the FEMA floodplains and flood hazard areas across the entire planning area. All municipalities in Somerset County contain flood-prone areas because they are located along streams, creeks, or lakes. In addition, community development of the floodplain has resulted in frequent flooding. Previous flooding occurrences are discussed below, but in the planning area, flooding along the Ohio River Basin has caused significant flooding in Somerset County, particularly areas near and along the bodies of water listed in Table 4.3.7-1 below.

Table 4.3.7-1 Rivers and Tributaries Particularly Susceptible to Flooding

River	Tributary
Youghiogheny River	• Casselman River and Coxes Creek • Laurel Hill Creek
Stonycreek River	• Quemahoning Creek • Shade Creek • Paint Creek • Bens Creek

Source: Somerset County DEM 2020

Table 4.3.7-2 lists total land areas within the 1 percent and 0.2 percent annual chance flood zones calculated via a spatial analysis referencing the 2019 Digital Flood Insurance Rate Map (DFIRM). Also shown are the current NFIP community status per FEMA's database.

Table 4.3.7-2. Total Land Areas in the 1 Percent and 0.2 Percent Annual Chance Flood Zones (Acres)

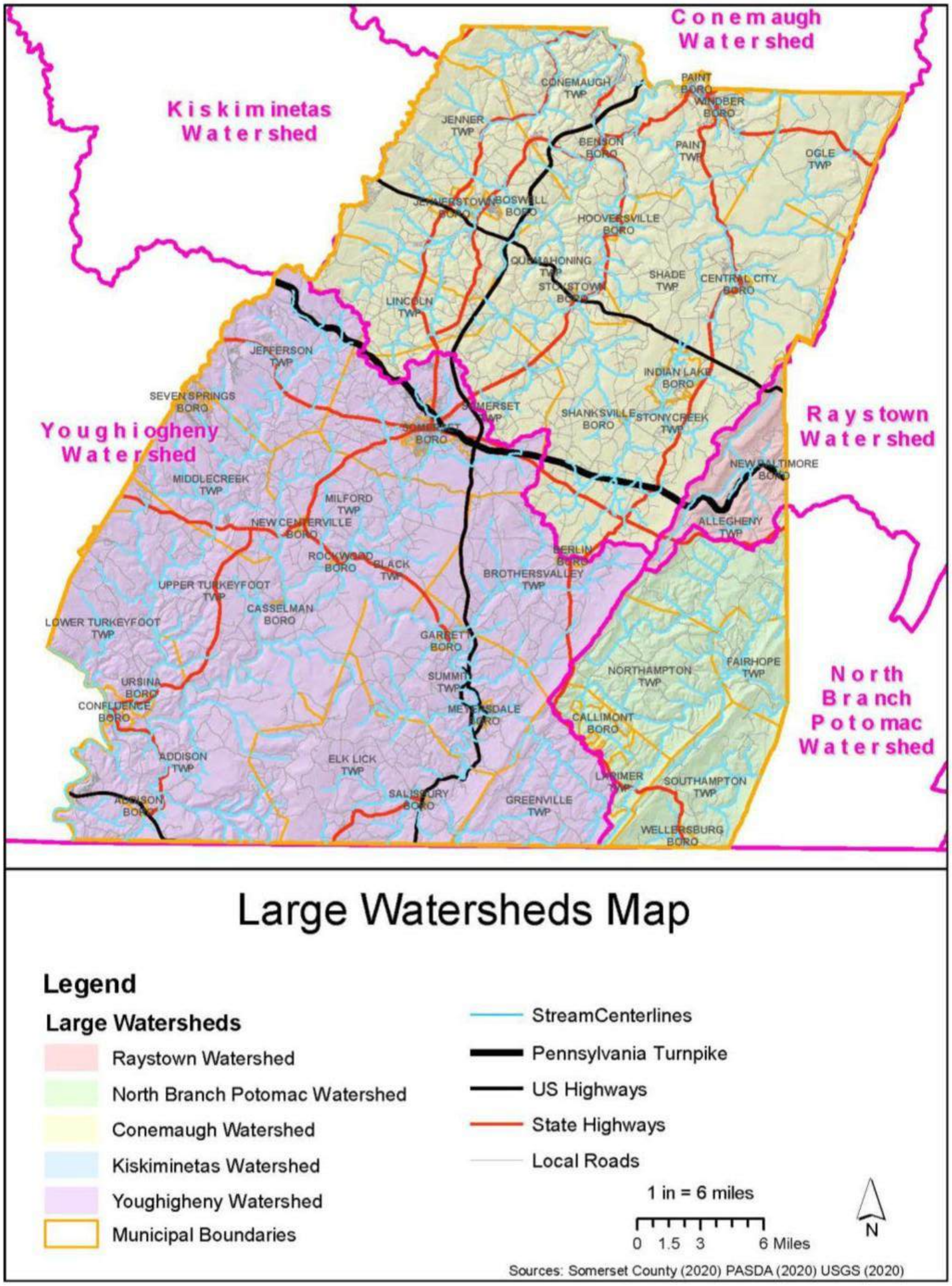
Jurisdiction *(B)=Borough (T)=Township*	NFIP-Participating Community	Total Land Area (excluding waterbodies) (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
Addison (B)	No	354	0	0.0%	0	0.0%
Addison (T)	Yes	39,355	1,554	3.9%	1,554	3.9%
Allegheny (T)	Yes	32,746	742	2.3%	742	2.3%
Benson (B)	Yes	228	103	45.2%	103	45.2%
Berlin (B)	No	586	0	0.0%	0	0.0%
Black (T)	Yes	27,335	1,101	4.0%	1,101	4.0%
Boswell (B)	Yes	473	29	6.2%	29	6.2%
Brothersvalley (T)	Yes	39,921	1,245	3.1%	1,245	3.1%
Callimont (B)	No	2,769	93	3.4%	93	3.4%
Casselman (B)	Yes	130	30	22.8%	30	22.8%
Central City (B)	Yes	340	43	12.7%	43	12.7%
Conemaugh (T)	Yes	26,431	1,274	4.8%	1,282	4.9%
Confluence (B)	Yes	1,077	167	15.5%	167	15.5%
Elk Lick (T)	Yes	36,572	1,546	4.2%	1,566	4.3%
Fairhope (T)	Yes	9,321	262	2.8%	262	2.8%
Garrett (B)	Yes	320	61	19.1%	61	19.1%
Greenville (T)	Yes	16,051	527	3.3%	527	3.3%
Hooversville (B)	Yes	398	73	18.2%	73	18.2%
Indian Lake (B)	Yes	2,282	121	5.3%	121	5.3%
Jefferson (T)	Yes	25,991	1,015	3.9%	1,015	3.9%
Jenner (T)	Yes	40,813	1,576	3.9%	1,576	3.9%
Jennerstown (B)	Yes	1,202	94	7.8%	94	7.8%
Larimer (T)	Yes	10,779	262	2.4%	262	2.4%
Lincoln (T)	Yes	16,456	510	3.1%	510	3.1%

Jurisdiction *(B)=Borough (T)=Township*	NFIP-Participating Community	Total Land Area (excluding waterbodies) (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
Lower Turkeyfoot (T)	Yes	23,384	1,231	5.3%	1,231	5.3%
Meyersdale (B)	Yes	518	86	16.7%	107	20.6%
Middlecreek (T)	Yes	21,345	848	4.0%	848	4.0%
Milford (T)	Yes	19,022	992	5.2%	992	5.2%
New Baltimore (B)	Yes	222	60	27.1%	60	27.1%
New Centerville (B)	Yes	91	0	0.0%	0	0.0%
Northampton (T)	Yes	22,933	736	3.2%	736	3.2%
Ogle (T)	Yes	21,965	526	2.4%	526	2.4%
Paint (B)	Yes	220	15	6.7%	29	13.1%
Paint (T)	Yes	20,649	898	4.3%	906	4.4%
Quemahoning (T)	Yes	22,387	1,175	5.3%	1,175	5.3%
Rockwood (B)	Yes	209	16	7.6%	16	7.6%
Salisbury (B)	Yes	226	8	3.3%	8	3.3%
Seven Springs (B)	Unknown	605	0	0.0%	0	0.0%
Shade (T)	Yes	43,868	1,473	3.4%	1,473	3.4%
Shanksville (B)	Yes	114	37	32.5%	37	32.5%
Somerset (B)	Yes	1,729	157	9.1%	199	11.5%
Somerset (T)	Yes	40,925	1,389	3.4%	1,426	3.5%
Southampton (T)	Yes	18,713	258	1.4%	258	1.4%
Stonycreek (T)	Yes	39,100	2,152	5.5%	2,152	5.5%
Stoystown (B)	Unknown	123	0	0.0%	0	0.0%
Summit (T)	Yes	28,898	1,769	6.1%	1,772	6.1%
Upper Turkeyfoot (T)	Yes	24,716	947	3.8%	947	3.8%
Ursina (B)	Yes	575	124	21.6%	124	21.6%
Wellersburg (B)	Yes	514	33	6.4%	33	6.4%
Windber (B)	Yes	1,265	132	10.4%	193	15.2%
Somerset Co. (Total)	N/A	**686,248**	**27,489**	**4.0%**	**27,704**	**4.0%**

Source: Somerset County 2022; USGS 2004; FEMA 2019, FEMA 2024
Note: % = Percent

In accordance with the 1978 Pennsylvania Stormwater Management Act (Act 167), counties are required to prepare stormwater management plans on a watershed-by-watershed basis; these plans provide for improved management of stormwater impacts associated with land development. Figure 4.3.7-1 below was sourced from the 2020 HMP and illustrates the locations and names of the PADEP-designated watersheds in Somerset County.

Figure 4.3.7-1. Watersheds in Somerset County, Pennsylvania



FEMA Regulatory Flood Zones

According to FEMA, flood hazard areas are defined as areas on a map shown to be inundated by a flood of a given magnitude. These areas are determined by statistical analyses of records of river flow, storm tides, and rainfall; information obtained through consultation with the community; floodplain topographic surveys; and hydrologic and hydraulic analyses. Flood hazard areas are delineated on FEMA's Flood Insurance Rate Maps (FIRM), which are official maps of a community on which the Federal Insurance and Mitigation Administration has delineated both Special Flood Hazard Areas (SFHA) and the risk premium zones applicable to the community. These maps identify SFHAs, location of a specific property in relation to the SFHA, the base flood elevation (BFE) (1 percent annual chance) at a specific site, the magnitude of a flood hazard within a specific area, undeveloped coastal barriers where flood insurance is not available, and regulatory floodways and floodplain boundaries (1 percent and 0.2 percent annual chance floodplain boundaries) (FEMA 2020) (FEMA 2020). Somerset County's FIRMs can be accessed online via the FEMA Flood Map Service Center.

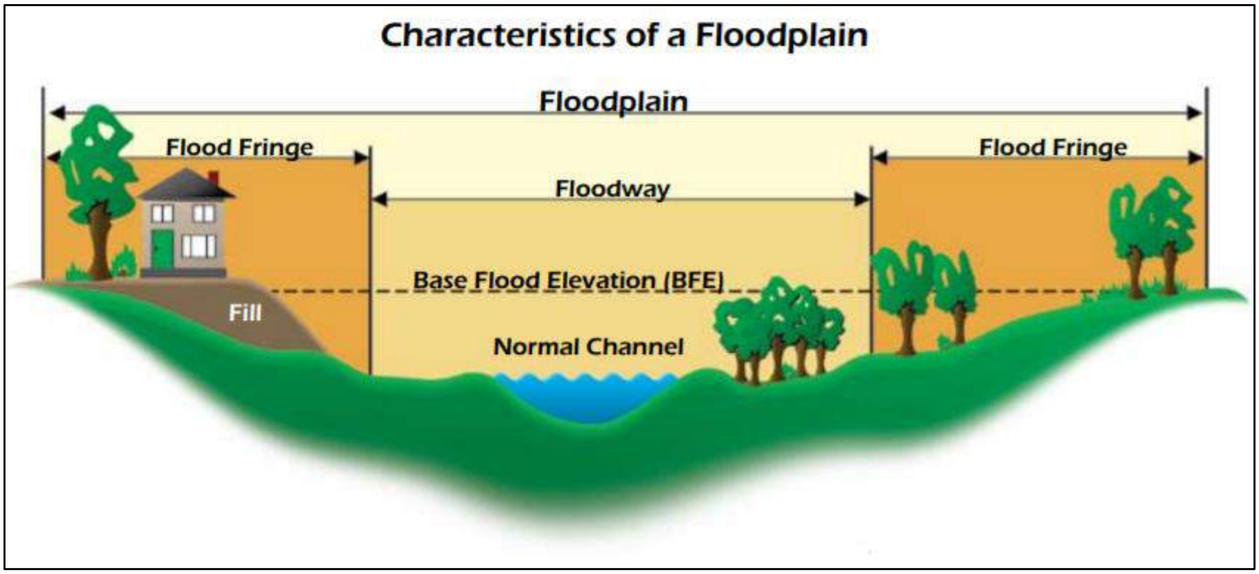
The SFHA on a FIRM consists of the land area covered by flood waters of the base flood. It is the area where the NFIP's floodplain management regulations must be enforced, and the area where mandatory purchase of flood insurance applies. This regulatory boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities because many communities have maps showing the extent of the base flood and the depths that could occur. Table 4.3.7-2 and Figure 4.3.7-2 provide a more detailed overview of the floodplain landscape.

Table 4.3.7-3 Floodplain Characteristics

Floodplain Characteristic	Description
Base Flood	Sometimes referred to as the 100-year flood, has a 1% chance of occurring in any given year
Base Flood Elevation (BFE)	The elevation (usually expressed in feet above sea level) which the base flood is expected to reach. Is one of the most important factors used in estimating potential damage within a given area
Floodway	Includes the channel of a river or stream and the overbank areas adjacent to the channel. It carries the bulk of the floodwater downstream and is usually where water velocities and forces are greatest (and most destructive). Regulations require that the floodway be kept open so that flood waters are not obstructed or diverted onto other properties
Flood Fringe	The area on either side of the floodway. This area is subject to inundation by the base flood but conveys little or no velocity flows
Special Flood Hazard Area (SFHA)	For the NFIP, this is the area that would be inundated by the base flood, or simply, the floodplain
Fill	Floodplains are low-lying areas that seem to invite filling activities. Filling is included in the NFIP definition of "development" and, therefore, requires a floodplain development permit. Filling is prohibited in the floodway

Source: FEMA 2009; USGS 2018

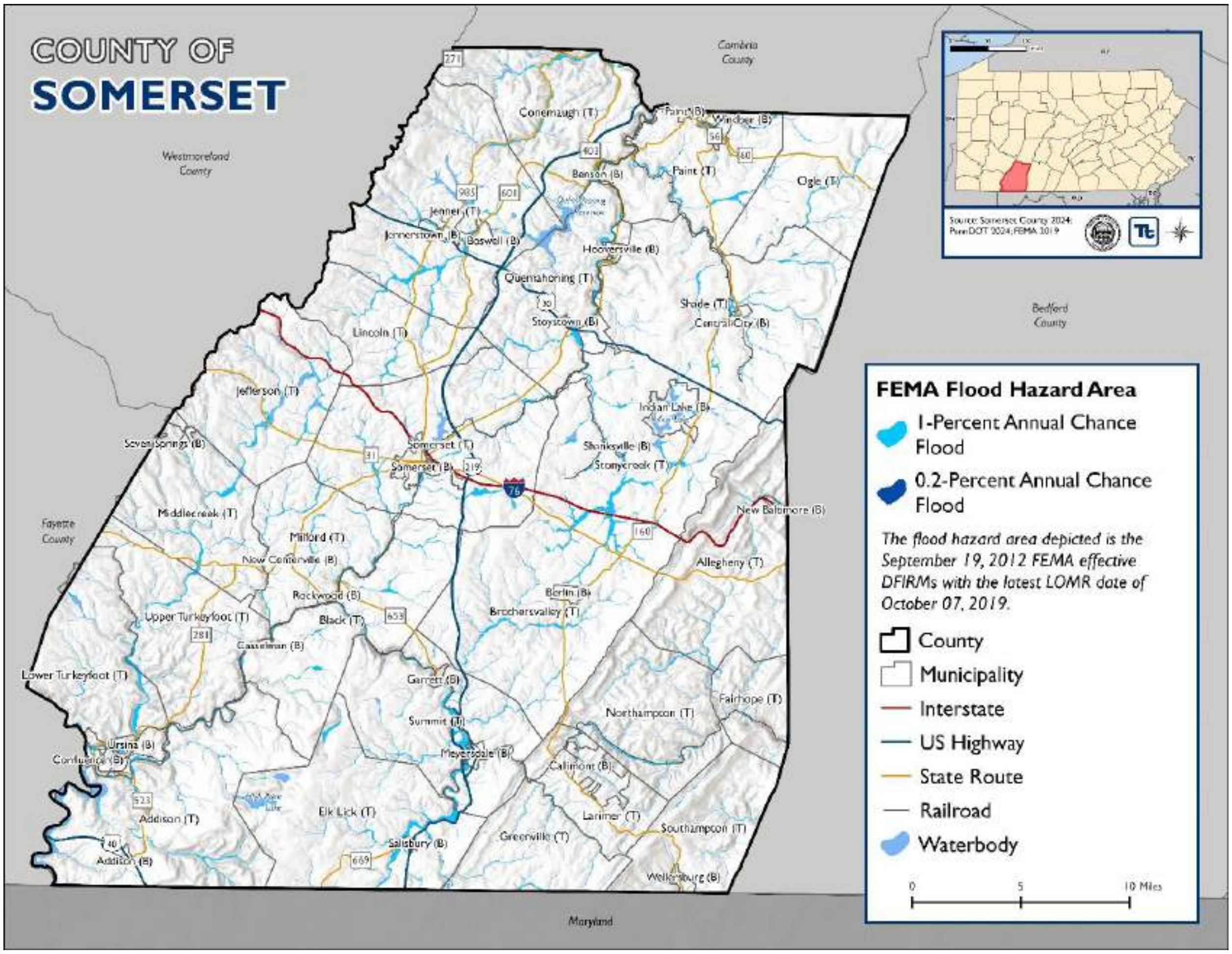
Figure 4.3.7-2. Characteristics of a Floodplain



Source: FEMA 2009

The SFHA serves as the primary regulatory boundary used by FEMA and Pennsylvania. Digitized Flood Insurance Rate Maps (DFIRMs), FIRMs, and other flood hazard information can be referenced to identify the expected spatial extent of flooding from a 1 percent annual chance event and 0.2 percent annual chance event. At the time this plan was written, the October 2019 DFIRMs were considered the best available and were used for the risk analysis. Figure 4.3.7-3 illustrates NFIP flood zones in Somerset County while jurisdictional floodplain maps are included at the end of this hazard profile.

Figure 4.3.7-3. FEMA Flood Hazard Areas in Somerset County



While the FIRMs provide a creditable source to document extent and location of the flood hazard, accuracy of data reflected on these maps has limitations. Notably, FIRMs are based on existing hydrological conditions at the time of map preparation. FIRMs are not set up to account for possible changes in hydrology over time.

Flood Insurance Study

In addition to FIRMs and DFIRMs, FEMA also provides FIS of entire counties and individual jurisdictions. These studies aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. They are narrative reports of countywide flood hazards, including descriptions of flood areas studied and engineered methods used, principal flood problems, flood protection measures, and graphic profiles of flood sources (FEMA 1997) The countywide FIS for Somerset County was last completed in 2017, at the same time as the DFIRM revisions.

Ice Jam Hazard Areas

Ice jams are common in northeastern United States, and the Commonwealth of Pennsylvania is not an exception. The ice jam database, maintained by the Ice Engineering Group at the USACE Cold Regions Research and Engineering Laboratory (CRREL) currently consists of over 26,000 records from across the United States. According to the USACE-CRREL, Somerset County has been impacted on occasion by ice jam incidents and these are listed in Table 4.3.7-3 below. Also included with these historic events are ice jam incidents that occurred in neighboring counties, and while these may not have had distinct impacts, future ice jams upstream or downstream have the potential to cause cascading flooding hazards to portions of the Somerset County planning area. In addition to historic ice jam incidents, notable flooding, and flash flooding events are summarized in Section 4.3.7.3 below.

4.3.7.3 Range of Magnitude

Both localized and widespread floods are considered hazards when people and property are affected. Injuries and deaths can occur when people are swept away by flood currents, or bacteria and disease are spread by moving or stagnant flood waters. Most property damage results from inundation by sediment-filled water. A large amount of rainfall over a short period of time can result in flash floods. Small amounts of rain can cause flooding in areas with frozen soil or saturated soils from a previous event, or if the rain is concentrated in areas with impervious surfaces (PEMA 2023).

Several factors determine the severity of floods, including rainfall intensity and duration, topography, ground cover, and even the rate of snowmelt. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover, and many areas in Pennsylvania have relatively steep slopes that promote quick surface water runoff. Most storms track from west to east; however, some originate in the Great Lakes or the Atlantic Ocean (PEMA 2023). Rainfall in Pennsylvania is about average for the eastern United States, and in Somerset, PA, annual average precipitation stands at 47.06" (NOAA/NWS 2022). Rainfall intensity is grouped according to the following three categories:

Figure 4.3.7-4 Monthly Climate Averages (1991-2020) for Precipitation Somerset, PA

Source: NOAA/NWS 2022

- **Light rain** – precipitation rate is 0.01 inch and 0.10 inches/hour
- **Moderate rain** – precipitation rate is 0.11 inch and 0.30 inches/hour
- **Heavy rain** – precipitation rate is > 0.30 inches/hour (AMS 2024)

The severity of a flood depends not only on the amount of water that accumulates within a period of time but also on the land's ability to manage this water. One element is the size of rivers and streams in an area, but an equally important factor is the land's absorbency. When it rains, the soil acts as a sponge, absorbing rainfall. When the soils are saturated (or frozen), however, rainfall at the surface cannot infiltrate the ground as efficiently, and what results is runoff.

In the case of riverine or flash flooding, once a river reaches flood stage, the flood extent or severity categories used by NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat. For Somerset County, the magnitude of flooding events can range from Minor to Major depending on the circumstances.

- **Minor Flooding** – minimal or no property damage, but possibly some public threat or inconvenience.
- **Moderate Flooding** – some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary.
- **Major Flooding** – extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations are necessary (NOAA/NWS n.d.)

In Somerset County, there are seasonal differences in how floods are caused. In the winter and early spring (February to April), major flooding has occurred as a result of heavy rainfall on dense snowpacks throughout contributing watersheds, although the snowpack is generally moderate during most winters. Winter floods also have resulted from runoff of intense rainfall on frozen ground, and local flooding has been exacerbated by ice jams in streams and creeks. Ice jam floods occur on rivers that are totally or partially frozen. A rise in stream stage will break up a totally frozen river and create ice flows that can pile up on channel obstructions such as shallow riffles, log jams, or bridge piers. The jammed ice creates a dam across the channel over which the water and ice mixture continue to flow, allowing for more jamming to occur. Flood events caused by ice jams are limited primarily to the Somerset River. Specific data on ice jam incidents in the County is not available from the Somerset County Department of Emergency Services or the National Climatic Data Center (NCDC). It is, however, available at a few select gauge sites across the County and in neighboring jurisdictions west of Somerset County. Table 4.3.7-4 summarizes some of the more notable ice jam data collected by the USACE.

Summer floods have occurred from intense rainfall on dry hard-packed or previously saturated soils. Summer thunderstorms deposit large quantities of rainfall over a short period of time have also produced flash flooding. In addition, the county has been experiencing more intense rainfall from tropical storms and hurricanes in late summer and early fall.

4.3.7.4 Past Occurrence

Somerset County has a long history of flooding events. While flooding is often localized to streets and small neighborhoods, the county has historically experienced periodic storm events that affect multiple communities over a large area. Past building practices often resulted in homes being constructed in the FEMA-designated floodplains, exacerbating flooding problems within certain communities. Of the types of flooding that occur in the county, flash flooding is the most common.

Major creeks within the county include the Casselman River at Markleton, Laurel Hill Creek at Ursina, Cantral PA Dams Youghiogheny Dam - Buttonhook, Youghiogheny River Below Youghiogheny Dam- Outflow (Tailwater) and Youghiogheny River at Confluence each of which experiences varying degrees of flood events.

Table 4.3.7-4 Notable Ice Jams Impacting Somerset County, PA

Jam Date	Location	Source	USGS Report Description
February 4, 1982	Markelton	Casselman River	Ice jam reported near Markleton, PA on the Casselman River – water discharge was 4700 cfs
February 4, 1982	Ursina	Laurel Hill Creek	Ice jam reported at Ursina, PA on Laurel Hill Creek -- water discharge was 1000 cfs
December 29, 1983	Ursina	Laurel Hill Creek	Ice jam reported at Ursina, PA on Laurel Hill Creek -- water discharge was 105 cfs
February 3, 1986	Ursina	Laurel Hill Creek	Ice jam reported at Ursina, PA on Laurel Hill Creek -- water discharge was 700 cfs
January 9, 1994	Ursina	Laurel Hill Creek	Backwater from ice on the Laurel Hill Creek at Ursina on January 9, 1994
February 11, 2000	Ursina	Laurel Hill Creek	Ice jam reported at Ursina, PA on Laurel Hill Creek – estimated water discharge was 120 cfs.
January 30, 2001	Ursina	Laurel Hill Creek	Ice jam reported at Ursina, PA on Laurel Hill Creek – estimated water discharge was 240 cfs.
February 7, 2004	Ursina	Laurel Hill Creek	USGS Water Resources Data for Pennsylvania WY 2004 reported a maximum peak stage of 7.18ft on 7 February 2004 due to backwater from ice at USGS gaging Station 03080000

Jam Date	Location	Source	USGS Report Description
			Laurel Hill Creek at Ursina, PA. The average daily discharge was estimated to be 742cfs.
April 13, 2004	Ursina	Laurel Hill Creek	USGS Water Resources Data for Pennsylvania WY 2004 reported a maximum peak stage of 6.64ft on 13 April 2004 due to backwater from ice at USGS gaging Station 03080000 Laurel Hill Creek at Ursina, PA. The average daily discharge was estimated to be 3,400cfs.
February 1, 1982	Connellsville	Youghiogheny River	Fayette County (upstream)
February 1, 1982	Sutersville	Youghiogheny River	Westmoreland County (upstream)
January 15, 1999	McKeesport	Youghiogheny River	Allegheny County (upstream)
January 31, 2001	Sutersville	Youghiogheny River	Westmoreland County (upstream)
January 21, 2003	McKeesport	Youghiogheny River	Allegheny County (upstream)
February 18, 2003	Smithton	Youghiogheny River	Westmoreland County (upstream)
February 23, 2003	McKeesport	Youghiogheny River	Allegheny County (upstream)
February 13, 2004	McKeesport	Youghiogheny River	Allegheny County (upstream)
January 15, 2015	Sutersville	Youghiogheny River	Westmoreland County (upstream)
March, 4, 2015	McKeesport	Youghiogheny River	Allegheny County (upstream)

Source: USACE/CRREL 2024
Notes: cfs=cubic feet per second

USGS Stream Gauge Data monitors conditions at Casselman River at Markleton, Laurel Hill Creek at Ursina, Central PA Dams Youghiogheny Dam - Buttonhook, Youghiogheny River Below Youghiogheny Dam- Outflow (Tailwater) and Youghiogheny River at Confluence. The NWS uses flood categories as forecast points that describe the severity of flood impacts in the river/stream reach. Table 4.3.7-4 summarizes the flood categories in feet at each of these gauges. Table 4.3.7-5 summarizes the top historic crests at these locations.

Table 4.3.7-5. Flood Categories at Casselman River at Markleton, Laurel Hill Creek at Ursina, Central PA Dams Youghiogheny Dam - Buttonhook, Youghiogheny River Below Youghiogheny Dam- Outflow (Tailwater) and Youghiogheny River at Confluence

Flood Category	Flood Category Definition	Casselman River at Markleton	Laurel Hill Creek at Ursina	Central PA Dams Youghiogheny Dam - Buttonhook	Youghiogheny River Below Youghiogheny Dam- Outflow (Tailwater)	Youghiogheny River at Confluence
Major Flooding	Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations	N/A	N/A	--	N/A	17 feet
Moderate Flooding	Some inundation of structures and roads near stream	N/A	N/A	--	N/A	14 feet
Minor Flooding	Gauge height above which a rise in water surface level begins to create a hazard to lives, property or commerce; issuance of flood warnings is linked to flood stage.	9 feet	5 feet	1,468 feet	N/A	12 feet
Action Stage	Level which, when reached by a rising stream, represents the level where the NWS or a customer/partner needs to take some type of mitigation action in preparation for possible significant hydrologic activity.	9 feet	3.7 feet	N/A	N/A	7 feet

Source: NWS 2022
Note: N/A - Not available

Table 4.3.7-6. Historic Crests at selected River/Creek/Dam Locations

Casselman River at Markleton		Laurel Hill Creek at Ursina		Central PA Dams Youghiogheny Dam – Buttonhook		Youghiogheny River Below Youghiogheny Dam- Outflow (Tailwater)		Youghiogheny River at Confluence	
Feet	*Date*	***Feet***	*Date*	***Feet***	*Date*	***Feet***	*Date*	***Feet***	*Date*
16.40	3/17/1936	**10.63**	10/15/1954	**N/A**	-	**15.94**	6/4/1941	**21. 60**	3/18/1936
14.06	10/15/1954	**10.28**	3/17/1936	**N/A**	-	**11.70**	4/20/1940	**19.92**	10/15/1954
13.26	1/19/1996	**9.83**	9/14/1971	**N/A**	-	**11.28**	3/5/1948	**17.62**	1/19/1996
12.17	3/29/1924	**9.3**	3/29/1924	**N/A**	-	**10.37**	3/9/1945	**13.13**	9/10/2018
10.35	9/18/2004	**9.0**	8/6/2000	**N/A**	-	**10.24**	4/7/1960	**13.08**	9/14/1971

Source: NWS 2020; USGS/NWIS 2024

Water Level Data

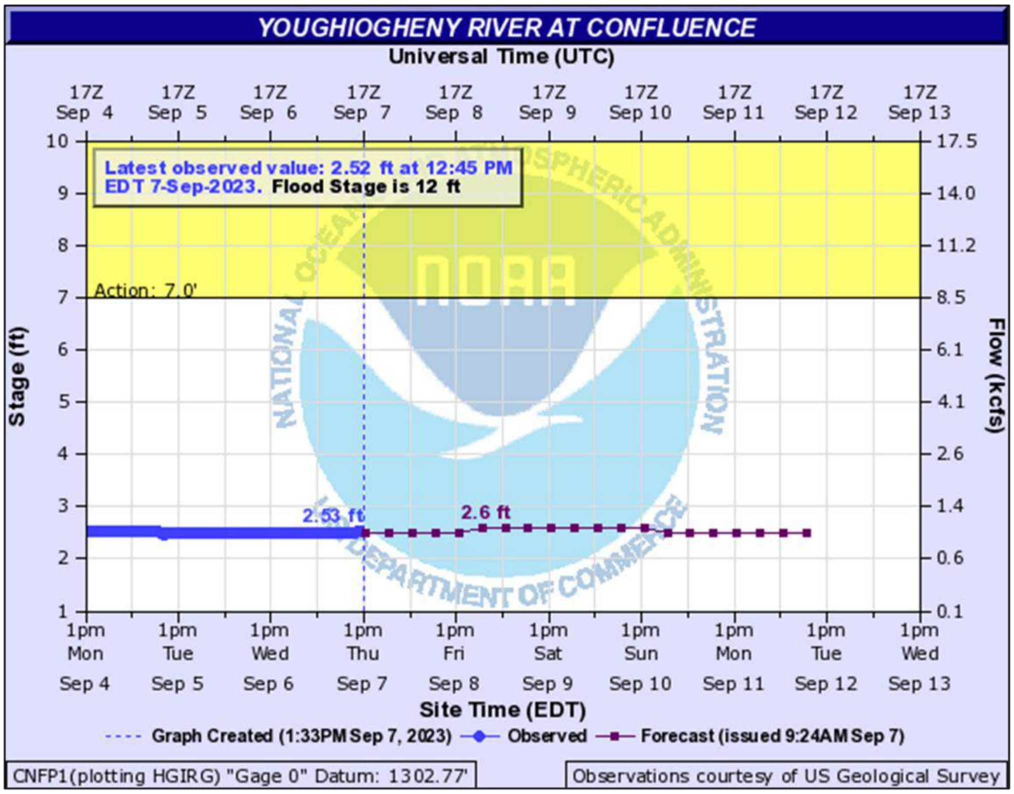
A hydrograph shows how a water level changes over time at a specific location to enable a review of historic water levels, which are useful in floodplain management planning. In Somerset County, there are five stream gauges. These forecast hydrographs are useful to reference when flooding is expected or to determine the observed water level for the past few days. The hydrographs for Casselman River at Markleton, Laurel Hill

Creek at Ursina, Central PA Dams Youghiogheny Dam - Buttonhook, Youghiogheny River Below Youghiogheny Dam- Outflow (Tailwater) and Youghiogheny River at Confluence provide water levels for the action, minor flooding, moderate flooding, and major flooding stages. They also display the flood of record (or the highest recorded water level) for the specific gauge. These stages are defined as follows:

- **Action Stage -** the stage which, when reached by a rising stream, lake, or reservoir, represents the level where the NWS or a partner/user needs to take some type of mitigation action in preparation for possible significant hydrologic activity.
- **Minor Flooding -** minimal or no property damage, but possibly some public threat.
- **Moderate Flooding -** some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
- **Major Flooding -** extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
- **Record Flooding -** flooding that equals or exceeds the highest stage or discharge at a given site during the period of record keeping.
- **Stage -** level of the water surface in a river measured with reference to some datum.
- **Flow -** volume of water passing a given point per unit of time.
- **kcfs -** measurement of water flow equivalent to 1000 cubic feet of water passing a given point for an entire second (NOAA/NWPS 2024)

To illustrate the data available, screenshots of the gauges are provided in Figure 4.3.7-5. The first hydrograph in the figure provides data collected at the *Youghiogheny River at Confluence* gauge, as captured on September 7, 2023. It indicates that Action Stage is 7 feet, 2.53 feet at 1 pm on that day. This information is useful for local officials, emergency managers, and citizens to inform preparedness and response planning and activities to reduce potential impacts of flooding.

Figure 4.3.7-5. Flood Hydrographs for the Gauges in Somerset County



Source: NWS 2023

FEMA Major Disaster and Emergency Declarations

Between 1954 and 2021, the Commonwealth of Pennsylvania underwent 46 presidentially declared disasters (DR) and six Emergency declarations (EM) involving flooding (FEMA 2024). Somerset County was included in 12 of the declarations, as listed in Table 4.3.7-7.

Table 4.3.7-7. Flood-Related Disaster Declarations for Somerset County, 1954 to 2023

FEMA Declaration Number	Date(s) of Event	Declaration Date	Incident Type	Declaration Title
DR-40-PA	August 20, 1955	August 20, 1955	Flood	Floods & Rains
DR-51-PA	March 15, 1956	March 15, 1956	Flood	Flood
DR-89-PA	January 23, 1959	January 23, 1959	Flood	Floods
DR-340-PA	June 23, 1972	June 23, 1972	Flood	Tropical Storm Agnes
DR-537-PA	July 21, 1977	July 21, 1977	Flood	Severe Storms & Flooding
DR-721-PA	August 27, 1984	August 27, 1984	Flood	Severe Storms & Flooding
DR-754-PA	November 3-6, 1985	November 9, 1985	Flood	Severe Storms & Flooding

FEMA Declaration Number	Date(s) of Event	Declaration Date	Incident Type	Declaration Title
DR-1093-PA	January 19, 1996 – February 1, 1996	January 21, 1996	Flood	Severe Storms and Flooding
DR-1219-PA	June 8, 1998	May 31, 1998 – June 2, 1998	Severe Storm	Severe Storms, Tornadoes, and Flooding
DR-1485-PA	August 23, 2003	July 21, 2003 – September 12, 2003	Severe Storm	Severe Storms, Tornadoes, and Flooding
DR-1555-PA	September 19, 2004	September 8-9, 2004	Severe Storm	Severe Storms and Flooding Associated with Tropical Storm Frances
EM-3340-PA	September 3, 2011 – October 15, 2011	September 8, 2011	Flood	Remnants of Tropical Storm Lee

Source: FEMA 2024

Table 4.3.7-8 USDA Flood-Related Disaster Declarations Involving Somerset County, PA

Designation Number	Hazard(s)	Begin Date	End Date	Description
S4465	Flood, Flash Flooding, Excessive Rain, moisture, humidity	March 20, 2019	July 21, 2018	Excessive Rain, flash flooding, and flooding

Source: (USDA 2024)

According to the National Oceanic and Atmospheric Administration's National Climatic Data Center (NOAA NCDC) storm event database, Somerset County experienced 50 flood events between January 1, 1996, and May 31, 2023 (the date range of data availability). These events resulted in over $1 million in property damage.

Between January 1, 1996 and December 31, 2023 the NCEI Storm Events Database has cataloged 15 flood events and 54 flash flood events in Somerset County. Together, these 69 flood-related events are summarized in Table 4.3.7-9 and serve as some of the more notable flood-related hazard events to impact the planning area.

Table 4.3.7-9. Notable Flooding Events between 2004 and 2023 in Somerset County

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Losses/Impacts
April, 13, 2004	Flood	Countywide	N/A	N/A	Heavy rain caused flooding over portions of Somerset county during the evening of the 13th. Flooded roads were reported in the town of Somerset in central Somerset county, as well as Boswell and Jerome in northwest portions of the county. Quemahoning Creek, Stony Creek and Coxes Creek all overflowed their banks. Flood waters quickly receded several hours after the rain ended.
May 18, 2004	Flash Flood	Berlin	N/A	N/A	Heavy rain caused flash flooding, which closed several roads in the Berlin area of Somerset county including Route 160 S. In addition, Township Road north of Rockwood was flooded with 1 foot of water on the road and over the bridge.
September 8, 2004	Flash Flood	Central City	DR-1555-PA	Yes	Thunderstorms produced torrential rain across Somerset County, leading to Flash Flooding in Central City. US Route 30 was closed in several places due to flooding and debris over the roadway. Several secondary roads were also closed in the vicinity of Central City and Meyersdale.
September 17-18, 2004	Flood	Confluence	EM-3340-PA	Yes	Heavy rain caused the Youghiogheny River at Confluence to exceed its flood stage of 12 feet. The river rose to flood stage at 08:00 EST on the 18th, and fell below flood stage at 09:00 EST on the 18th.
January 11, 2005	Flood	Meyersdale	N/A	N/A	Heavy rain caused flooding in Somerset County, especially in the Meyersdale area. About seven roads were closed due to flooding, and several basements were also flooded. Two other roads were closed due to flooding and debris from a possible mud slide near Salisbury.
March 28-29, 2005	Flood	Confluence	N/A	N/A	Heavy rain caused the Youghiogheny River at Confluence to flood. The river exceeded flood stage of 12 feet at 02:00 EST on the 29th, crested at 12.35 feet at 05:00 EST on the 29th, then fell back below flood stage at 10:00 EST on the 29th.
May 31, 2006	Flash Flood	Somerset	N/A	N/A	Thunderstorms with torrential rain caused flooding over central and northern Somerset County, mainly from Somerset Borough north. Road closures and basement flooding were reported in Somerset, Stoystown, Hooversville and Windber. In all, about two dozen roads were closed, with about 50 reports of flooded basements.
June 26, 2006	Flash Flood	Somerset	N/A	N/A	Heavy rain produced flash flooding in Somerset county in and near the city of Somerset. 18 basements were flooded, and Route 31 was closed due to high water just to the west of Somerset.

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Losses/Impacts
July 31, 2006	Flash Flood	Tire Hill	N/A	N/A	Heavy rain caused flash flooding in Southwest Somerset County near Tire Hill. Road flooding to the point of shoulder erosion was noted on some roadways.
November 16, 2006	Flash Flood	Somerset	N/A	N/A	Heavy rain caused Flash Flooding throughout Somerset County. There was a rockslide reported along the Pennsylvania Turnpike, and 8 roads were under water and closed at the height of the flooding.
June 1, 2007	Flash Flood	Berlin	N/A	N/A	Heavy rainfall from a slow moving thunderstorm caused flash flooding near the town of Berlin. The heavy rain caused the closure of State Route 219, due to water flowing over the roadway.
June 17, 2009	Flash Flood	Ursina	N/A	N/A	Heavy rain caused flash flooding in Lower Turkeyfoot Township near the town of Ursina. Laurel Hill Creek rose over 4 feet and flooded Humbert and Jersey Hollow Roads. A number of basements were also flooded. Some additional minor flooding and flooded basements were noted south of Somerset.
June 18, 2009	Flood	Ursina	N/A	N/A	Heavy Rain caused Flash Flooding in Lower Turkeyfoot Township mainly near the town of Ursina. Laurel Hill Creek rose over 4 feet...flooding Humbert and Jersey Hollow Roads. A number of basements were also flooding in the area. Some additional minor flooding and flooded basements were noted south of Somerset. The Flash Flooding transitioned into a Flood event, as high waters remained for some time after the rain ended, continuing to affect roads and basements.
March 13, 2010	Flood	Confluence	N/A	N/A	Heavy rainfall between 1 and 3 inches combined with melt water from a deep snow pack to produce extensive areal flooding along the Casselman and Youghiogheny Rivers. Considerable flooding also occurred along Stony Creek. The flooding evacuated an unknown number of Benson Borough residents. Numerous secondary roads were closed across the southern half of the county. Three personal care homes were evacuated due to high water covering access roads, displacing approximately 45 to 50 people. The Youghiogheny River at Confluence crested over 13 feet or 1.5 feet above flood stage. The county declared a disaster emergency for this event.
May 18, 2011	Flash Flood	Meyersdale	N/A	N/A	Heavy rainfall produced localized flash flooding and closed several roads in the Meyersdale area.

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Losses/Impacts
September 9, 2011	Flash Flood	Cairnbrook	EM-3340-PA	Yes	Heavy rainfall resulted in road closures across northern Somerset County. Small stream flooding was reported, along with flooded basements. Small stream flooding was reported in Central City, with water entering the first floor of several buildings.
July 4, 2013	Flash Flood	Sand Patch	N/A	N/A	Torrential thunderstorm rains produced significant, localized flash flooding in Larimer Township. Rain gauge reports indicate over 2 inches of rain fell in less than 1 hour. The flash flooding caused washouts and severe damage to White Oak Hollow Road (TR-828) and Porter Road (TR-402). The heavy rains caused Wills Creek to rapidly rise out of its banks and cover White Oak Hollow Road. The elevated terrain along with the flash flooding contributed to major damage along Porter Road, as a stream of water took out a large portion of the road.
August 8, 2013	Flash Flood	Windber	N/A	N/A	Heavy thunderstorm rains caused a washout of Route 160 (Forest Hills Drive/9th Street) in Paint Township near Windber.
August 28, 2013	Flash Flood	Boswell	N/A	N/A	Localized heavy rainfall of 3-4 inches in about 3 hours caused flash flooding in Jenner Township and Boswell Borough. The North Star School District was closed due to the flooding. Route 601 was closed in Jenners and several homes had flooded basements. One vehicle got stranded in moving water along Route 601 in the flood waters. Large boulders washed out onto the roadway on US 30 (Lincoln Highway) in the village of Jenners. Several roads were closed in Boswell Borough.
August 28, 2013	Flood	Boswell	N/A	N/A	Flash flooding that occurred during the predawn hours transitioned into areal flooding and persisted through the late morning. Several small streams and creeks exceeded bankful levels and flooded nearby roads and low-lying areas.
August 28, 2013	Flash Flood	Boswell	N/A	N/A	Following a period of heavy rain and flash flooding earlier in the morning, a second area of heavy rain in Jenner Township and Boswell Borough lead to additional flash flooding and exacerbated ongoing inundation.
August 28, 2013	Flood	Boswell	N/A	N/A	Widespread areal flooding persisted through the evening hours in the Boswell area. Small streams and creeks returned to their banks as flood waters receded into the overnight hours.
August 28, 2013	Flood	Ursina	N/A	N/A	Several rounds of heavy rain caused the Laurel Hill Creek to overflow its banks, flooding nearby roads and low-lying areas.
June 12, 2014	Flash Flood	Kennells Mills	N/A	N/A	Heavy rain produce flash flooding and closed Palo Alto Road near Wellersburg in extreme southeast Somerset County.

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Losses/Impacts
May 28, 2017	Flash Flood	Somerset	N/A	N/A	Several roads closed in Somerset and New Centerville. Eighteen homes reported basement flooding.
May 28, 2017	Flash Flood	Geiger	N/A	N/A	A water rescue was reported on Klondike Road near Somerset.
June 20, 2018	Flash Flood	Glade	N/A	N/A	Heavy rainfall flooded Cornerstone Road at Huckleberry Highway, including the bridge.
June 20, 2018	Flash Flood	Listie	N/A	N/A	A swift water rescue occurred at the intersection of Cider Mill Road and Klondike Road.
June 20, 2018	Flash Flood	Enoch	N/A	N/A	The bridge at East Bakersville Edie Road and Brendle Road in Lincoln Township was flooded.
June 20, 2018	Flash Flood	New Baltimore	N/A	N/A	A covered bridge near New Baltimore was washed out.
June 20, 2018	Flash Flood	Hooversville	N/A	N/A	The Hooversville Fire Dept Chief has reported they have a total of 5 streets under water, a total of 20 homes displaced due to flooding in Hooverville, Somerset County. Approximately, 47 people have been evacuated and have gotten placement either with other family members, in hotels, or the at shelter at Church Street and Clark Street. in Hooversville. Hooversville Fire Chief also advised the water is approx one house away from there station at this time.||Somerset County 911 is reporting that 35 persons are being evacuated in Benson Borough. The evacuees are will being going to a shelter being set up at St. Thomas Church.
September 9, 2018	Flood	Coal Run	N/A	N/A	A dike on the Castleman River was breached and several roadways were flooded.
September 9, 2018	Flood	Meyersdale	N/A	N/A	Route 219 south of Meyersdale was closed due to flooding.
September 9, 2018	Flood	Tire Hill	N/A	N/A	Route 403 was closed near the Cambria Somerset County line and a bridge was under water.
May 9, 2019	Flash Flood	Jerome	N/A	N/A	Heavy rainfall caused flooding along Gilbert Hollow Road and caused debris to dam a drain which led to the evacuation of 21 homes along Gilbert Hollow Road. The rain and water subsided by 1144 PM.
July 5, 2019	Flash Flood	Listie	N/A	N/A	Piersol road flooded south of Listie. $1,000,000 in property damages were also reported

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Losses/Impacts
July 5, 2019	Flash Flood	Wellscreek	N/A	N/A	Swift water rescue team activated for stranded residents in a Mobile Home Park 1 mile south of Friedens.
July 7, 2019	Flash Flood	Seanor	N/A	N/A	Significant flooding along small creek near Jones Avenue.
July 7, 2019	Flash Flood	Meyersdale	N/A	N/A	Water over the intersection of Rockdale and Mt. Davis roads.
July 7, 2019	Flash Flood	Foustwell	N/A	N/A	Water rushing across Seanor Road between Windber and Hollsopple.
July 7, 2019	Flash Flood	Windber	N/A	N/A	Jackson avenue Flooded and closed. Water Rescue on Cottage Lane along Paint Creek.
July 8, 2020	Flash Flood	Somerset	N/A	N/A	Flash Flooding was reported in downtown Somerset. Water was blocking traffic on South Ankeny Road and West Garrett.
September 1, 2021	Flash Flood	Tire Hill	N/A	N/A	Widespread flash flooding across the area. Around 10:30 a.m., Dark Shade Drive and Seanor Roads in Paint Township were shut down to one lane of travel because of flooding. Gardner Road between Bicycle and Dunmyer roads in Quemahoning Township and Water Works Road near Days Inn in Somerset Borough were also closed. Portions of routes 2005, 669 and 2003 in Elk Lick Township also closed.
September 1, 2021	Flash Flood	Ogletown	N/A	N/A	Widespread flash flooding reported. On the PA Turnpike flash flooding was reported at mile marker 135 with a large portion of the turnpike closed during the afternoon.

Sources: NOAA/NCEI 2024
N/A = Not Applicable

4.3.7.5 Future Occurrence

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of flood waters) and the related probability of occurrence. The NFIP uses historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year.

The NFIP recognizes the 1 percent annual chance flood, also known as the *base flood*, as the standard for identifying properties subject to federal flood insurance purchase requirements. A 1 percent annual chance flood is a flood that has a 1 percent chance of occurring over a given year. The DFIRMs identify areas subject to the 1 percent and 0.2 percent annual chance flooding. Areas subject to 2 percent and 10 percent annual chance events are not shown on maps; however, water surface elevations associated with these events are included in the flood source profiles contained in the Flood Insurance Study Report. Table 4.3.7-10 shows a range of flood recurrence intervals and associated probabilities of occurrence.

Table 4.3.7-10. Recurrence Intervals and Associated Probabilities of Occurrence

Flood Recurrence Interval	Chance of Occurrence in Any Given Year (%)
5 year	20
10 year	10
25 year	4
50 year	2
100 year	1
500 year	0.2

Based on the historic and more recent flood events in Somerset County, it is clear that the county has a high probability of flooding in the future. The fact that the elements required for flooding exist and that major flooding has occurred throughout the county in the past suggests that many people and properties are at risk from the flood hazard in the future.

For the 2025 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of flooding events for Somerset County. Information from NOAA NCEI storm events database, FEMA, Pennsylvania State Climatologist, and the CRREL ice jam database were used to identify the number of flood events that occurred between 1950 and 2023. Using these sources ensures the most accurate probability estimates possible. The table below shows these statistics, as well as the annual average number of events and the estimated percent chance of an incident occurring in a given year.

Table 4.3.7-11. Probability of Future Flooding Events

Hazard Type	Number of Occurrences Between 1950 and 2023	Recurrence Interval (in Years) (# Years/Number of Events)	Percent Chance of Occurrence in Any Given Year
Flash Flood	54	1.37	73%
Flood	15	4.93	20%
Ice Jam	9	8.22	12%
Total	**78**	**0.95**	**100%**

Sources: NOAA/NCEI 2024; USACE/CRREL 2024

It is estimated that Somerset County will continue to experience direct and indirect impacts of annual flooding events that may induce secondary hazards, such as infrastructure deterioration or failure, utility failures; power outages; water quality and supply concerns; and transportation delays, accidents, and inconveniences. Therefore, the future occurrence of floods in Somerset County has been adjusted and characterized as *highly likely*, when taking into consideration flash flooding, as defined by the Risk Factor Methodology probability criteria (see Table 4.4-1).

Effects of Climate Change

In Pennsylvania, precipitation is expected to increase year-round, particularly in the winter. Somerset County, located in the western part of the Commonwealth, is projected to experience a similar trend with higher mean annual precipitation between 2041 and 2070, compared to historical averages from 1971 to 2000 (DEP et al., 2021). This increase in precipitation raises the potential for floods to become more frequent and intense in the region.

4.3.7.6 Vulnerability Assessment

The 1 and 0.2 percent annual chance flood events were examined to evaluate Somerset County's flood risk. Polygons representing the 1 and 0.2 percent annual chance events from the FEMA Risk Map products dated October 2019 were used to estimate exposure. Figure 4.3.7-4 presented earlier in this section illustrates the flood boundaries used for the vulnerability assessment. The 1 percent annual chance flood depth grid generated for the FEMA Risk Map program was imported into FEMA's Hazus model and a riverine analysis was processed to estimate potential losses. To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the flood hazard on the county, including:

- Impact on (1) life, health and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collection that will assist in understanding this hazard over time.

Impact on Life, Health, and Safety

Impacts of flooding on life, health, and safety depend on several factors including severity of the event and whether or not adequate warning time is provided to residents. Assumedly, the population living in or near floodplain areas that could be impacted by a flood would be exposed. However, exposure should not be limited only to those who reside within a defined hazard zone, but everyone who may be affected by a hazard event (e.g., people are at risk while traveling in flooded areas, or their access to emergency services is compromised during an event, as well as the first responders' safety); the degree of that impact varies and is not strictly measurable.

Based on the spatial analysis, an estimated 2,731 people live in the SFHA (or 1 percent annual chance event floodplain) and an estimated 3,483 people are located in the 0.2 percent annual chance flood event floodplain (Table 4.3.7-12). In the event of a flood hazard, these residents could be displaced from their homes, requiring them to seek temporary shelter with friends, family, or emergency shelters. For this project, the potential population exposed is used as a guide for planning purposes.

Table 4.3.7-12 Estimated Somerset County Population Exposed to the 1 percent and 0.2 percent Flood Hazard Area

Jurisdiction *(B) = Borough* *(T)= Township*	Total Population (2022 ACS 5-Year Estimates)	Estimated Population Located in the Flood Hazard Areas			
		Population in the 1% Annual Chance Flood Hazard Area	% of Jurisdiction Total	Population in the 0.2% Annual Chance Flood Hazard Area	% of Jurisdiction Total
Addison (B)	272	0	0.0%	0	0.0%
Addison (T)	945	25	2.6%	25	2.6%
Allegheny (T)	669	36	5.4%	36	5.4%
Benson (B)	139	40	28.8%	40	28.8%
Berlin (B)	2,297	0	0.0%	0	0.0%
Black (T)	868	4	0.5%	4	0.5%
Boswell (B)	1,411	0	0.0%	0	0.0%
Brothersvalley (T)	2,002	11	0.5%	11	0.5%
Callimont (B)	52	0	0.0%	0	0.0%
Casselman (B)	64	7	10.9%	7	10.9%
Central City (B)	1,045	58	5.6%	58	5.6%
Conemaugh (T)	6,759	270	4.0%	281	4.2%
Confluence (B)	596	13	2.2%	13	2.2%
Elk Lick (T)	2,423	111	4.6%	117	4.8%
Fairhope (T)	85	16	18.8%	16	18.8%
Garrett (B)	409	132	32.3%	132	32.3%
Greenville (T)	865	19	2.2%	19	2.2%
Hooversville (B)	722	126	17.5%	126	17.5%
Indian Lake (B)	314	9	2.9%	9	2.9%
Jefferson (T)	1,313	14	1.1%	14	1.1%
Jenner (T)	3,713	84	2.3%	84	2.3%
Jennerstown (B)	1,182	26	2.2%	26	2.2%
Larimer (T)	536	20	3.7%	20	3.7%
Lincoln (T)	1,305	49	3.8%	49	3.8%
Lower Turkeyfoot (T)	425	32	7.5%	32	7.5%
Meyersdale (B)	2,118	67	3.2%	141	6.7%

Jurisdiction *(B) = Borough* *(T)= Township*	Total Population (2022 ACS 5-Year Estimates)	Estimated Population Located in the Flood Hazard Areas			
		Population in the 1% Annual Chance Flood Hazard Area	% of Jurisdiction Total	Population in the 0.2% Annual Chance Flood Hazard Area	% of Jurisdiction Total
Middlecreek (T)	644	20	3.1%	20	3.1%
Milford (T)	1,428	29	2.0%	29	2.0%
New Baltimore (B)	147	44	29.9%	44	29.9%
New Centerville (B)	118	0	0.0%	0	0.0%
Northampton (T)	282	20	7.1%	20	7.1%
Ogle (T)	493	8	1.6%	8	1.6%
Paint (B)	1,122	8	0.7%	80	7.1%
Paint (T)	3,038	39	1.3%	39	1.3%
Quemahoning (T)	1,661	122	7.3%	122	7.3%
Rockwood (B)	816	8	1.0%	8	1.0%
Salisbury (B)	619	0	0.0%	0	0.0%
Seven Springs (B)	7	0	0.0%	0	0.0%
Shade (T)	2,342	25	1.1%	25	1.1%
Shanksville (B)	166	30	18.1%	30	18.1%
Somerset (B)	6,030	259	4.3%	427	7.1%
Somerset (T)	11,775	189	1.6%	241	2.0%
Southampton (T)	628	37	5.9%	37	5.9%
Stonycreek (T)	2,271	203	8.9%	203	8.9%
Stoystown (B)	410	0	0.0%	0	0.0%
Summit (T)	1,911	137	7.2%	144	7.5%
Upper Turkeyfoot (T)	1,073	49	4.6%	49	4.6%
Ursina (B)	214	21	9.8%	21	9.8%
Wellersburg (B)	148	3	2.0%	3	2.0%
Windber (B)	3,930	311	7.9%	673	17.1%
Somerset Co. (Total)	**73,802**	**2,731**	**3.7%**	**3,483**	**4.7%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; FEMA 2019

Of the population exposed, the most vulnerable include the economically disadvantaged and the population over the age of 65. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on net economic impact on their families. The population over the age of 65 is also more vulnerable because they are more likely to seek or need medical attention that may not be available because of isolation during a flood event, and they may have more difficulty evacuating. They also may need to seek or need medical attention that may not be available due to isolation during a flood event. Within Somerset County, approximately 17,034 people are over the age of 65, and 7,513 people are below the poverty level.

Using 2020 U.S. Census data, Hazus estimates the potential sheltering needs as a result of a 1 percent annual chance flood event. For the 1 percent flood event, Hazus estimates 3,000 people will be displaced, and 598 people will seek short-term sheltering. The Township of Conemaugh would have the greatest displaced population (365 people) while the Borough of Windber will have the greatest number of persons seeking short-term shelter (103 people). These statistics, by jurisdiction, are presented in Table 4.3.7-13. The estimated displaced population and number of persons seeking short-term sheltering differs from the number of persons exposed to the 1 percent annual chance flood, because the displaced population numbers take into consideration that not all residents will be significantly impacted enough to be displaced or to require short-term sheltering during a flood event.

Table 4.3.7-13 Population Displaced or Seeking Short-Term Shelter from the 1% Annual Chance Flood Event

Jurisdiction	Total Population (2020 Decennial)	1-Percent Annual Chance Flood Event	
		Displaced Population	Persons Seeking Short-Term Sheltering
Addison (B)	272	0	0
Addison (T)	945	38	2
Allegheny (T)	669	28	1
Benson (B)	139	42	0
Berlin (B)	2,297	0	0
Black (T)	868	15	3
Boswell (B)	1,411	7	2
Brothersvalley (T)	2,002	26	9
Callimont (B)	52	0	0
Casselman (B)	64	7	0
Central City (B)	1,045	97	7
Conemaugh (T)	6,759	365	97
Confluence (B)	596	33	8
Elk Lick (T)	2,423	118	22
Fairhope (T)	85	7	0

Jurisdiction	Total Population (2020 Decennial)	1-Percent Annual Chance Flood Event	
		Displaced Population	Persons Seeking Short-Term Sheltering
Garrett (B)	409	118	7
Greenville (T)	865	13	1
Hooversville (B)	722	96	10
Indian Lake (B)	314	5	1
Jefferson (T)	1,313	42	10
Jenner (T)	3,713	130	35
Jennerstown (B)	1,182	18	3
Larimer (T)	536	11	1
Lincoln (T)	1,305	29	9
Lower Turkeyfoot (T)	425	61	6
Meyersdale (B)	2,118	61	8
Middlecreek (T)	644	24	1
Milford (T)	1,428	33	2
New Baltimore (B)	147	55	2
New Centerville (B)	118	0	0
Northampton (T)	282	17	0
Ogle (T)	493	13	2
Paint (B)	1,122	4	1
Paint (T)	3,038	59	11
Quemahoning (T)	1,661	140	9
Rockwood (B)	816	23	3
Salisbury (B)	619	6	6
Seven Springs (B)	7	0	0
Shade (T)	2,342	31	2
Shanksville (B)	166	41	2
Somerset (B)	6,030	272	89
Somerset (T)	11,775	237	53
Southampton (T)	628	35	8

Jurisdiction	Total Population (2020 Decennial)	1-Percent Annual Chance Flood Event	
		Displaced Population	Persons Seeking Short-Term Sheltering
Stonycreek (T)	2,271	72	8
Stoystown (B)	410	0	0
Summit (T)	1,911	164	45
Upper Turkeyfoot (T)	1,073	26	6
Ursina (B)	214	26	2
Wellersburg (B)	148	13	1
Windber (B)	3,930	342	103
Somerset Co. (Total)	**73,802**	**3,000**	**598**

Source: *Hazus V6.1; FEMA 2019; USGS 2021; U.S. Census Bureau 2020*
Note*: % = Percent, (B)=Borough, (T)=Township; Displaced and Short-Term Shelter Populations are rounded down. The population displaced and seeking shelter was calculated using 2020 U.S. Census data, which is the default demographic database for HAZUS-MH v6.1*

Total number of injuries and casualties resulting from typical riverine flooding is generally limited because of advance weather forecasting, blockades, and warnings. Therefore, injuries and deaths generally are not anticipated if proper warning occurs and precautions are in place. Warning time for flash flooding is often limited. Flash flood events are frequently associated with other natural hazard events, such as earthquakes, landslides, or severe weather, which limits their predictability and compounds the hazard. Populations without adequate warning of the event are highly vulnerable to this hazard. Ongoing mitigation efforts should help to avoid the most likely cause of injury—persons trying to cross flooded roadways or channels. Mitigation action items addressing this issue are included in Section 6 (Mitigation Strategy) of this plan.

Cascading impacts may also include exposure to pathogens such as mold. After flood events, excess moisture and standing water contribute to growth of mold in buildings. Mold may present a health risk to building occupants, especially those with already compromised immune systems such as infants, children, the elderly, and pregnant women. The degree of impact will vary and is not strictly measurable. Mold can grow in as short a period as 24-48 hours in wet and damaged areas of buildings that have not been properly cleaned. Very small mold spores can easily be inhaled, creating potential for allergic reactions, asthma episodes, and other respiratory problems. Buildings should be properly cleaned and dried out to safely prevent mold growth (CDC 2023)

Mold and mildew are not the only public health risk associated with flooding. Flood waters can be contaminated by pollutants such as sewage, human and animal feces, pesticides, fertilizers, oil, asbestos, and rusting building materials. Common public health risks associated with flood events also include:

- Unsafe food
- Contaminated drinking and washing water and poor sanitation
- Mosquitos and animals
- Carbon monoxide poisoning
- Secondary hazards associated with re-entering/cleaning flooded structures
- Mental stress and fatigue.

Current loss estimation models, such as Hazus, are not equipped to measure public health impacts. The best mitigation measures for these impacts is to be aware that they can occur, educate the public on prevention, and be prepared to address these vulnerabilities in responding to flood events.

Impact on General Building Stock

After consideration of the population exposed and vulnerable to the flood hazard, the built environment was evaluated. Exposure to the flood hazard includes those buildings within the flood zone. Potential damage is the modeled loss that could occur to the exposed inventory, including structural and content value.

The potential damage caused by flood events is the modeled loss that could occur to the exposed building stock measured by the structural and content replacement cost value. Table 4.3.7-14 summarizes these results. In total, 3,651 structures, or 4.3 percent of the building stock, are within the 1 percent annual chance flood zone; and 4,194 structures, or 4.9 percent of the building stock, are within the 0.2 percent flood zone.

Furthermore, Hazus estimated potential damage to buildings in Somerset County for the 1 percent annual chance flood event. Table 4.3.7-15 summarizes these results. In total, Hazus estimates $190 million in potential building damage. Hazus estimates $50 million in residential building loss.

Table 4.3.7-14 Estimated General Building Stock Exposure to the 1 Percent and 0.2 Percent Annual Chance Flood Event – All Occupancies

Jurisdiction *(B)=Borough* *(T)=Township*	Jurisdiction Total Buildings	Estimated Building Stock Located in the Flood Hazard Area			
		Buildings in the 1% Annual Chance Flood Hazard Area	% of Jurisdictional Total	Buildings in the 0.2% Annual Chance Flood Hazard Area	% of Jurisdictional Total
Addison (B)	255	0	0.0%	0	0.0%
Addison (T)	2,429	96	4.0%	96	4.0%
Allegheny (T)	1,509	75	5.0%	75	5.0%
Benson (B)	173	59	34.1%	59	34.1%
Berlin (B)	1,392	0	0.0%	0	0.0%
Black (T)	1,515	16	1.1%	16	1.1%
Boswell (B)	826	3	0.4%	3	0.4%
Brothersvalley (T)	3,330	35	1.1%	35	1.1%
Callimont (B)	55	0	0.0%	0	0.0%
Casselman (B)	119	21	17.6%	21	17.6%
Central City (B)	912	70	7.7%	70	7.7%
Conemaugh (T)	6,338	361	5.7%	374	5.9%
Confluence (B)	753	21	2.8%	21	2.8%
Elk Lick (T)	3,334	116	3.5%	130	3.9%
Fairhope (T)	304	40	13.2%	40	13.2%
Garrett (B)	377	111	29.4%	111	29.4%
Greenville (T)	1,145	17	1.5%	17	1.5%
Hooversville (B)	581	112	19.3%	112	19.3%
Indian Lake (B)	1,148	131	11.4%	131	11.4%
Jefferson (T)	3,395	88	2.6%	88	2.6%
Jenner (T)	5,016	149	3.0%	149	3.0%
Jennerstown (B)	641	19	3.0%	19	3.0%
Larimer (T)	839	18	2.1%	18	2.1%
Lincoln (T)	1,981	50	2.5%	50	2.5%
Lower Turkeyfoot (T)	1,168	93	8.0%	93	8.0%

Jurisdiction *(B)=Borough* *(T)=Township*	Jurisdiction Total Buildings	Estimated Building Stock Located in the Flood Hazard Area			
		Buildings in the 1% Annual Chance Flood Hazard Area	% of Jurisdictional Total	Buildings in the 0.2% Annual Chance Flood Hazard Area	% of Jurisdictional Total
Meyersdale (B)	1,529	50	3.3%	98	6.4%
Middlecreek (T)	2,860	100	3.5%	100	3.5%
Milford (T)	2,434	44	1.8%	44	1.8%
New Baltimore (B)	174	57	32.8%	57	32.8%
New Centerville (B)	171	0	0.0%	0	0.0%
Northampton (T)	763	55	7.2%	55	7.2%
Ogle (T)	687	13	1.9%	13	1.9%
Paint (B)	553	4	0.7%	35	6.3%
Paint (T)	3,474	48	1.4%	48	1.4%
Quemahoning (T)	2,464	171	6.9%	171	6.9%
Rockwood (B)	619	14	2.3%	14	2.3%
Salisbury (B)	639	4	0.6%	4	0.6%
Seven Springs (B)	82	0	0.0%	0	0.0%
Shade (T)	3,461	49	1.4%	49	1.4%
Shanksville (B)	178	41	23.0%	41	23.0%
Somerset (B)	3,433	199	5.8%	331	9.6%
Somerset (T)	8,899	210	2.4%	248	2.8%
Southampton (T)	1,001	51	5.1%	51	5.1%
Stonycreek (T)	3,547	234	6.6%	234	6.6%
Stoystown (B)	266	0	0.0%	0	0.0%
Summit (T)	3,085	229	7.4%	237	7.7%
Upper Turkeyfoot (T)	2,126	93	4.4%	93	4.4%
Ursina (B)	279	28	10.0%	28	10.0%
Wellersburg (B)	261	8	3.1%	8	3.1%
Windber (B)	2,673	248	9.3%	507	19.0%
Somerset Co. (Total)	**85,193**	**3,651**	**4.3%**	**4,194**	**4.9%**

Source: Somerset County 2024; USACE 2022; FEMA 2019; RS Means 2024

Table 4.3.7-15 Estimated General Building Stock Potential Loss to the 1 Percent Annual Chance Flood Event

Jurisdiction	Total Replacement Cost Value (RCV)	1% Annual Chance Flood Impacts on Buildings				
		Estimated Loss for All Occupancies	Percent of Total	Estimated Loss for Residential Properties	Estimated Loss for Commercial Properties	Estimated Loss for All Other Occupancies
Addison (B)	$148,461,465	$0	0.0%	$0	$0	$0
Addison (T)	$1,136,703,437	$2,772,320	0.2%	$398,792	$1,038,131	$1,335,397
Allegheny (T)	$781,809,472	$552,254	0.1%	$231,748	$282,194	$38,313
Benson (B)	$89,274,721	$4,253,305	4.8%	$1,554,626	$1,569,347	$1,129,332
Berlin (B)	$895,269,284	$0	0.0%	$0	$0	$0
Black (T)	$834,474,737	$295,406	<0.1%	$0	$92,740	$202,666
Boswell (B)	$474,400,294	$320,781	0.1%	$0	$320,781	$0
Brothersvalley (T)	$2,064,465,986	$1,143,574	0.1%	$27,701	$1,106,486	$9,386
Callimont (B)	$30,930,873	$0	0.0%	$0	$0	$0
Casselman (B)	$41,086,890	$1,382,175	3.4%	$288,240	$840,337	$253,598
Central City (B)	$442,954,504	$1,873,052	0.4%	$834,626	$1,038,426	$0
Conemaugh (T)	$3,880,986,714	$9,472,399	0.2%	$2,070,507	$5,225,513	$2,176,379
Confluence (B)	$379,399,641	$246,786	0.1%	$0	$159,699	$87,087
Elk Lick (T)	$1,853,364,019	$5,914,063	0.3%	$2,306,084	$2,279,320	$1,328,659
Fairhope (T)	$114,953,744	$1,052,755	0.9%	$337,003	$224,866	$490,886
Garrett (B)	$163,199,308	$4,139,160	2.5%	$1,270,050	$1,736,532	$1,132,578
Greenville (T)	$619,817,620	$42,507	<0.1%	$0	$19,905	$22,602
Hooversville (B)	$284,259,840	$14,120,483	5.0%	$3,726,785	$5,037,696	$5,356,001
Indian Lake (B)	$775,063,497	$3,862,019	0.5%	$505,475	$3,020,487	$336,057
Jefferson (T)	$1,763,883,579	$1,346,028	0.1%	$355,419	$511,262	$479,347
Jenner (T)	$2,687,221,806	$6,670,672	0.2%	$701,391	$2,795,733	$3,173,548
Jennerstown (B)	$404,635,410	$1,226,162	0.3%	$299,505	$926,656	$0
Larimer (T)	$411,045,802	$166,564	<0.1%	$16,692	$137,028	$12,844
Lincoln (T)	$1,209,799,393	$1,603,027	0.1%	$1,091,930	$497,213	$13,884
Lower Turkeyfoot (T)	$528,650,209	$4,689,016	0.9%	$1,822,220	$1,133,825	$1,732,971
Meyersdale (B)	$888,796,373	$1,226,103	0.1%	$745,729	$480,374	$0

Jurisdiction	Total Replacement Cost Value (RCV)	1% Annual Chance Flood Impacts on Buildings				
		Estimated Loss for All Occupancies	Percent of Total	Estimated Loss for Residential Properties	Estimated Loss for Commercial Properties	Estimated Loss for All Other Occupancies
Middlecreek (T)	$1,361,478,007	$6,004,940	0.4%	$2,663,990	$2,686,792	$654,158
Milford (T)	$1,414,705,761	$686,803	<0.1%	$148,832	$467,174	$70,797
New Baltimore (B)	$77,842,527	$450,476	0.6%	$46,726	$403,750	$0
New Centerville (B)	$104,468,378	$0	0.0%	$0	$0	$0
Northampton (T)	$355,524,703	$216,885	0.1%	$10,949	$148,700	$57,236
Ogle (T)	$335,973,192	$158,555	<0.1%	$64,627	$60,890	$33,039
Paint (B)	$294,837,290	$29,195	<0.1%	$26,548	$2,647	$0
Paint (T)	$2,072,241,492	$2,056,577	0.1%	$969,050	$472,257	$615,270
Quemahoning (T)	$1,472,027,871	$12,355,517	0.8%	$4,645,194	$4,660,940	$3,049,383
Rockwood (B)	$349,683,802	$157,869	<0.1%	$1,153	$156,716	$0
Salisbury (B)	$345,399,685	$106,900	<0.1%	$0	$3,240	$103,659
Seven Springs (B)	$139,517,399	$0	0.0%	$0	$0	$0
Shade (T)	$1,759,474,604	$1,637,961	0.1%	$305,380	$469,451	$863,129
Shanksville (B)	$97,994,103	$5,007,396	5.1%	$2,233,928	$2,773,467	$0
Somerset (B)	$3,277,246,043	$24,321,310	0.7%	$2,328,973	$6,435,143	$15,557,194
Somerset (T)	$6,489,508,286	$10,818,671	0.2%	$820,607	$7,844,396	$2,153,668
Southampton (T)	$469,896,734	$660,979	0.1%	$55,171	$222,494	$383,314
Stonycreek (T)	$1,868,134,699	$13,074,902	0.7%	$6,502,248	$5,218,709	$1,353,945
Stoystown (B)	$142,664,600	$0	0.0%	$0	$0	$0
Summit (T)	$1,765,406,355	$23,332,680	1.3%	$3,731,718	$12,048,965	$7,551,996
Upper Turkeyfoot (T)	$1,035,009,396	$6,935,794	0.7%	$2,842,062	$3,634,733	$458,998
Ursina (B)	$118,221,649	$81,706	0.1%	$17,917	$63,789	$0
Wellersburg (B)	$117,923,548	$91,876	0.1%	$56,502	$35,374	$0
Windber (B)	$1,756,688,270	$13,415,340	0.8%	$3,700,753	$9,363,406	$351,181
Somerset County (Total)	**$50,126,777,010**	**$189,972,940**	**0.4%**	**$49,756,854**	**$87,647,583**	**$52,568,503**

Source: *Hazus V6.1; Somerset County 2024; USACE 2022; RS Means 2024*
Note: *All Other Occupancies include Agriculture, Government, Education, and Religion*

NFIP Statistics

In addition to total building stock modeling, individual data on flood policies, claims, repetitive loss (RL), and severe repetitive loss (SRL) properties were analyzed. Data shows that as of September 6, 2023, Somerset County has 279 NFIP policies, while the total dollar amount in coverage was not available at the time of this update. Since 1978, there have been 350 total claims for NFIP policies in the county for a total of $2,280,030 in losses paid.

According to Section 1361A of the National Flood Insurance Act (NFIA), as amended, 42 *United States Code* (U.S.C.) 4102a, the definition of an SRL property is a residential property covered by an NFIP flood insurance policy, and for which at least one of the following sets of claim payments have occurred:

- At least four NFIP claim payments (including building and contents) over $5,000 each, with the cumulative amount payments for these claims exceeding $20,000
- At least two separate payments for claims (building payments only), with the cumulative amount of the building portion of these payments exceeding the market value of the building

Moreover, for both above, at least two of the referenced claims must have occurred within any ten-year period and must have been submitted separately on dates more than 10 days apart. An RL property is defined by FEMA's Flood Mitigation Assistance (FMA) Program as an NFIP-insured structure that incurred flood-related damage on two occasions and for which the cost of repair equaled or exceeded 25 percent of the market value of the structure at the time of each such flood. According to data from September 2023, Somerset County has 22 RL properties and one SRL property, with all 23 summarized in Table 4.3.7-16 and Table 4.3.7-17 below.

Table 4.3.7-16 Total and Mitigated Repetitive Loss Properties in Somerset County

Single-Family		Other Residential		Other Residential		Other Non-Residential		Business Non-Residential		Total	
Total	Mit	Total	Mit	Total	Mit	Total	Mit	Total	Mit	**Total**	**Mit**
16	0	1	0	1	0	3	0	1	0	**22**	**0**

Source: Somerset County DES
Note: Mit = Mitigated

Table 4.3.7-17 Total and Mitigated Severe Repetitive Loss Properties in Somerset County

Single-Family		Other Residential		Other Residential		Other Non-Residential		Business Non-Residential		Total	
Total	Mit	Total	Mit	Total	Mit	Total	Mit	Total	Mit	**Total**	**Mit**
1	0	0	0	0	0	0	0	0	0	**1**	**0**

Source: Somerset County DES
Note: Mit - Mitigated

Impact on Critical Facilities

It is important to determine the critical facilities and infrastructure within the county that may be at risk to flooding (riverine, dam failure, flash/stormwater flooding), and that may be impacted should damage occur. Critical services during and after a flood event may not be available if facilities are directly damaged or transportation routes to access these critical facilities are impacted. Roads that are blocked or damaged can isolate residents and can prevent access throughout the planning area to many service providers needing to get to vulnerable populations or to make repairs. Utilities, such as overhead power, cable, and phone lines, could also be vulnerable because of damage to utility poles by standing water or the surge of water from a dam failure event. Loss of these utilities could create additional isolation issues for the inundation zones.

Critical facility exposure to the 1 percent and 0.2 percent annual chance flood hazard event boundary was examined. Table 4.3.7-18 lists critical facilities and utilities within the 1 percent annual change flood boundary. Table 4.3.7-19 lists critical facilities and utilities within the 0.2 percent annual change flood boundary. Section 4.4 (Hazard Vulnerability Summary) provides more information about the critical facilities and lifelines in Somerset County. Of the 713 critical facilities, 187 are located in the 1 percent annual chance flood event boundary, and all but one of these are designated FEMA lifeline facilities. Similarly, of all 713 critical facilities in Somerset County, 190 are in the 0.2 percent annual chance flood event boundary, and of these, 189 are considered lifelines for the county.

Table 4.3.7-18 Critical Facilities within the 1 Percent Annual Chance Flood Boundary

Jurisdiction (B)=Borough (T)=Township	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the 1-Percent Annual Chance Flood Event Hazard Area			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Addison (B)	2	2	0	0.0%	0	0.0%
Addison (T)	14	14	2	14.3%	2	14.3%
Allegheny (T)	15	15	6	40.0%	6	40.0%
Benson (B)	2	2	2	100.0%	2	100.0%
Berlin (B)	10	9	0	0.0%	0	0.0%
Black (T)	20	20	9	45.0%	9	45.0%
Boswell (B)	8	7	1	12.5%	1	14.3%
Brothersvalley (T)	33	32	4	12.1%	4	12.5%
Callimont (B)	1	1	0	0.0%	0	0.0%
Casselman (B)	1	1	0	0.0%	0	0.0%
Central City (B)	7	6	1	14.3%	1	16.7%
Conemaugh (T)	50	46	12	24.0%	12	26.1%
Confluence (B)	9	9	4	44.4%	4	44.4%
Elk Lick (T)	26	26	9	34.6%	9	34.6%
Fairhope (T)	4	4	4	100.0%	4	100.0%
Garrett (B)	5	5	4	80.0%	4	80.0%
Greenville (T)	7	7	3	42.9%	3	42.9%

Jurisdiction (B)=Borough (T)=Township	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the 1-Percent Annual Chance Flood Event Hazard Area			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Hooversville (B)	7	7	4	57.1%	4	57.1%
Indian Lake (B)	1	1	0	0.0%	0	0.0%
Jefferson (T)	20	20	5	25.0%	5	25.0%
Jenner (T)	39	39	12	30.8%	12	30.8%
Jennerstown (B)	9	8	2	22.2%	2	25.0%
Larimer (T)	4	4	0	0.0%	0	0.0%
Lincoln (T)	20	18	4	20.0%	4	22.2%
Lower Turkeyfoot (T)	10	10	4	40.0%	4	40.0%
Meyersdale (B)	12	9	1	8.3%	1	11.1%
Middlecreek (T)	9	9	6	66.7%	6	66.7%
Milford (T)	21	21	10	47.6%	10	47.6%
New Baltimore (B)	2	2	0	0.0%	0	0.0%
New Centerville (B)	1	1	0	0.0%	0	0.0%
Northampton (T)	12	12	4	33.3%	4	33.3%
Ogle (T)	5	5	1	20.0%	1	20.0%
Paint (B)	5	4	1	20.0%	6	150.0%
Paint (T)	22	20	9	40.9%	10	50.0%
Quemahoning (T)	23	22	10	43.5%	4	18.2%

Jurisdiction (B)=Borough (T)=Township	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the 1-Percent Annual Chance Flood Event Hazard Area			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Rockwood (B)	10	9	0	0.0%	0	0.0%
Salisbury (B)	4	4	0	0.0%	0	0.0%
Seven Springs (B)	5	5	0	0.0%	0	0.0%
Shade (T)	33	30	8	24.2%	8	26.7%
Shanksville (B)	3	3	2	66.7%	2	66.7%
Somerset (B)	33	27	3	9.1%	3	11.1%
Somerset (T)	71	64	12	16.9%	12	18.8%
Southampton (T)	8	8	0	0.0%	0	0.0%
Stonycreek (T)	42	42	5	11.9%	5	11.9%
Stoystown (B)	3	3	0	0.0%	0	0.0%
Summit (T)	35	35	10	28.6%	10	28.6%
Upper Turkeyfoot (T)	10	10	3	30.0%	3	30.0%
Ursina (B)	4	3	1	50.0%	1	33.3%
Wellersburg (B)	2	2	0	0.0%	0	0.0%
Windber (B)	14	14	8	57.1%	8	57.1%
Somerset Co. (Total)	**714**	**677**	**186**	**26.2%**	**186**	**27.5%**

Source: Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021
Note: SARA – Superfund Amendments and Reauthorization Act

Table 4.3.7-19. Critical Facilities within the 0.2 Percent Annual Chance Flood Boundary

Jurisdiction *(B)=Borough* *(T)=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the 0.2-Percent Annual Chance Flood Event Hazard Area			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Addison (B)	2	2	0	0.0%	0	0.0%
Addison (T)	14	14	2	14.3%	2	14.3%
Allegheny (T)	15	15	6	40.0%	6	40.0%
Benson (B)	2	2	2	100.0%	2	100.0%
Berlin (B)	10	9	0	0.0%	0	0.0%
Black (T)	20	20	9	45.0%	9	45.0%
Boswell (B)	8	7	1	12.5%	1	14.3%
Brothersvalley (T)	33	32	4	12.1%	4	12.5%
Callimont (B)	1	1	0	0.0%	0	0.0%
Casselman (B)	1	1	0	0.0%	0	0.0%
Central City (B)	7	6	1	14.3%	1	16.7%
Conemaugh (T)	50	46	12	24.0%	12	26.1%
Confluence (B)	9	9	4	44.4%	4	44.4%
Elk Lick (T)	26	26	9	34.6%	9	34.6%
Fairhope (T)	4	4	4	100.0%	4	100.0%
Garrett (B)	5	5	4	80.0%	4	80.0%
Greenville (T)	7	7	3	42.9%	3	42.9%
Hooversville (B)	7	7	4	57.1%	4	57.1%

Jurisdiction *(B)=Borough* *(T)=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the 0.2-Percent Annual Chance Flood Event Hazard Area			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Indian Lake (B)	1	1	0	0.0%	0	0.0%
Jefferson (T)	20	20	5	25.0%	5	25.0%
Jenner (T)	39	39	12	30.8%	12	30.8%
Jennerstown (B)	9	8	2	22.2%	2	25.0%
Larimer (T)	4	4	0	0.0%	0	0.0%
Lincoln (T)	20	18	4	20.0%	4	22.2%
Lower Turkeyfoot (T)	10	10	4	40.0%	4	40.0%
Meyersdale (B)	12	9	1	8.3%	1	11.1%
Middlecreek (T)	9	9	6	66.7%	6	66.7%
Milford (T)	21	21	10	47.6%	10	47.6%
New Baltimore (B)	2	2	0	0.0%	0	0.0%
New Centerville (B)	1	1	0	0.0%	0	0.0%
Northampton (T)	12	12	4	33.3%	4	33.3%
Ogle (T)	5	5	1	20.0%	1	20.0%
Paint (B)	5	4	1	20.0%	1	25.0%
Paint (T)	22	20	9	40.9%	9	45.0%
Quemahoning (T)	23	22	10	43.5%	10	45.5%
Rockwood (B)	10	9	0	0.0%	0	0.0%
Salisbury (B)	4	4	0	0.0%	0	0.0%

Jurisdiction *(B)=Borough* *(T)=Township*	Total Critical Facilities Located in Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Critical Facilities and Lifeline Facilities Located in the 0.2-Percent Annual Chance Flood Event Hazard Area			
			Critical Facilities	Percent of Total Critical Facilities	Lifelines	Percent of Total Lifelines
Seven Springs (B)	5	5	0	0.0%	0	0.0%
Shade (T)	33	30	8	24.2%	8	26.7%
Shanksville (B)	3	3	2	66.7%	2	66.7%
Somerset (B)	33	27	5	15.2%	5	18.5%
Somerset (T)	71	64	12	16.9%	12	18.8%
Southampton (T)	8	8	0	0.0%	0	0.0%
Stonycreek (T)	42	42	5	11.9%	0	0.0%
Stoystown (B)	3	3	0	0.0%	0	0.0%
Summit (T)	35	35	11	31.4%	11	31.4%
Upper Turkeyfoot (T)	10	10	3	30.0%	3	30.0%
Ursina (B)	4	3	3	50.0%	1	33.3%
Wellersburg (B)	2	2	0	0.0%	0	0.0%
Windber (B)	14	14	8	57.1%	8	57.1%
Somerset Co. (Total)	**713**	**677**	**190**	**26.6%**	**189**	**27.9%**

Source: Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021; FEMA 2019

Impact on the Economy

For impact on the economy, estimated losses from a flood event are considered. Losses include but are not limited to general building stock damage, agricultural losses, business interruption, and impacts on tourism and tax base within Somerset County. Damage to general building stock can be quantified by the use of Hazus, as discussed above. Other economic components, such as loss of facility use, functional downtime, and socio-economic factors, are less susceptible to measurement with a high degree of certainty. In areas that are directly flooded, renovations of commercial and industrial buildings may be necessary, disrupting associated services.

Hazus estimates the amount of debris generated from a 1 percent annual chance flood event. The model breaks down debris into three categories because of the different types of equipment needed to handle debris: (1) finishes (dry wall, insulation, etc.), (2) structural (wood, brick, etc.), and (3) foundations (concrete slab and block, rebar, etc.). Table 4.3.7-20 summarizes the debris Hazus estimates to result from a 1 percent annual chance flood event, which is roughly 10,000 tons of debris. Notably, this table lists estimated debris generated only by riverine flooding and does not include additional potential damage and debris possibly generated by force of wind.

Table 4.3.7-20. Estimated Debris Generated from the 1 Percent Annual Chance Flood Event

Jurisdiction	Estimated Debris Created During the 1-Percent Annual Chance Food Event			
	Total (tons)	Finish (tons)	Structure (tons)	Foundation (tons)
Addison (B)	0	0	0	0
Addison (T)	373	142	131	100
Allegheny (T)	12	11	0	0
Benson (B)	114	86	15	13
Berlin (B)	0	0	0	0
Black (T)	51	17	18	16
Boswell (B)	180	37	79	65
Brothersvalley (T)	44	25	10	9
Callimont (B)	0	0	0	0
Casselman (B)	52	18	17	17
Central City (B)	120	117	1	2
Conemaugh (T)	696	396	169	131
Confluence (B)	94	46	25	24
Elk Lick (T)	389	281	49	60
Fairhope (T)	26	12	8	6
Garrett (B)	240	152	36	53
Greenville (T)	4	3	1	1
Hooversville (B)	630	419	113	97
Indian Lake (B)	69	47	12	9
Jefferson (T)	46	36	5	5
Jenner (T)	561	259	159	142
Jennerstown (B)	78	63	10	6
Larimer (T)	5	3	1	1

Jurisdiction	Estimated Debris Created During the 1-Percent Annual Chance Food Event			
	Total (tons)	Finish (tons)	Structure (tons)	Foundation (tons)
Lincoln (T)	25	22	1	2
Lower Turkeyfoot (T)	74	51	12	12
Meyersdale (B)	184	111	32	41
Middlecreek (T)	53	23	17	13
Milford (T)	65	43	11	11
New Baltimore (B)	22	21	1	1
New Centerville (B)	0	0	0	0
Northampton (T)	11	7	2	2
Ogle (T)	30	28	1	1
Paint (B)	78	16	35	26
Paint (T)	178	109	40	28
Quemahoning (T)	655	425	125	105
Rockwood (B)	217	59	88	70
Salisbury (B)	13	12	1	1
Seven Springs (B)	0	0	0	0
Shade (T)	83	58	14	11
Shanksville (B)	254	139	68	46
Somerset (B)	1,114	280	421	413
Somerset (T)	296	216	37	43
Southampton (T)	44	27	8	9
Stonycreek (T)	465	343	70	52
Stoystown (B)	0	0	0	0
Summit (T)	596	268	184	145
Upper Turkeyfoot (T)	857	197	378	282
Ursina (B)	53	26	12	14
Wellersburg (B)	11	10	0	0
Windber (B)	702	487	124	90
Somerset County (Total)	**9,864**	**5,148**	**2,541**	**2,175**

Source: Hazus v6.1.

Impact on the Environment

As Somerset County and its jurisdictions evolve with changes in population and density, flood events may increase in frequency and/or severity as land use changes, more structures are built, and impervious surfaces expand. Flood extents for the 1 percent and 0.2 percent annual chance flood event will continue to evolve alongside natural occurrences such as climate change and/or severe weather events. These flood events will inevitably impact Somerset County's natural and local environment.

Furthermore, the environmental impacts of a dam failure event can include significant issues pertaining to water quality as week as debris disposal. Flood waters can back up sanitary sewer systems and inundate wastewater treatment plants, causing raw sewage to contaminate residential and commercial buildings and the flooded waterway. The contents of unsecured containers of oil, fertilizers, pesticides, and other chemicals get added to flood waters. Hazardous materials may be released and distributed widely across the floodplain. Water supply and wastewater treatment facilities could be offline for weeks. After the flood waters subside, contaminated and flood-damaged building materials and contents must be properly disposed of. Contaminated sediment must be removed from buildings, yards, and properties. In addition, severe erosion is likely; such erosion can negatively impact local ecosystems. Flooding will affect these natural areas and can ultimately be disruptive to species that reside in these natural habitats.

Future Changes that May Impact Vulnerability

Future Growth and Development

Any areas of growth could be impacted by the flood hazard if within identified hazard areas. The tables and hazard maps included in the jurisdictional annexes contain additional information regarding the specific areas of development that would increase county vulnerability to dam inundation areas.

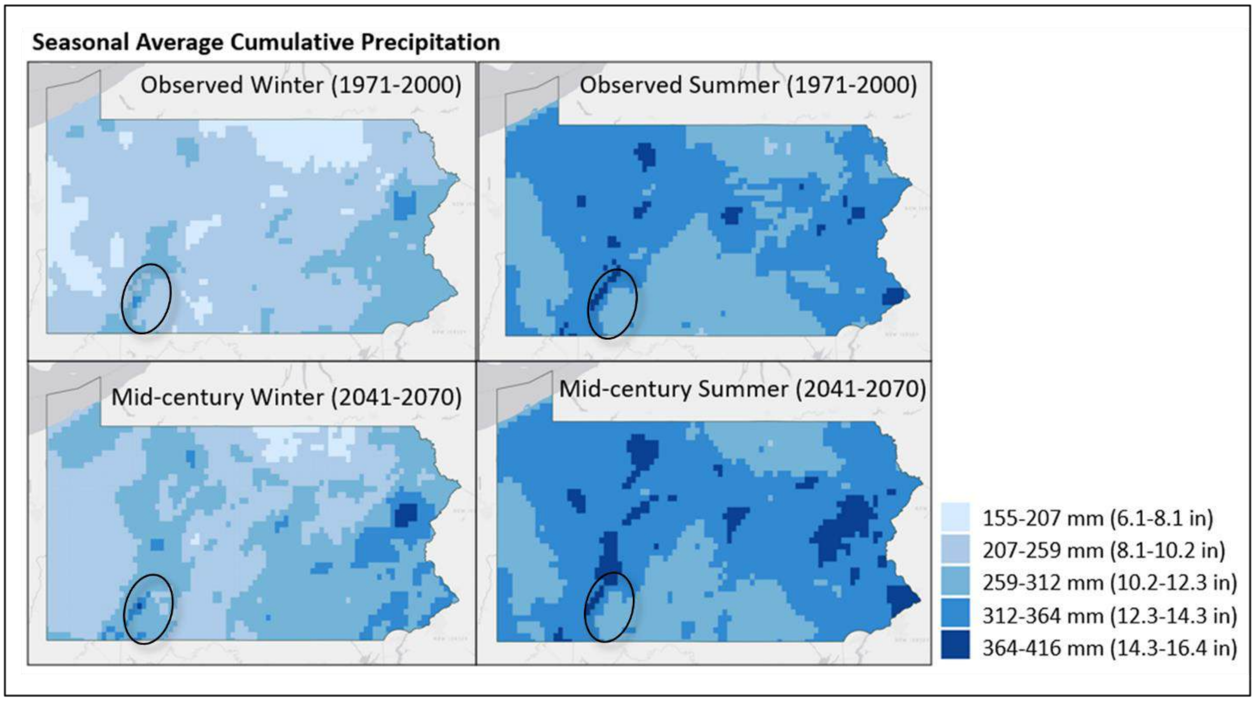
Estimated population projections provided by the Pennsylvania State Data Center for the Center for Rural Pennsylvania indicate that Somerset County's population will gradually decrease over the next 15 years, with a total countywide population in 2040 being approximately 75,132 (Centers for Rural Pennsylvania 2021). On the contrary, if these projections prove to be inaccurate and population numbers increase, this would mean more people are moving into flood zone areas, increasing their vulnerability to flood hazards.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by type, frequency, and intensity of weather events. Both globally and at the local scale, climate change can alter the prevalence and severity of extremes such as flood events. While predicting changes in flood events under a changing climate regime is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (EPA 2023)

The Pennsylvania Department of Environmental Protection (PADEP) was directed by the Climate Change Act (Act 70 of 2008) to initiate a study of potential impacts of global climate change on the Commonwealth. The January 2021 Pennsylvania Climate Impact Assessment's main findings indicate that Pennsylvania is very likely to undergo increased temperatures in the 21st century. An increase in variability of temperature and precipitation may lead to increased frequency and/or severity of storm events.

Figure 4.3.7-6 Observed and Projected Winter & Summer Seasonal Cumulative Precipitation



Source: ICF 2021
Notes: Black oval represents the general location of Somerset County; Based on 50th percentile of 32-model ensemble of LOCA downscaled data, RCP 8.5. The legend shows the full range of observed and projected values divided into equal increments.

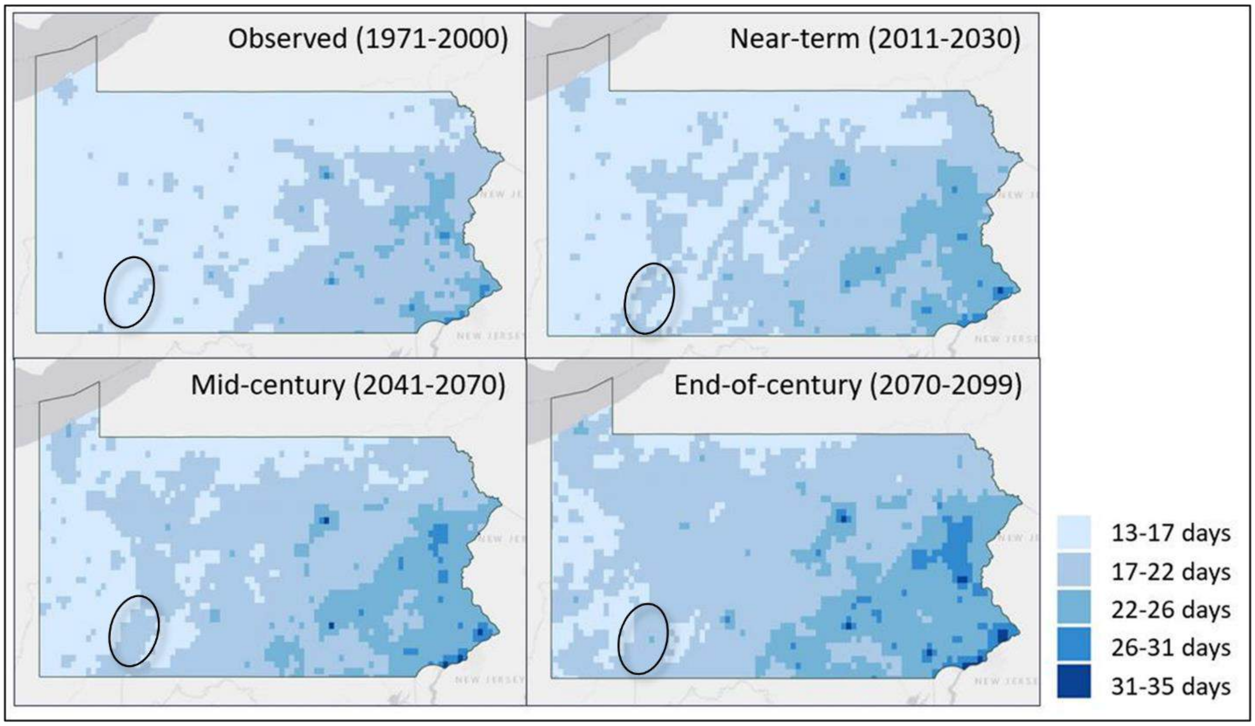
An average increase of more than 6 º F and an increase of 8 percent average annual precipitation is projected for mid-century time periods. Summer floods and general stream flow variability are projected to increase due to increased precipitation. Even with the anticipated increase in winter precipitation occurring as rain rather than snow, increased winter temperatures and a reduced snowpack may decrease rain-on-snow events and thus affect major flooding events in Pennsylvania. This conclusion regarding trends toward increased temperatures, however, remains speculative until further studies can validate it. Future improvements in modeling smaller-scale climatic processes are expected and will lead to improved understanding of the ways in which the changing climate will alter temperature, precipitation, storms, and flood events in Pennsylvania (ICF 2021).

Table 4.3.7-21 County-wide Average Observed and Projected Annual Average Temperature

Location	Observed (1971-2000)	Mid-Century (2041-2070)	End of Century (2070-2099)
Somerset County	46.9 ˚F	53.0 ˚F	56.5 ˚F

Source: ICF 2021

Figure 4.3.7-7 Observed and Projected Annual Days with "Very Heavy" Precipitation



Source: ICF 2021
Notes: Black oval represents the general location of Somerset County; Based on 50th percentile of 32-model ensemble of LOCA downscaled data, RCP 8.5. The legend shows the full range of observed and projected values divided into equal increments.

4.3.7.7 Additional Data and Next Steps

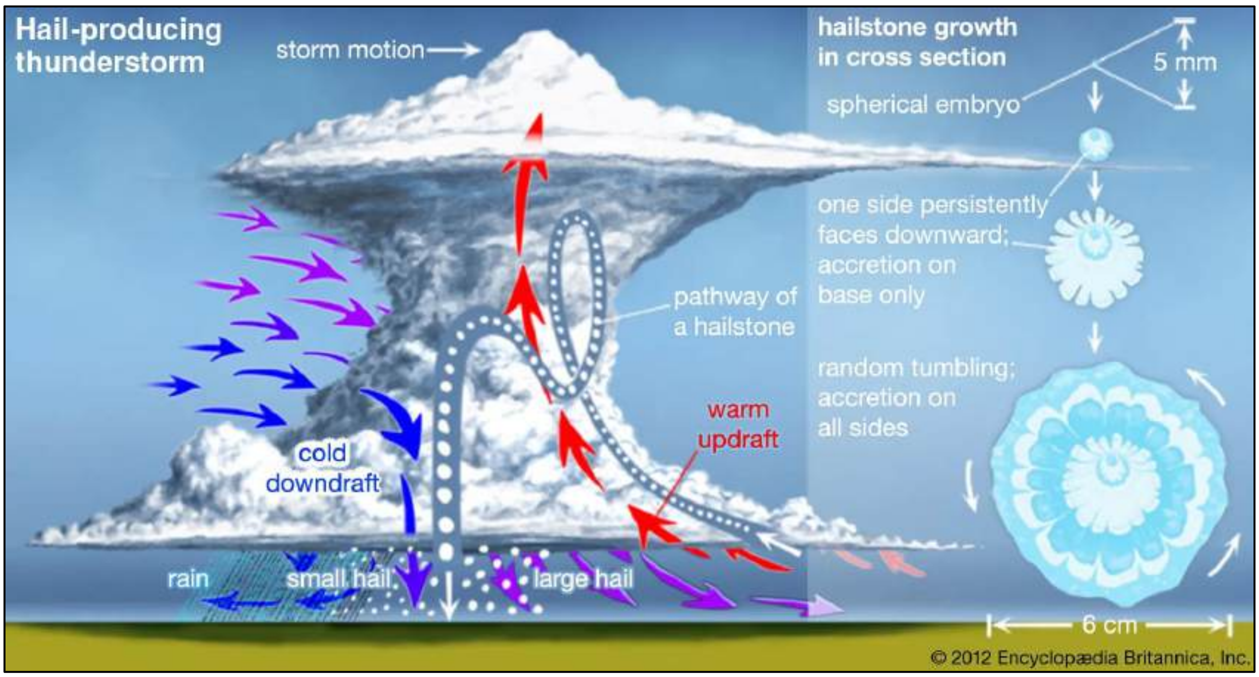
Somerset County will work to updated building and critical facility inventories to develop more precise modeling of flood impacts in future updates. The series of maps in Appendix D are jurisdictional-specific flood hazard map, much like Figure 4.3.7-4.

4.3.8 Hailstorm

4.3.8.1 Hazard Description

Hail forms inside a thunderstorm where there are strong updrafts of warm air and downdrafts of cold water. If a water droplet is picked up by the updrafts, it can be carried well above the freezing level. Water droplets freeze when temperatures reach 32 degrees Fahrenheit (°F) or colder. As the frozen droplet begins to fall, it might thaw as it moves into warmer air toward the bottom of the thunderstorm, or the droplet might be picked up again by another updraft and carried back into the cold air to re-freeze. With each trip above and below the freezing level, the frozen droplet adds another layer of ice. The frozen droplet, with many layers of ice, falls to the ground as hail (NSSL 2021). Figure 4.3.8-1 illustrates the process that occurs in hail formulation.

Figure 4.3.8-1 Hail Formation



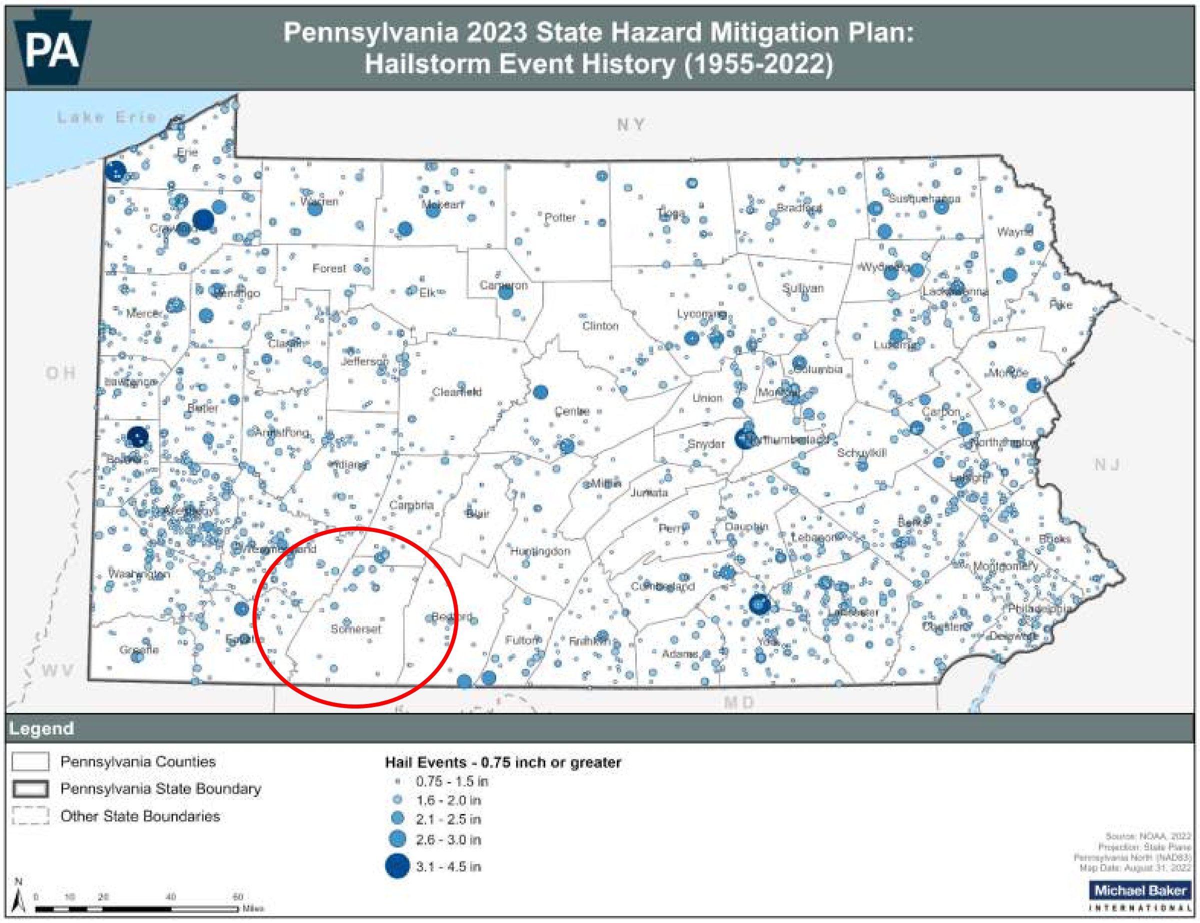
Source: Encyclopaedia Britannica, 2012

The size of hailstones is directly related to the size and severity of the storm. Stronger updrafts support suspended hailstones for longer periods of time, and more time aloft produces larger hail. When hail is released from storms and impacts the ground, damage can occur to anything exposed and unprotected at the surface. Following hailstorm events, property damage and the cost of recovery can easily exceed $1 billion, like in Texas in September of 2023 (NOAA/NCEI 2024).

4.3.8.2 Location

Hailstorm events can occur in all areas of Somerset County, affecting the entire planning region equally. On average, Somerset County experiences two to four days annually with hailstones exceeding 0.75 inches in diameter. Figure 4.3.8-2 shows the number of recorded hailstorms evets in Somerset County by magnitude.

Figure 4.3.8-2 Number of Hailstorms by County, 1955-2022



Source: PEMA 2023
Note: Somerset indicated by red oval

4.3.8.3 Magnitude

Hail can vary in size from less than one inch to several inches in diameter and can cause significant damage to crops and property. The extent of damage depends on the size, duration, and intensity of hail precipitation. Individuals who do not seek shelter could face serious injury. Automobiles and aircraft are particularly susceptible to damage. Additionally, other hazards associated with thunderstorms, such as strong winds, intense precipitation, and lightning, often occur concurrently with hail (PEMA 2023).

Historically, Somerset County has experienced hailstones ranging in size from zero to two inches (NOAA-NCEI 2023). However, hailstone magnitudes can range from zero to four inches (IEM 2024). No deaths or injuries due to hail have been recorded in the County.

Hail can be produced during various types of storms, typically occurring with thunderstorms. The size of hail is estimated by comparing it with a known object. Figure 4.3.8-3 summarizes hailstone sizes and references. During most hailstorms, hail is produced in a variety of sizes, and only the very largest hailstones pose a serious risk to exposed individuals.

Figure 4.3.8-3 Hail Size Descriptions

Source: NWS 2023

4.3.8.4 Past Occurrence

Hailstorms occur as a routine part of severe weather in Somerset County. The potential for hailstorms exists throughout the county, with a few minor incidents occurring each year. While the future occurrence of hailstorms in the county can be considered likely, Somerset County has a high potential for significant hail events based on previous records.

Hail caused over $1 billion for total damages in 2021 across the United States (Erdman 2023). Hail occurs most frequently in states within the southern and central plains; however, hail damage is possible throughout the entire United States because hail may accompany a thunderstorm (NOAA-NSSL n.d.).

The NOAA National Center for Environmental Information (NCEI) Storm Events database includes reports of hail appearing during storm incidents in Somerset County from January 1971 to December 2023, as summarized in Table 4.3.8-1. Also shown below are NWS storm reports which sometimes are not accounted for with the NCEI data. Together, both datasets reveal 38 separate reports. According to these reports, Somerset County has experienced hail ranging in size from 0.75 inch to 1.75 inches in diameter, with no deaths or injuries, and up to $5,000 in property damages reported to NOAA (NOAA-NCEI 2023). Neither Somerset County, nor the Commonwealth of Pennsylvania has ever received a federal disaster declaration because of a hail event.

Table 4.3.8-1. Notable Hail Events from 1971-2024 in Somerset County

Event Date	Location	Magnitude (Diameter)	Event Summary
June 6, 1971	Somerset County	1.75”	
July 11, 1977	Somerset County	1.75”	
July 12, 1985	Somerset County	1.75”	
April 1, 1990	Somerset County	1.75”	
September 2, 1990	Somerset County	0.75”	
June 16, 1994	Somerset County	1.00”	
June 19, 1994	Somerset County	1.00”	
July 20, 1994	Somerset, Sipesville, Hooversville, and Friedens	0.75”	
June 24, 1996	Somerset County	UNK	
June 13, 1998	Somerset County	0.88”	
June 19, 1998	Somerset County	0.88”	
April 9, 1999	Mt. Davis, Somerset, Meyersdale	0.75”	
April 22, 1999	Ogletown, Somerset	0.75”	
July 31, 1999	Mt. Davis, Salisbury, Somerset	1.75”	
July 14, 2000	Mt. Davis, Somerset	0.88”	
April 28, 2002	Meyersdale, Somerset	0.75”	
July 8, 2003	Seven Springs	1.00”	
May 17, 2004	Indian Lake	1.00”	
July 13, 2005	Gray, Acosta	0.75”	Duration of the hailstorm was three to four minutes
May 31, 2006	Confluence, Ogletown	0.88” – 1.00”	Nickle-sized hail was reported along the Somerset County line near Confluence. The public also reported one-inch diameter hail in Ogletown

Event Date	Location	Magnitude (Diameter)	Event Summary
May 14, 2010	Boswell	0.75"	Storm spotters reported penny-sized hail covering the ground three miles southwest of Boswell, PA
September 22, 2010	**Westmont**	**1.00"**	**The public reported one-inch hail on Laurel Mountain southwest, about four miles southwest of Westmont**
March 23, 2011	Somerset	0.80" – 1.00"	Hail sizes ranged between penny-size and nickel-size in Somerset
March 23, 2011	Davidsville	1.75"	
March 23, 2011	Jerome	2.00"	
March 23, 2011	Ogletown	1.00"	
April 3, 2011	Hooversville	1.00"	Trained storm spotters reported hail ranging from dime to quarter-size
April 27, 2011	Berlin	1.00"	
March 28, 2012	Davidsville	0.70"	Trained storm spotters reported dime-size hail covering the ground
July 4, 2012	Jerome	1.75"	Public reported 1.75" hail two miles northwest of Jerome
July 4, 2012	Hooversville	1.00"	Trained spotter reported one-inch hail two miles northwest of Hooversville
August 9, 2012	Markleton	0.88"	
July 4, 2013	Larimer, Callimont	1.00"	
August 7, 2013	Windber	0.88"	Trained spotter reported nickel size hail in Windber
April 20, 2015	Gray	0.88"	Trained spotter reported 0.88" hail in Gray
July 16, 2016	**Ogletown**	**0.88"**	**CO-OP observer reported 0.88" hail in Ogletown**
April 8, 2020	**Casselman**	**0.50"**	**Public reported an mPing report of half-inch size hail three miles northwest of Casselman**
September 9, 2023	**Indian Lake**	**0.75"**	**NWS employee reported pea size to dime size hail three miles north-northwest of Indian Lake**

Source: NOAA NCEI 2023
Notes: The bolded text is NWS hail report data which was not listed with NCEI summaries.

4.3.8.5 Probability of Future Occurrence

Information on previous hailstorm occurrences in the County was used to calculate the probability of future occurrence of such events and summarized in Table 4.3.8-2. Future occurrences of hailstorms can be considered *likely* as defined by the Risk Factor Methodology probability criteria (further discussed in Section 4.4).

Table 4.3.8-2. Somerset County Hailstorm Future Occurrence

Hazard Type	Number of Occurrences Between 1971 and 2023	Rate of Occurrence or Annual Number of Events (Average)	Recurrence Interval (in Years) (# Years/Number of Events)	Percent Chance of Occurrence in Any Given Year
Hailstorm	38	0.73	1.36	73%

Source: NOAA NCEI 2023

Effects of Climate Change

The definition of "climate" is not restricted to average temperature and precipitation, but also includes type, frequency, and intensity of weather events. On both global and local scales, climate change could alter the prevalence and severity of extremes such as hailstorms. While predicting changes of storm events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating effects of future climate change on human health, society, and the environment (EPA 2025).

As directed by the Climate Change Act (Act 70 of 2008), Pennsylvania's Department of Environmental Protection (PADEP) initiated a study of potential impacts of global climate change on the Commonwealth. The PADEP Climate Impact Assessment was updated in 2021 and the main findings indicate likelihood that Pennsylvania will undergo increased temperatures in the 21st century. An increase in variability of temperature and precipitation may well lead to increased frequency and severity of hailstorm events. Future improvements in modeling smaller-scale climatic processes such as thunderstorms and associated hailstorms can be expected and will lead to improved understanding of the ways in which the changing climate will alter storms, such as hailstorm events, in Pennsylvania (PEMA 2021).

4.3.8.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable within the identified hazard area. Regarding hail events, the entire county has been identified as the hazard area. Therefore, all assets in Somerset County (population, structures, critical facilities, and lifelines), as described in the County Profile (Section 2), are vulnerable. This section evaluates and estimates the potential impact of hailstorm events on the county in the following sections:

Overview of vulnerability.
Impacts on (1) life, health, and safety of residents; (2) general building stock, critical facilities, and economy; (3) the environment; and (4) future growth and development.
Effect of climate change on vulnerability.
Collection of further data that will assist in understanding this hazard.

Life, Health, and Safety

General Population

The entire population of Somerset County is considered exposed to the hail hazard. People outdoors, such as those engaged in recreational activities or farming, are particularly vulnerable because they often receive little to no warning and may not have immediate access to shelter. Hailstorms can cause significant injuries and damage to property, including vehicles and crops, leading to economic losses. Moving to a lower-risk location can decrease a person's vulnerability, as areas less prone to severe hail events offer better protection.

Socially Vulnerable Population

Socially vulnerable populations, including those with lower socioeconomic status, the elderly, children, individuals with disabilities, and marginalized communities, face heightened risks during hailstorms. These groups often have fewer resources to prepare for and recover from such events, making them more susceptible to injury and property damage. Limited access to transportation and safe shelter can exacerbate their vulnerability. Additionally, language barriers and lack of access to timely information can hinder their ability to respond effectively to warnings.

General Building Stock

The general building stock is vulnerable to hailstorms in several ways. Hail can cause significant damage to roofs, siding, windows, and other exterior components of buildings. Roofs are particularly susceptible, with hailstones potentially puncturing or cracking shingles, tiles, or metal roofing, leading to leaks and water damage. Siding materials, such as vinyl or wood, can also be dented, cracked, or broken by hail impacts.

Windows and skylights are at risk of shattering, which can result in interior damage from rain and wind. Additionally, hail can damage HVAC systems, satellite dishes, and other rooftop equipment, leading to costly repairs or replacements. The severity of the damage depends on the size, density, and velocity of the hailstones, as well as the building materials and construction quality

Overall, hailstorms can lead to substantial repair and maintenance costs for property owners, and in severe cases, may necessitate complete replacement of damaged building components.

Community Lifelines and Other Critical Facilities

Full functionality of critical facilities such as police, fire, and medical services is essential for any emergency response during and after a hailstorm event. These critical facility structures are largely constructed of concrete and masonry; therefore, they should undergo only minimal structural damage from a hailstorm event. However, hailstorms can still cause significant disruptions. Power interruptions are a common consequence of severe hail, which can damage power lines and transformers.

Additionally, hail can damage communication systems, impacting the ability of emergency services to coordinate effectively. Transportation routes, which are vital for emergency response and recovery, can also be affected by hail, leading to delays and complications in reaching affected areas.

Economy

Hailstorms can cause significant damage to property, including homes, businesses, vehicles, and agricultural assets. This damage often results in costly repairs and insurance claims, which can strain local resources and finances. Businesses, particularly those with outdoor operations or exposed assets, may face interruptions in their activities, leading to lost revenue and productivity. For example, hail can damage crops, reducing agricultural yields and impacting the livelihoods of farmer. According to the State's HMP, Somerset County has experienced 35 hail events resulting in zero dollars' worth of property damage, however. $5,000 in crop damage (PEMA 2023).

Moreover, hailstorms can lead to power outages and communication failures, affecting both businesses and residents. These disruptions can delay recovery efforts and increase the overall economic impact of the storm. The cost of emergency response and recovery operations can also be substantial, placing additional financial burdens on the County.

Environment

Hailstorms pose significant threats to the environment, impacting various natural resources and ecosystems. The force of hailstones can cause extensive damage to vegetation, stripping trees of leaves and bark, and breaking branches. This damage can reduce the overall health and productivity of forests and other plant communities. Crops are particularly vulnerable, with hailstorms capable of destroying entire fields, leading to substantial agricultural losses and affecting food supply chains.

Wildlife is also at risk during hailstorms. Birds, small mammals, and other animals can suffer injuries or fatalities if caught in the open. The destruction of vegetation and habitats can disrupt local ecosystems, affecting food availability and shelter for various species.

Additionally, the accumulation of hail and subsequent melting can lead to increased runoff and soil erosion, which can degrade water quality in streams, rivers, and other water bodies.

Hailstorms can also impact the water cycle by altering the distribution and availability of water resources. The intense precipitation associated with hailstorms can lead to localized flooding, which can further erode soil and damage aquatic habitats.

Future Changes that May Impact Vulnerability

Future Growth and Development

Future growth and development in the County can increase the vulnerability to hailstorms in several ways. As the County expands, more buildings, infrastructure, and assets become exposed to potential hail damage. New residential and commercial developments, particularly those with large surface areas like roofs and windows, are susceptible to hail impacts, which can lead to significant repair and replacement costs.

The expansion of infrastructure, such as roads, bridges, and utilities, also increases the exposure to hail damage. Power lines, communication systems, and transportation networks can be disrupted by severe hail, leading to service interruptions and economic losses. Additionally, increased development can lead to higher population density, meaning more people and properties are at risk during hailstorm events. Agricultural areas may also face greater vulnerability as development encroaches on farmland. Hail can devastate crops, leading to reduced yields and financial losses for farmers.

Areas targeted for potential future growth and development within the next 5 to 10 years have been identified across Somerset County and are further discussed in Section 2.4 of this HMP. New developments and new residents are expected to be exposed to the hailstorm hazard in the future.

Climate Change

Climate change is expected to impact Somerset County's vulnerability to hailstorms in several ways. As global temperatures rise, the atmosphere holds more moisture, leading to increased instability and a higher likelihood of severe thunderstorms, which can produce hail. This means that while the frequency of hailstorms may not necessarily increase the severity of these events is likely to become more pronounced. Warmer temperatures can also raise the altitude at which hail forms, potentially leading to larger hailstones that can cause more damage when they reach the ground. This increased severity can result in greater damage to buildings, vehicles, crops, and infrastructure, thereby amplifying the economic and environmental impacts on Somerset County.

Additionally, the changing climate can alter weather patterns, potentially leading to more unpredictable and extreme weather events (NASA 2020). This unpredictability makes it more challenging for communities to prepare for and respond to hailstorms, increasing overall vulnerability.

4.3.8.7 Additional Data and Next Steps

The assessment above identifies vulnerable populations and potential structural and economic losses associated with this hazard of concern. Collection of additional information and actual loss data specific to the plan participants will further enhance Somerset County’s vulnerability assessment.

4.3.9 Invasive Species

4.3.9.1 Hazard Description

An invasive species is a species that is not indigenous to a given ecosystem and that, when introduced to that ecosystem, is likely to cause economic or environmental harm or pose a hazard to human health. The Pennsylvania Governor's Invasive Species Council has identified over 300 species that could significantly threaten the natural environment in Pennsylvania (PDA n.d.) These species are largely introduced by the actions of humans. Common pathways for invasive species include unintentional release, the movement of goods and equipment that may unknowingly harbor species, smuggling, emptying ship ballast water, hull fouling, and escape from cultivation (PDA n.d.). Invasive species threats are generally categorized as follows:

Aquatic invasive species are non-native viruses, invertebrates, fish, and aquatic plants that threaten the diversity or abundance of native species; the ecological stability of infested waters; human health and safety; or commercial, agriculture, aquaculture, or recreational activities dependent on such waters (FWS 2021). Terrestrial invasive species are non-native arthropods, vascular plants, higher vertebrates, or pathogens that complete their life cycle on land instead of water and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (USDA n.d.).

Somerset County officials and municipal leaders have identified plants, insects, and diseases that have caused, or have potential to cause, significant damage to the county's natural landscape and agricultural economy through defoliation and mortality, or out-competition for vital resources. The sections below describe species of local concern that are considered for this risk assessment.

Emerald Ash Borer

The emerald ash borer was detected in 2007 in Butler and Allegheny Counties. It is an invasive pest from Southeast Asia that kills all types of ash trees (genus *Fraxinus*) in North America. It has caused massive devastation and prompted the USDA to form a national program for surveying, outreach, and management (USDA n.d.). As a result of federal and state mitigation efforts, Pennsylvania lifted all quarantines in the commonwealth in 2011, and the USDA has rescinded its federal quarantine. Although the commonwealth's quarantine is no longer in effect, it is still possible for the emerald ash borer to impact Pennsylvania.

Spotted Lanternfly

The spotted lanternfly was first observed in Berks County in 2014. Since then, the pests have been found in about 38 Pennsylvania counties, including Somerset County, with an additional six counties being added in 2023 (DEP 2023). The spotted lanternfly (adult and juvenile) sucks sap from stems and branches from under the bark. When it is done feeding, the sap continues to ooze from the tree and attract other insects. This liquid then promotes mold. All these factors will damage a tree (USDA n.d.). A recent economic impact study estimates Pennsylvania could lose more than $324 million annually and 2,800 jobs (DEP 2023). Because of the detrimental effects this insect has on Pennsylvania's ecosystem and economy, the Department of Agriculture has set up a hotline to report spotted lanternfly sightings.

Asian Longhorned Beetle

The Asian longhorned beetle poses a threat to softer hardwood trees, including maples, birch, elm, willow, ash, and poplar trees. The beetle chews out a small area about an inch in size and lays eggs into the bark of a tree. When hatched, these larvae bore into the tree and continue to eat the wood for nearly a year, creating tunnels up to a half inch in size. After that, the beetle creates a cocoon and emerges as an adult. During the larval period, the beetle puts great strain on the feeding tree and eventually kills the tree (USDA, Forest Service, Animal and Plant Health Insepction Service 2008). The Asian longhorned beetle has not been confirmed in Pennsylvania.

Invasive Plants

Many invasive plants pose a significant threat to ecosystem biodiversity and agricultural productivity because of their ability to out-compete native species. The Pennsylvania Department of Agriculture (PDA) defines Class A noxious weeds as invasive plants that are established in the state, are geographically limited, and are intended to be fully eradicated (PDA n.d.). Pennsylvania's Controlled Plant and Noxious Weed Act identifies 22 Class A noxious weeds (PDA n.d.). Some species (e.g., Palmer amaranth and waterhemp) are prolific seed producers and have developed a potential resistance to traditional herbicides, making them challenging to manage. Others, such as kudzu, grow rapidly and prevent slower-growing native plants from establishing. Wavy leaf basket grass is expected to affect Somerset County in the near future.

4.3.9.2 Location and Extent

The location and extent of these invasive threats depend on the preferred habitat of the species as well as the species' ease of movement and establishment. The University of Arizona and the National Invasive Species Information Center have identified the following characteristics of areas that are more likely to be impacted by invasive species:

Lack of natural predators or diseases that kept the species under control in its native environment
Present vacant ecological niches that can be exploited by non-native species
Lack of species diversity
Lack of a multi-tiered canopy (in the case of invasive plants)
Disturbed by fire, construction, or agriculture prior to invasion.

No mapping of such areas in Somerset County has been prepared, so the entire county is assumed to be at risk from this hazard.

4.3.9.3 Range of Magnitude

The magnitude of invasive species threats ranges from nuisance to widespread killer. Some invasive species are not considered agricultural pests and do not harm humans. Others can cause widespread illness or death in humans or significant changes in the composition of local ecosystems.

Forest or crop-impacting invasive species could have a significant economic impact in Somerset County because the county hosts both forest-based recreational land and agricultural land. Forests prevent soil degradation and erosion, protect watersheds, stabilize slopes, and absorb carbon dioxide emissions. If forest land is wiped out, the effects of erosion and flooding will be amplified. Invasive species negatively impact the county's agricultural economy by increasing the cost of pest control measures and decreasing harvest yields. Invasive species reduce the productivity and profitability of agricultural land.

Invasive species that affect the health of hardwood trees can have damaging impacts in urban and suburban areas. As the damage progresses, branches become less stable and are more susceptible to winds. Significant building and auto damage can result from falling trees.

The magnitude of an invasive species threat is generally amplified when the ecosystem or host species is already stressed, such as in times of drought. The already-weakened state of the native ecosystem causes it to succumb to an infestation more easily. An example of a possible worst-case invasive species scenario would be if the spotted lanternfly continued to spread across Somerset County and significantly destroy the county's crops. With the high mortality rate associated with the spotted lanternfly, crops would be devastated. Farms, orchards, wineries, and lumber companies could experience a $324 million loss in Pennsylvania (Penn State 2021). Such significant crop loss could cause farms to fail, resulting in the loss of jobs and valuable income to the county.

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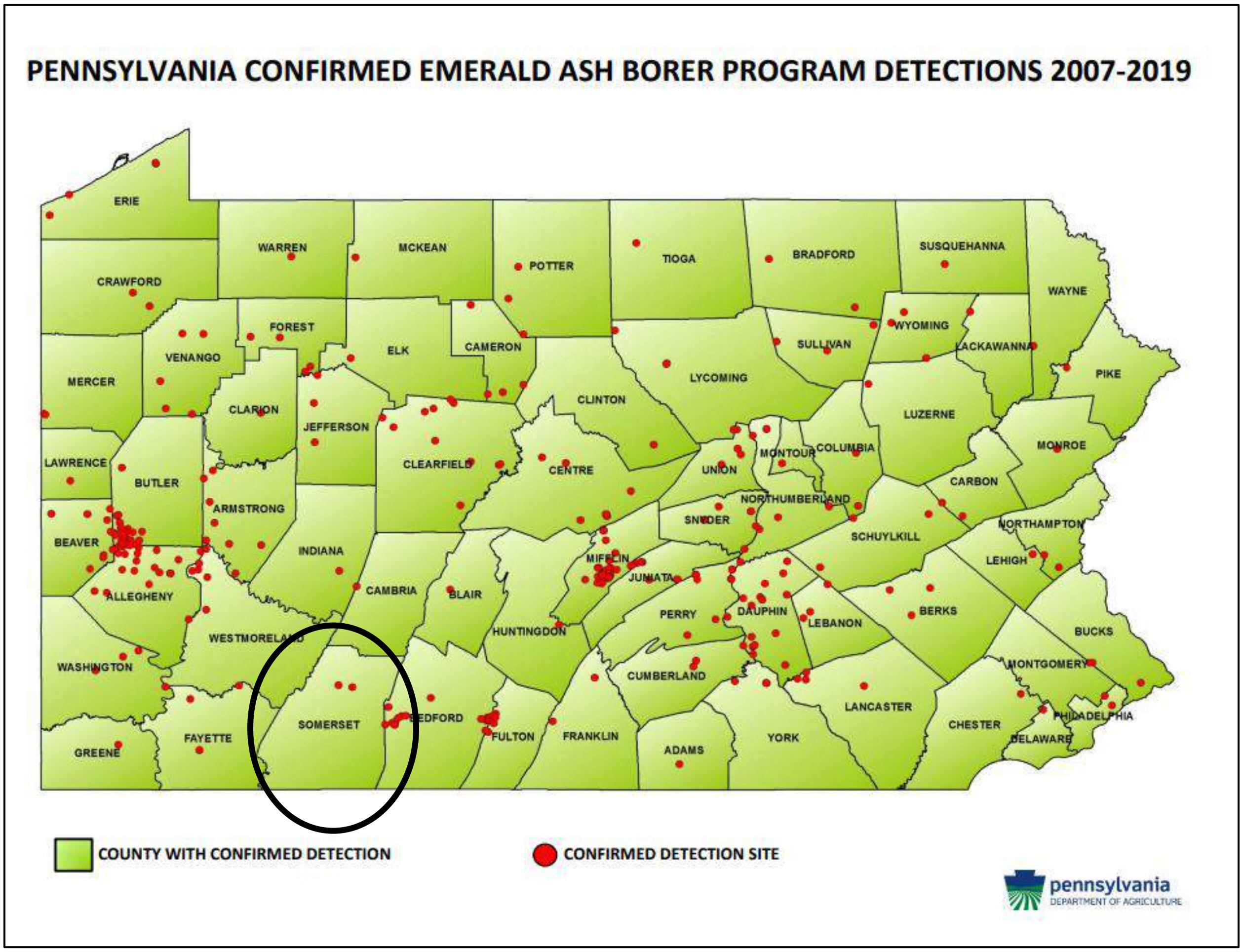
4.3.9.4 Past Occurrence

Invasive species have been entering Pennsylvania since the arrival of early European settlers. Somerset County has two confirmed detection sites for emerald ash borer from 2007-2019, as shown in Figure 4.3.9.4-1 (PDA n.d.). Additionally, the hemlock woolly adelgid has been present in Pennsylvania since 1973 and was first detected in Somerset County in 1967. The recent identification of spotted lanternfly has resulted in Somerset County being added to the state's quarantine area (PA PDA 2025). The Pennsylvania Department of Conservation and Natural Resources (DCNR) continues to monitor the progression of the invasive species.

Figure 4.3.9-1. Pennsylvania Confirmed Emerald Ash Borer Program Detections 2007-2019



Source: PDA, n.d.
Note: Somerset County is indicated by the black oval.

4.3.9.5 Future Occurrence

According to the Pennsylvania Invasive Species Council (PISC), the probability of future occurrence for invasive species threats is on the rise because of the growing volume of transported goods; increasing technology, efficiency, and speed of transportation; and expanding international trade agreements (PEMA 2023). Expanded global trade has created opportunities for many organisms to be transported to and establish themselves in new countries and regions.

Climate change also contributes to the introduction of new invasive species. As maximum and minimum seasonal temperatures change, pests are able to establish themselves in previously inhospitable climates. This also gives introduced species an earlier start and increases the magnitude of their growth, which may shift the dominance of ecosystems in favor of non-native species.

To combat the increase in future occurrences, the PISC, a collaboration of state agencies, public organizations, and federal agencies, released the Invasive Species Management Plan in May 2009 and revised it in 2016 (PISC 2016). This plan creates a framework for responding to threats through research, action, and public outreach.

The Pennsylvania Department of Agricultural Entomology Programs regularly conducts surveys to monitor, control, and mitigate invasive species. Based on historical documentation, increased incidences of infestation throughout Pennsylvania and the overall impact of changing climate trends, it is estimated that Somerset County and all its jurisdictions will continue to experience the impacts of invasive species.

For this HMP update, the future occurrence of invasive species is considered *highly likely*, as defined by the Risk Factor Methodology probability criteria (further discussed in Section 4.4).

Effects of Climate Change

Climate change can significantly impact invasive species in Somerset County. Warmer temperatures and longer frost-free periods extend growing seasons, allowing invasive species to establish and spread more easily. As temperatures rise, species previously limited by colder climates can expand their range into the county, leading to new invasions and increased competition with native species (USGS 2023). Changes in precipitation patterns and temperature can disrupt local ecosystems, making them more vulnerable to invasions. For example, reduced snow cover and longer summers can increase the risk of drought, stressing native plants and creating opportunities for invasive species to thrive. Additionally, warmer winters can lead to higher survival rates for invasive species sensitive to cold temperatures, resulting in larger populations and more significant impacts on local ecosystems.

4.3.9.6 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the area identified. Somerset County's exact vulnerability will depend on the invasive species in question. In general, though, the University of Arizona and the National Invasive Species Information Center have identified the following characteristics of areas that are more likely to be invaded by invasive species:

Lack of natural predators or diseases that kept the species under control in its native environment
Present vacant ecological niches that can be exploited by non-native species
Lack of species diversity
Lack of a multi-tiered canopy (in the case of invasive plants)
Disturbed by fire, construction, or agriculture prior to invasion (Sommerset County HMP 2020).

The following sections discuss the potential impact of the invasive species hazard on Somerset County, including:

Impact on (1) life, health and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development.
Effects of climate change on vulnerability.
Further data collections that will assist understanding this hazard over time.

Impact on Life, Health, and Safety

General Population

The entire population of Somerset County is vulnerable to invasive species to some extent, but direct impacts on life, health, and safety are minor. Indirect impacts such as spread of disease by invasive species are possible.

Socially Vulnerable Populations

People with limited English abilities may have difficulty understanding the risks associated with invasive species if education and outreach are not provided in preferred languages. Often, outreach materials are generated only in English. For people living below poverty levels, the costs associated with removing or treating impacted vegetation may not be feasible.

General Building Stock

No structures are anticipated to be directly affected by infestation or invasive species; however, some species could lead to the death of vegetation and trees throughout the county, which could result in stream bank instability, erosion, and increased sedimentation, impacting ground stabilization and possibly causing foundation issues for nearby structures. Additionally, with an increased number of dead trees, there is an increased risk of trees falling on roadways, power lines, and buildings.

Some invasive plants have been shown to destabilize soil due to high densities and shallow root systems, negatively impacting nearby buildings and septic systems. Other invasive plant species have been known to clog culverts and streams, increasing flood risk.

Community Lifelines and Other Critical Facilities

Impacts on critical facilities and lifelines are specific to the type of facility and the species impacting it. Water treatment plants could be impacted by invasive species because of similar issues the general building stock may experience. Water that becomes polluted due to increased sedimentation and erosion will require additional treatment. If the system becomes clogged with these pollutants, the ability of water treatment plants to operate may become impaired. Additionally, soil that becomes unstable due to decaying vegetation can impact critical facilities built on or around these soils.

Economy

Impacts of infestation and invasive species on the economy and estimated dollar losses are difficult to measure and quantify. Costs associated with activities and programs implemented to conduct surveillance and address a variety of infestations within Somerset County have not been quantified in available documentation.

Although the economic impact has not been quantified for Somerset County, state-wide agricultural losses because of invasive species were estimated at $7,405,754,000 (PEMA 2019). The potential financial impact of invasive species on agriculture in Somerset County was identified as having 1.66 percent of state total sales (PEMA 2019).

Environment

Invasive species contribute to a broad range of environmental impacts. Many invasive species can cause significant reductions in biodiversity by crowding out native species. This can affect the health of individual host organisms as well as the overall well-being of the affected ecosystem.

Parks, forests and neighborhood trees are vulnerable to invasive species. Species that cause eventual destabilization of soil, such as invasive insects that destroy plants or invasive plants that outcompete native vegetation but have less effective root systems, can increase runoff into water bodies. This can lead to negative impacts on drinking water supplies. Soil destabilization can also increase the likelihood of mudslides in areas with a steep slope.

Future Changes That May Impact Vulnerability

Future Growth and Development

As discussed in Section 2, areas targeted for future growth and development have been identified across Somerset County. Any areas of growth could be impacted by the infestation hazard because the entire planning area is exposed and vulnerable.

Climate Change

Changing weather patterns could create a change in the migration patterns for when invasive species move into and out of Somerset County. If the species have a more prolonged existence in the County, there may be a greater number of infestation events, or a higher value of loss tied to infestation (United States Environmental Protection Agency 2022).

4.3.9.7 Additional Data and Next Steps

Any additional information regarding localized concerns and past impacts will be collected and analyzed. These data will be developed to support future revisions to the plan. Future mitigation efforts could include partnering and collaborating with existing Commonwealth of Pennsylvania organizations and through local efforts.

4.3.10 Landslide

4.3.10.1 Hazard Description

The term landslide includes a wide range of ground movements, such as rock falls, deep failure of slopes, and shallow debris flows (USGS 2024b). Landslides are classified by type of material involved and the type of movement. In addition, they are classified by the rate of movement and the water content of the material. Movement rates can be as slow as a few inches over many years or as fast as many feet per second.

Landslides can be caused by a variety of factors, including earthquakes, storms, fire, and human modification of land. Areas that are generally prone to landslide hazards include previous landslide areas, areas on or at the base of slopes, the base of drainage hallows, developed hillsides with leach field septic systems, and areas recently burned by forest and brush fires (PEMA 2023). Human activities that contribute to slope failure include altering the natural slope gradient, increasing soil water content, and removing vegetation cover.

Natural variables that contribute to the potential for landslide activity in a given area include soil properties, topographic position and slope, and historical incidence. USGS mapping of landslide potential in the United States bases the hazard on landslide incidence and susceptibility, as defined below (Radbruch-Hall 2013):

- Landslide incidence is the number of landslides that have occurred in a given geographic area. Unusually high precipitation or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past. In the USGS mapping, high incidence means greater than 15 percent of a given area has been involved in landsliding; medium incidence means that 1.5 to 15 percent of an area has been involved; and low incidence means that less than 1.5 percent of an area has been involved.

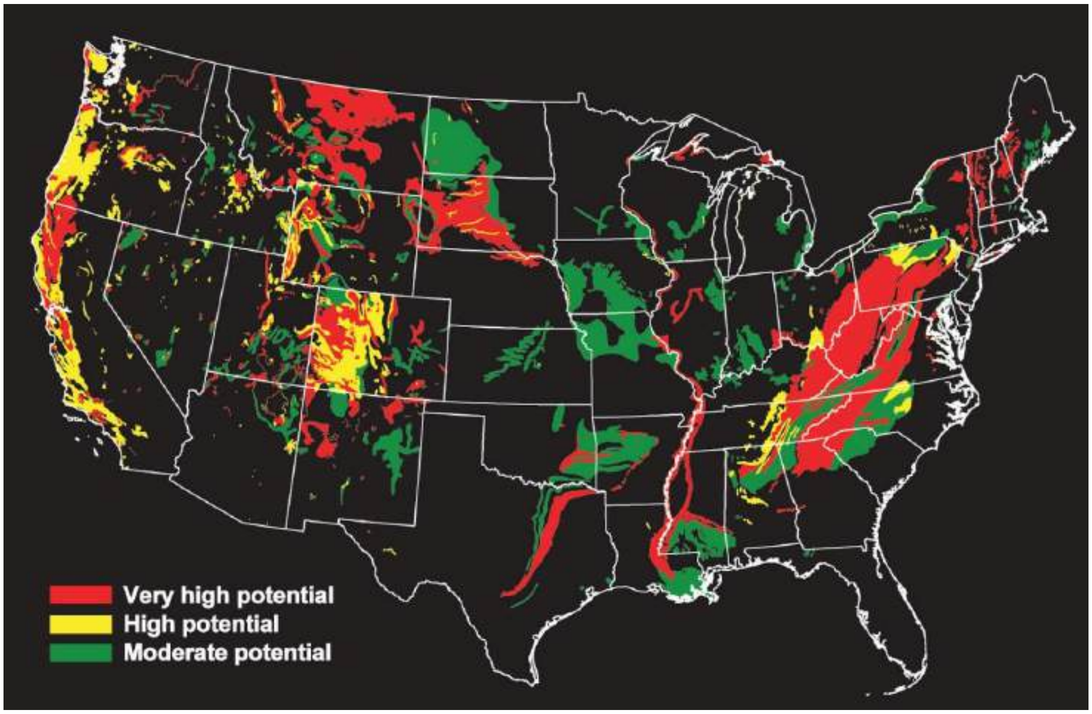
- Landslide susceptibility is defined as the probable degree of response of geologic formations to natural or artificial cutting, to loading of slopes, or to unusually high precipitation. Landslide susceptibility depends on slope angle and the geologic material underlying the slope. Landslide susceptibility only identifies areas potentially affected and does not imply a time frame when a landslide might occur. High, medium, and low susceptibility are delimited by the same percentages used for classifying the incidence of landsliding.

4.3.10.2 Location and Extent

Landslides have occurred in many parts of Pennsylvania but are most abundant and dangerous in the Appalachian Plateaus of western and north-central Pennsylvania (PEMA 2023). According to Pennsylvania's Department of Conservation and Natural Resources, most major and minor highways have sections cut in rock or soil that can lead to slope failure. Steep mountain slopes across Pennsylvania have experienced debris avalanches associated with extreme rainfall or rain-on-snow events. Additionally, urban and rural land development is increasing the number of landslide occurrences (Delano and Wilshusen 2001).

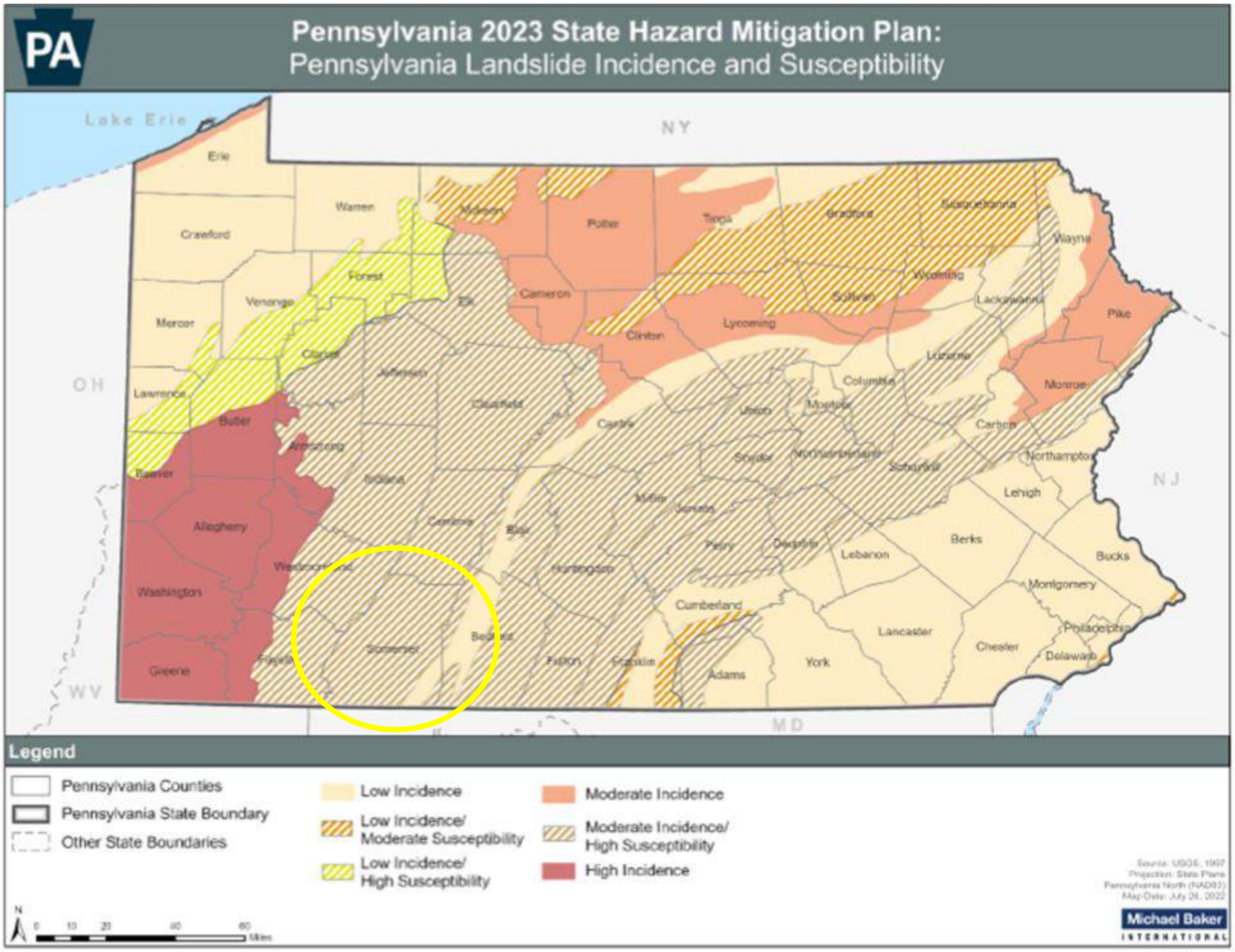
As shown in Figure 4.3.10.2-1, the nation's largest area of very high landslide potential crosses central and southwestern Pennsylvania, including Somerset County. Figure 4.3.10.2-2 shows landslide susceptibility and incidence across the commonwealth. As shown in Figure 4.3.10.2-2, most of Somerset County has high susceptibility to landslides and moderate incidence of landslide events.

Figure 4.3.10-1. National USGS Map of Landslide Potential



Source: (USGS 2005)

Figure 4.3.10-2. Areas of Pennsylvania Susceptible to Landslides

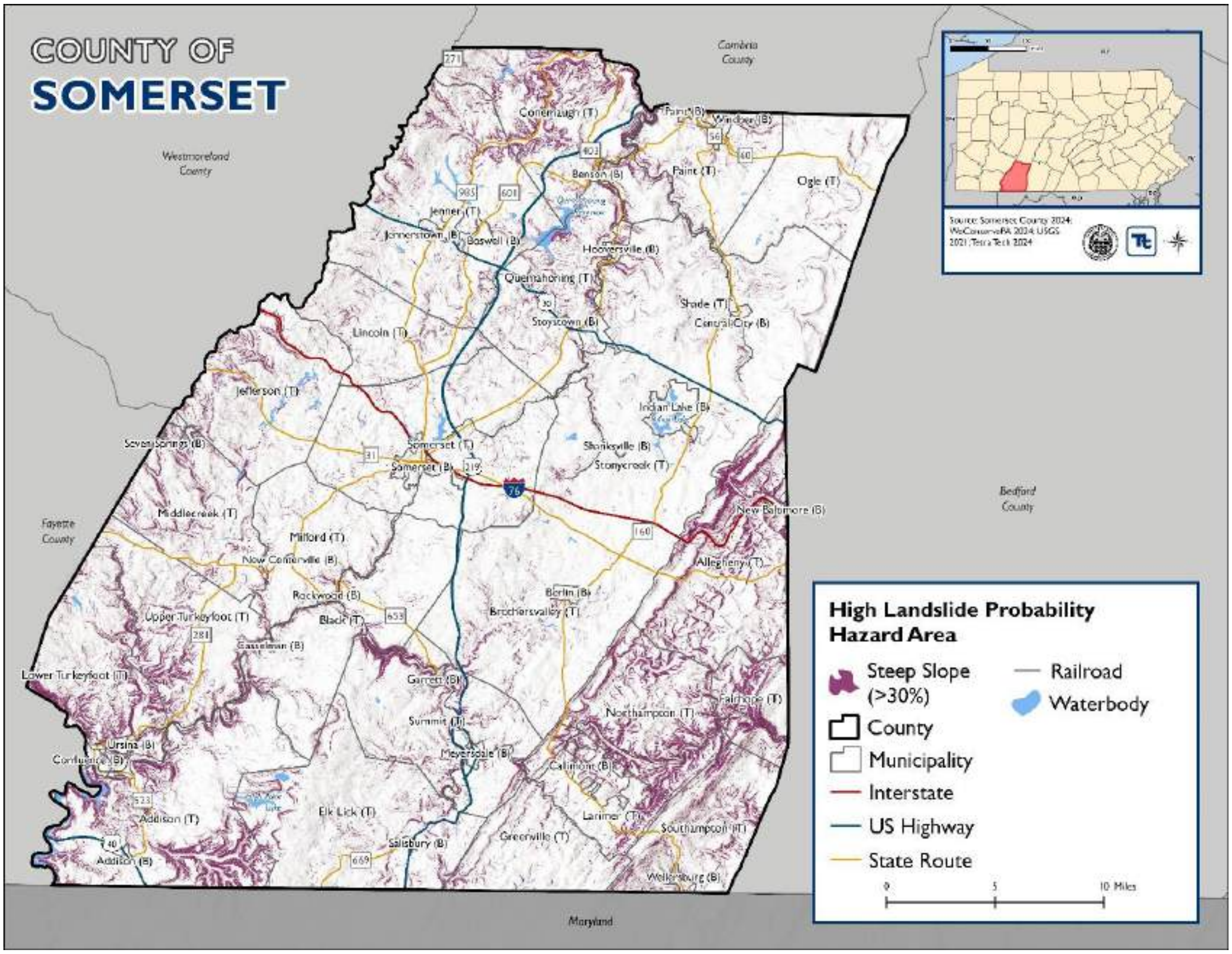


Source: PEMA 2023

Note: The yellow circle indicates the approximate location of Somerset County. The eastern portion of Somerset County is shown as having a moderate incidence and high susceptibility to landslide.

For the purposes of this planning effort, any area with a slope greater than 30 percent is considered the hazard area. Figure 4.3.10.2-3 shows the portions of the County that have areas with 30 percent or greater steepness.

Figure 4.3.10-3. High Landslide Hazard Area in Somerset County



4.3.10.3 Range of Magnitude

Landslides have the potential to damage transportation routes, utilities, and buildings. They can also create travel delays and other side effects. Deaths and injuries caused by landslides are rare in Pennsylvania, and most landslides in the commonwealth are moderate to slow moving, damaging things rather than people. Almost all of the known deaths caused by landslides have occurred when rockfalls or other slides along highways have involved vehicles. Storm-induced debris flows are the only other type of landslide likely to cause death and injuries (PEMA 2023).

PennDOT and large municipalities incur substantial costs due to landslide damage and to extra construction costs for new roads in known landslide-prone areas. A PennDOT estimate in 1991 showed an average of $10 million per year in landslide repair contracts across the commonwealth and a similar amount in mitigation costs for grading projects (Delano and Wilshusen 2001).

The worst-case scenario for a landslide in Somerset County would be an event similar to one in Beaver County in 1942. In that event, 150 cubic yards of rock fell from a highway cut onto a bus. Twenty-two people were killed, and four others were injured (PEMA 2023). In Somerset County's worst-case scenario, a landslide would strike a major transportation route, potentially causing a severe traffic accident with multiple fatalities. The closure of this route would disrupt commerce within the County and across the Commonwealth. This scenario is considered the worst-case due to its significant impact on the County, neighboring counties, and the

Commonwealth. Conversely, the most likely landslide would occur in an unpopulated area and likely go unnoticed.

4.3.10.4 Past Occurrence

A comprehensive inventory of landslide events across the commonwealth is not available, and the USGS does not maintain a formal inventory of landslides. However, the USGS Landslide Hazards Program collects data as events are reported to the agency (PEMA 2023). Outside of impacts on important transportation routes, landslide history is not documented as completely as other hazards. Because landslides are not always seen, historical landslide occurrences in Somerset County are not well known.

Neither the Federal Emergency Management Agency (FEMA), the National Centers for Environmental Information (NCEI), nor the County have any records of landslides in the county. Between 1954 and 2024, FEMA has issued no disaster (DR) or emergency (EM) declaration for a landslide related event that included Somerset County.

Table 4.3.10-1 presents known landslide related events in Somerset County between January 1954 and December 2024, as documented by the National Centers for Environmental Information (NCEI) Storm Event Database and the Somerset County 2020 HMP.

Table 4.3.10-1. Landslide Events in Somerset County, 1954 to 2024

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Losses/Impacts
February 18-19, 2000	Mudslide	Meyersdale	N/A	N/A	Several motorists were stranded in their vehicles from a road closure due to a mudslide.
June 15, 2015	Landslide	Conemaugh	N/A	N/A	Landslide leading to road closures.
January 5, 2017	Landslide	Conemaugh	N/A	N/A	Landslide leading to road closures.

Source: (Somerset County 2020) (NOAA NCEI 2024)

4.3.10.5 Future Occurrence

Based upon risk factors but lack of occurrences, it is unlikely landslides will occur in Somerset County in the future. However, severity of the landslides can vary depending on the type and location of the event. Landslide probabilities are largely a function of surface geology but are also influenced by both weather and human activities.

If mismanaged, intense development in steeply sloped areas could increase the frequency of a landslide occurrence. Periods of intense rain or snowmelt can also increase the risk of landslides. Building and road construction are contributing development factors to landslides, as they can often undermine or steepen otherwise stable soil. Increased deforestation and soil disturbances caused by development on sloped areas further increases these risks. As timbering and development of sloped land continue, the risk of significant landslides increases. The probability of future occurrence of landslides in Somerset County, according to FEMA's National Risk Index, is relatively moderate and has score of 87.7 (FEMA n.d.).

Based on available historical data, the future occurrence of landslides can be considered *possible* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4).

Table 4.3.10-2. Probability of Future Landslide Events

Hazard Type	Number of Occurrences Between 1996 and 2024	Recurrence Interval (in years) (# Years/Number of Events)	Percent chance of occurrence in any given year
Landslide	3	9.7	10.3%

Source: (Somerset County 2020) (NOAA NCEI 2024)

Effects of Climate Change

Climate change can significantly impact the frequency and severity of landslides, particularly in regions like Somerset County. Increased precipitation from more intense and frequent rainfall events can lead to soil saturation, raising the likelihood of landslides (PSU 2022). Warmer winters with more freeze-thaw cycles can weaken soil and rock structures, making them more susceptible to landslides. Additionally, changes in temperature and precipitation can affect vegetation cover; loss of vegetation due to drought or other climate stressors can reduce root strength, which helps stabilize slopes. More frequent and intense storms can also trigger landslides by rapidly increasing water infiltration into the soil, leading to slope failure.

4.3.10.6 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed and/or vulnerable to the identified hazard. Because of the lack of spatially delineated landslide hazard areas in the county, a spatial analysis referenced areas with slopes greater than 30 percent to delineate the landslide hazard area. Slope degrees greater than 30 percent are categorized as the most at-risk slopes in the study. The following sections evaluate and estimate potential impact of landslide in Somerset County, presenting:

- Impact on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist in understanding this hazard over time

Life, Health, and Safety

General Population

Generally, a landslide event would be an isolated incidence and impact the populations within the immediate area of the incident. Specifically, the populations located downslope of the landslide hazard areas are particularly vulnerable to this hazard. In addition to causing damage to residential buildings and displacing residents, landslide events can block off or damage major roadways and inhibit travel for emergency responders or populations trying to evacuate the area.

Table 4.3.10-3 summarizes the population located in the landslide-susceptible hazard area. Conemaugh Township has the greatest number of persons located in the landslide-susceptible hazard area, with 161 people, or 2.4 percent of its total population. The Borough of Callimont has the greatest percentage of its population located in the landslide-susceptible hazard area with 3 people out of a total of 52 people, or 5.8 percent of the Borough's total population.

Table 4.3.10-3. Estimated Somerset County Population Vulnerable to the Landslide Hazard Area

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population in the Landslide Hazard Area	
		Number of Persons	% of Jurisdiction Total
Addison (B)	272	2	0.7%
Addison (T)	945	35	3.7%
Allegheny (T)	669	5	0.7%
Benson (B)	139	3	2.2%
Berlin (B)	2,297	3	0.1%
Black (T)	868	6	0.7%
Boswell (B)	1,411	3	0.2%
Brothersvalley (T)	2,002	22	1.1%
Callimont (B)	52	3	5.8%
Casselman (B)	64	0	0.0%
Central City (B)	1,045	6	0.6%
Conemaugh (T)	6,759	161	2.4%
Confluence (B)	596	0	0.0%
Elk Lick (T)	2,423	18	0.7%
Fairhope (T)	85	1	1.2%
Garrett (B)	409	6	1.5%
Greenville (T)	865	0	0.0%
Hooversville (B)	722	2	0.3%
Indian Lake (B)	314	7	2.2%
Jefferson (T)	1,313	26	2.0%
Jenner (T)	3,713	31	0.8%
Jennerstown (B)	1,182	18	1.5%
Larimer (T)	536	13	2.4%
Lincoln (T)	1,305	19	1.5%
Lower Turkeyfoot (T)	425	7	1.6%
Meyersdale (B)	2,118	19	0.9%
Middlecreek (T)	644	15	2.3%
Milford (T)	1,428	8	0.6%
New Baltimore (B)	147	0	0.0%
New Centerville (B)	118	0	0.0%
Northampton (T)	282	3	1.1%
Ogle (T)	493	4	0.8%
Paint (B)	1,122	32	2.9%
Paint (T)	3,038	26	0.9%
Quemahoning (T)	1,661	23	1.4%
Rockwood (B)	816	2	0.2%
Salisbury (B)	619	2	0.3%
Seven Springs (B)	7	0	0.0%

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population in the Landslide Hazard Area	
		Number of Persons	% of Jurisdiction Total
Shade (T)	2,342	7	0.3%
Shanksville (B)	166	6	3.6%
Somerset (B)	6,030	36	0.6%
Somerset (T)	11,775	100	0.8%
Southampton (T)	628	12	1.9%
Stonycreek (T)	2,271	23	1.0%
Stoystown (B)	410	12	2.9%
Summit (T)	1,911	31	1.6%
Upper Turkeyfoot (T)	1,073	18	1.7%
Ursina (B)	214	3	1.4%
Wellersburg (B)	148	1	0.7%
Windber (B)	3,930	20	0.5%
Somerset County (Total)	**73,802**	**800**	**1.1%**

Sources: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; United States Geological Survey 2021; Tetra Tech 2024
Note: % = Percent

Socially Vulnerable Population

Socially vulnerable populations (e.g., the elderly and low-income populations) are particularly vulnerable to a landslide event. There are approximately 175 persons over 65, and less than 1 percent of the population is living below the poverty level in Somerset County (Census 2020). Conemaugh Township has the greatest elderly population (48 people) and the greatest low-income population (11 people). Conemaugh Township is also the jurisdiction with greatest number of exposed persons (161). Economically disadvantaged populations are more vulnerable because they may be unable to evacuate their homes due to a lack of transportation, lack of a safe place to which to evacuate, or lack of financial resources (e.g., cannot afford temporary lodging). The population over the age of 65 is more vulnerable because they are more likely to seek or need medical attention, which may not be available because of isolation during an emergency; they may also have more difficulty evacuating. Special consideration should be taken when planning for disaster preparation, response, and recovery for these vulnerable groups.

General Building Stock

In general, the built environment located in the landslide-susceptibility area and the population, structures, and infrastructure located downslope are vulnerable to this hazard. Landslides also have the potential of destabilizing the foundation of structures, which may result in monetary losses to businesses and residents. There are 1,151 buildings with a replacement cost value of almost $600 million located in the landslide hazard area countywide (6.9 percent of the total replacement cost value of the county). Conemaugh Township has the greatest number of buildings and estimated replacement cost value located in the landslide-susceptible hazard area, with 148 buildings totaling more than $61 million in replacement cost value. Table 4.3.10-4 summarizes the exposed building stock located in the landslide-susceptibility area throughout the county by jurisdiction.

Table 4.3.10-4. Estimated General Building Stock Exposure to the Landslide Hazard Area

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Landslide Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	148,461,465	5	2.0%	$1,729,353	1.2%
Addison (T)	2,429	1,136,703,437	73	3.0%	$43,768,568	3.9%
Allegheny (T)	1,509	781,809,472	26	1.7%	$10,808,574	1.4%
Benson (B)	173	89,274,721	2	1.2%	$613,275	0.7%
Berlin (B)	1,392	895,269,284	3	0.2%	$738,088	0.1%
Black (T)	1,515	834,474,737	13	0.9%	$3,988,112	0.5%
Boswell (B)	826	474,400,294	3	0.4%	$982,579	0.2%
Brothersvalley (T)	3,330	2,064,465,986	39	1.2%	$20,498,528	1.0%
Callimont (B)	55	30,930,873	1	1.8%	$191,558	0.6%
Casselman (B)	119	41,086,890	0	0.0%	$0	0.0%
Central City (B)	912	442,954,504	5	0.5%	$1,319,685	0.3%
Conemaugh (T)	6,338	3,880,986,714	148	2.3%	$61,179,004	1.6%
Confluence (B)	753	379,399,641	3	0.4%	$776,958	0.2%
Elk Lick (T)	3,334	1,853,364,019	55	1.6%	$20,106,123	1.1%
Fairhope (T)	304	114,953,744	4	1.3%	$1,816,957	1.6%
Garrett (B)	377	163,199,308	6	1.6%	$1,577,028	1.0%
Greenville (T)	1,145	619,817,620	19	1.7%	$10,686,314	1.7%
Hooversville (B)	581	284,259,840	8	1.4%	$3,186,877	1.1%
Indian Lake (B)	1,148	775,063,497	29	2.5%	$16,666,104	2.2%
Jefferson (T)	3,395	1,763,883,579	72	2.1%	$37,056,635	2.1%
Jenner (T)	5,016	2,687,221,806	61	1.2%	$33,479,468	1.2%
Jennerstown (B)	641	404,635,410	10	1.6%	$4,579,826	1.1%
Larimer (T)	839	411,045,802	15	1.8%	$10,773,200	2.6%
Lincoln (T)	1,981	1,209,799,393	29	1.5%	$19,083,503	1.6%
Lower Turkeyfoot (T)	1,168	528,650,209	18	1.5%	$10,542,166	2.0%
Meyersdale (B)	1,529	888,796,373	18	1.2%	$5,821,524	0.7%
Middlecreek (T)	2,860	1,361,478,007	47	1.6%	$31,714,051	2.3%
Milford (T)	2,434	1,414,705,761	21	0.9%	$23,860,543	1.7%
New Baltimore (B)	174	77,842,527	1	0.6%	$560,779	0.7%
New Centerville (B)	171	104,468,378	0	0.0%	$0	0.0%
Northampton (T)	763	355,524,703	12	1.6%	$3,015,683	0.8%
Ogle (T)	687	335,973,192	4	0.6%	$2,042,862	0.6%
Paint (B)	553	294,837,290	14	2.5%	$8,559,811	2.9%
Paint (T)	3,474	2,072,241,492	38	1.1%	$17,699,211	0.9%
Quemahoning (T)	2,464	1,472,027,871	27	1.1%	$15,574,350	1.1%
Rockwood (B)	619	349,683,802	1	0.2%	$18,526	<0.1%
Salisbury (B)	639	345,399,685	3	0.5%	$1,733,268	0.5%

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Landslide Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Seven Springs (B)	82	139,517,399	1	1.2%	$248,560	0.2%
Shade (T)	3,461	1,759,474,604	17	0.5%	$9,368,055	0.5%
Shanksville (B)	178	97,994,103	6	3.4%	$2,586,067	2.6%
Somerset (B)	3,433	3,277,246,043	28	0.8%	$17,358,871	0.5%
Somerset (T)	8,899	6,489,508,286	68	0.8%	$35,893,756	0.6%
Southampton (T)	1,001	469,896,734	25	2.5%	$14,552,552	3.1%
Stonycreek (T)	3,547	1,868,134,699	38	1.1%	$24,075,652	1.3%
Stoystown (B)	266	142,664,600	9	3.4%	$3,341,346	2.3%
Summit (T)	3,085	1,765,406,355	58	1.9%	$29,659,029	1.7%
Upper Turkeyfoot (T)	2,126	1,035,009,396	38	1.8%	$14,295,450	1.4%
Ursina (B)	279	118,221,649	5	1.8%	$2,333,406	2.0%
Wellersburg (B)	261	117,923,548	6	2.3%	$1,599,389	1.4%
Windber (B)	2,673	1,756,688,270	19	0.7%	$10,641,139	0.6%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**1,151**	**1.4%**	**$592,702,364**	**1.2%**

Sources: : Somerset County 2024; USACE 2022; United States Geological Survey 2021; Tetra Tech 2024; RS Means 2024
Note: B – Borough; T – Township, %= Percent

Community Lifelines and Other Critical Facilities

Landslides can also impact the critical facilities in Somerset County. Critical infrastructure that may be impacted by landslides includes water and sewer systems, roads, bridges, power lines, and rail lines. Access to major roads is crucial for life-safety after a disaster and for response and recovery operations. Landslides can block roads, isolating neighborhoods, causing traffic problems, and delaying public and private transportation, which can result in economic losses for businesses. Bridges are also vulnerable, as landslides can knock out bridge abutments or weaken the supporting soil, making them hazardous. Power lines, typically elevated above steep slopes, can be affected if the supporting towers are compromised by landslides, leading to power and communication failures that impact vulnerable populations and businesses. Rail lines, essential for disaster response and recovery, can be blocked by landslides, and detouring them is more challenging than rerouting local roads or highways

There are 56 critical lifeline facilities located in the identified landslide hazard area (Table 4.3.10-5). The majority of the lifelines in this hazard area come from the transportation lifeline (49).

Table 4.3.10-5. Number of Lifeline Facilities Located in the Steep Slope (>30% Degrees) Landslide Hazard Area

Jurisdiction	Number of Facilities in High Incidence Landslide Hazard Area, by Lifeline Category									All Facilities in Hazard Area	
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdiction Total
Addison (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Addison (T)	0	0	0	0	0	0	1	0	0	1	7.1%
Allegheny (T)	0	0	0	0	0	0	1	0	0	1	6.7%
Benson (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Berlin (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Black (T)	0	0	0	0	0	0	4	0	0	4	20.0%
Boswell (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Brothersvalley (T)	0	0	0	2	0	0	3	0	0	5	15.2%
Callimont (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Casselman (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Central City (B)	0	0	0	0	0	0	1	0	0	1	14.3%
Conemaugh (T)	0	0	0	1	0	0	3	0	0	4	8.0%
Confluence (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Elk Lick (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Fairhope (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Garrett (B)	0	0	0	0	0	0	0	0	0	0	0.0%

Jurisdiction	Number of Facilities in High Incidence Landslide Hazard Area, by Lifeline Category									All Facilities in Hazard Area	
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdiction Total
Greenville (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Hooversville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Indian Lake (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Jefferson (T)	0	0	0	0	0	0	2	0	0	2	10.0%
Jenner (T)	0	0	0	0	0	0	6	0	0	6	15.4%
Jennerstown (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Larimer (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Lincoln (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Lower Turkeyfoot (T)	0	0	0	0	0	0	2	0	0	2	20.0%
Meyersdale (B)	0	0	0	0	0	0	1	0	0	1	8.3%
Middlecreek (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Milford (T)	0	0	0	0	0	0	2	0	0	2	9.5%
New Baltimore (B)	0	0	0	0	0	0	0	0	0	0	0.0%
New Centerville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Northampton (T)	0	0	0	0	0	0	4	0	0	4	33.3%
Ogle (T)	0	0	0	0	0	0	0	0	0	0	0.0%

Jurisdiction	Number of Facilities in High Incidence Landslide Hazard Area, by Lifeline Category									All Facilities in Hazard Area	
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdiction Total
Paint (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Paint (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Quemahoning (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Rockwood (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Salisbury (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Seven Springs (B)	0	0	0	0	0	1	0	0	0	1	20.0%
Shade (T)	0	0	0	0	0	0	4	0	0	4	12.1%
Shanksville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Somerset (B)	0	0	0	0	0	0	0	0	1	1	3.0%
Somerset (T)	0	0	0	0	0	0	3	0	0	3	4.2%
Southampton (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Stonycreek (T)	0	0	0	0	0	0	7	0	0	7	16.7%
Stoystown (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Summit (T)	0	0	0	1	0	0	4	0	0	5	14.3%
Upper Turkeyfoot (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Ursina (B)	0	0	0	0	0	0	0	0	0	0	0.0%

Jurisdiction	Number of Facilities in High Incidence Landslide Hazard Area, by Lifeline Category									All Facilities in Hazard Area	
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdiction Total
Wellersburg (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Windber (B)	1	0	0	0	0	0	1	0	0	2	14.3%
Somerset County (Total)	**1**	**0**	**0**	**4**	**0**	**1**	**49**	**0**	**1**	**56**	**7.9%**

Source: Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021, United States Geological Survey 2021; Tetra Tech 2024
Note: % = Percent

Economy

The landslide hazard can impose direct and indirect impacts on society. Direct costs include actual damage sustained by buildings, property, and infrastructure. Indirect costs, such as cleanup costs, business interruption, loss of tax revenues, reduced property values, and loss of productivity, are difficult to measure. Additionally, ground failure threatens transportation corridors, fuel and energy conduits, and communication lines (Gori and Spiker 2000). Additionally, landslides can cause agricultural and industrial losses by damaging land and facilities, reducing productivity. The tourism sector can suffer as natural attractions and tourist facilities may be damaged, leading to a decline in revenue. Furthermore, the cost of emergency response and recovery operations can be substantial. Overall, the economic impact of landslides is multifaceted, affecting various sectors and leading to both direct and indirect financial losses.

Environment

A landslide alters the landscape, causing changes to topography, damage or destruction of vegetation, potential diversion or blockage of water in streams and rivers, increased sediment runoff both during and after the event, and a loss of forest productivity (PEMA 2023).

Mudslides are a type of landslide that involve quick-moving debris rivers. These types of landslides can destroy natural and man-made objects, ultimately settling in a level location and gathering into thick deposits (CDC 2018)

Future Changes that May Impact Vulnerability

Future Growth and Development

Future growth and development in the County, can significantly impact the vulnerability to landslides. As the County expands, increased construction and land alteration can destabilize slopes, making them more susceptible to landslides. Urban expansion often involves the removal of vegetation, which naturally helps to stabilize soil. Without this vegetation, the risk of landslides increases, particularly during heavy rainfall or rapid snowmelt.

Additionally, the development of infrastructure such as roads, bridges, and buildings can alter natural water drainage patterns. Improperly managed water runoff can lead to soil saturation, further increasing the likelihood of landslides. The construction of new transportation routes and residential areas on or near steep slopes can also intensify the risk, as these areas are more prone to ground movement.

Moreover, the increased load on slopes due to new buildings and infrastructure can contribute to slope instability. The weight of these structures, combined with the potential for increased water infiltration from impervious surfaces like roads and rooftops, can weaken the soil and rock, making landslides more likely.

Effects of Climate Change on Vulnerability

A direct impact of climate change on landslides is difficult to determine. However, multiple secondary effects of climate change have the potential to increase the likelihood of landslides. Warming temperatures resulting in wildfires would reduce vegetative cover along steep slopes and destabilize the soils because of destruction of the root system. Additionally, increased intensity of rainfall events would increase saturation of soils on steep slopes. Under these future conditions, the county’s assets located on or at the base of these steep slopes will have an increased risk to landslides.

4.3.10.7 Additional Data and Next Steps

For future Hazard Mitigation Plan (HMP) updates, additional factors used to determine landslide susceptibility besides steep slope could allow for more accurate development of exposure and potential loss estimates.

4.3.11 Levee Failure

4.3.11.1 Hazard Description

This section provides a profile and vulnerability assessment for the levee failure hazard for the Somerset County Hazard Mitigation Plan (HMP).

Levees and flood walls are man-made structures designed to protect specific areas within a community from flooding. These structures fail when flood waters exceed the height of the protective levee structure or when the maximum pressure exerted by the flood waters against the levee or flood wall exceeds its capability.

Levee failures, like dam failures, have the potential to place large numbers of people and great amounts of property at risk. Unlike dams, levees are built parallel to a river or another body of water to protect the population and structures behind it from risks to human health and property damage that could be caused by flooding events (FEMA 2021). Levees do not serve a purpose beyond providing flood protection and (less frequently) recreational space for community residents. Dams, on the other hand, can serve to store water or generate energy, in addition to protecting areas from flooding.

Levee failures can be caused by a number of factors and can be catastrophic. Damage to the area beyond a failed levee could be more significant than damage caused by the uninhibited flow of flood water (FEMA 2021). Levees are designed to provide a specific level of protection; therefore, excessive water from a flooding event could overtop a levee if the water volume exceeds the levee specifications. Additionally, because levees can fail if they are allowed to decay or deteriorate, regular maintenance is critical.

Regulatory Oversight for Levees

USACE and FEMA

U.S. Army Corps of Engineers (USACE) and FEMA have differing roles and responsibilities related to levees. USACE addresses a range of operation and maintenance, risk communication, risk management, and risk-reduction issues as part of its responsibilities under the Levee Safety Program. FEMA addresses mapping and floodplain management issues related to levees, and it accredits levees as meeting requirements set forth by the National Flood Insurance Program.

Depending on the levee system, USACE and FEMA may be involved with the levee sponsor and community independently or—when a levee system overlaps both agency programs—jointly. Under both scenarios, the long-term goals are similar: to reduce risk and lessen the devastating consequences of flooding. Some USACE and FEMA partnering activities related to levees include:

- Joint meetings with levee sponsors and other stakeholders
- Integration of levee information into the National Levee Database
- State Silver Jackets teams
- Sharing of levee information
- Targeted task forces to improve program alignment

The Silver Jackets is a program that provides an opportunity to consistently bring together multiple state, federal, tribal, and local agencies to learn from each other and apply their knowledge to reduce risk. The program's primary goals include the following (Silver Jackets n.d.):

- Create or supplement a mechanism to collaboratively identify, prioritize, and address risk management issues and implement solutions.
- Increase and improve risk communication through a unified interagency effort.
- Leverage information and resources and provide access to such national programs as FEMA's Risk Mapping, Assessment, and Planning (MAP) and USACE's Levee Inventory and Assessment Initiative.

- Provide focused, coordinated hazard mitigation assistance in implementing high-priority actions such as those identified by state hazard mitigation plans.
- Identify gaps among agency programs and/or barriers to implementation, such as conflicting agency policies or authorities, and provide recommendations for addressing these issues.

Pennsylvania has an active Silver Jackets team. The team is an interagency organization dedicated to working collaboratively with the Commonwealth and appropriate stakeholders in developing and implementing solutions to flood hazards by combining available agency resources, which include funding, programs, and technical expertise. The team provides a variety of flood risk management resources for the public – before, during, and after a flood – on their website at http://www.nab.usace.army.mil/Home/Silver-Jackets/.

Coordination between USACE and FEMA regarding levees is now standard within many of each agency's policies and practices. Over the past several years, both agencies coordinated policies where appropriate; jointly participated in meetings with stakeholders; and participated in many multiagency efforts, such as the National Committee on Levee Safety, the Federal Interagency Floodplain Management Task Force, and the Silver Jackets Program.

National Committee on Levee Safety

Congress created the National Committee on Levee Safety to "develop recommendations for a national levee safety program, including a strategic plan for implementation of the program." The Committee adopted the vision of "an involved public and reliable levee systems working as part of an integrated approach to protect people and property from floods," and has been working toward this goal since October 2008 (Association of State Dam Safety Officials n.d.). The Committee is made up of representatives from state, regional, and local agencies; the private sector; USACE; and FEMA.

4.3.11.2 Location and Extent

A total of 317 levee segments and 63 floodwall segments levees have been identified throughout Pennsylvania via the MLI, with at least one levee in 51 of 67 counties (PEMA 2019). Somerset County has 13 levee systems located in throughout the County (USACE 2023). Table 4.3.11-1 details information about each levee system located in the County.

Table 4.3.11-1. Levee Systems in Somerset County

Levee Name	Municipality	Total Miles	Class
Boynton, PA	Elk Lick Township	.55 Miles	4 - Low
Confluence, PA – RB Casselman	Confluence Borough	.31 Miles	4 - Low
Confluence, PA – RB Youghiogheny	Confluence Borough	.11 Miles	4 - Low
Myersdale, PA – Debris Basin	Meyersdale Borough	.08 Miles	4 - Low
Myersdale, PA – LB Flaugherty	Meyersdale Borough	.08 Miles	4 - Low
Myersdale, PA – RB Casselman	Summit Township and Meyersdale Borough	1.04 Miles	4 - Low
Roaring Fork Levee System	Ogle Township	.13 Miles	Not Screened

Levee Name	Municipality	Total Miles	Class
Rockwood, PA	Rockwood Borough	.8 Miles	4 - Low
Unnamed Tributary to Clear Shade Creek Levee	Ogle Township	.13 Miles	Not Screened
Windber, PA – LB Paint	Windber Borough	.11 Miles	4 - Low
Windber, PA – RB Paint DS	Windber Borough	.71 Miles	4 - Low
Windber, PA – RB Paint US	Windber Borough	.28 Miles	4 - Low
Windber, PA – RB Seese	Windber Borough	.06 Miles	4 - Low

Source: USACE, 2023

A complete levee failure, like a dam failure, is rather infrequent and typically coincides with events that cause them, such as heavy rainfall, storm surge, or hurricanes. In the event of a levee failure, floodwaters may ultimately inundate the protected area landward of the levee. The extent of inundation is dependent on the flooding intensity. Failure of a levee during a 1 percent annual chance flood will inundate the approximate 100-year flood plain previously protected by the levee. Residential and commercial buildings located nearest the levee failure or breach location will suffer the most damage from the initial embankment failure flood wave. Landward buildings will be damaged by inundation (FEMA n.d.).

Levees require maintenance to continue to provide the level of protection they were designed and built to offer. Maintenance responsibility belongs to a variety of entities, including local, state, and federal government and private landowners. Well-maintained levees may obtain certification through independent inspections. Levees may not be certified for maintaining flood protection when the levee owner does not maintain the levee or pay for an independent inspection. The impacts of an uncertified levee include higher risk of levee failure. In addition, insurance rates may increase because FEMA identifies on Flood Insurance Rate Maps that the structures are not certified to protect from a 1 percent annual chance flood event (FEMA n.d.).

4.3.11.3 Range of Magnitude

Levee failures can be caused by a number of factors and can also result in catastrophic effects. If a levee fails, damage to the area beyond the levee could be more significant than if the levee was not present. Levees are designed to provide a specific level of protection; flooding events could overtop the levees if these events exceeded the levee specifications. Additionally, levees can also fail if they are allowed to decay or deteriorate, so regular maintenance of levees is critical (FEMA 2021).

A levee failure or breach causes flooding in landward areas adjacent to the structure. The failure of a levee or other flood protection structure could be devastating, depending on the level of flooding for which the structure is designed and the amount of landward development present. Large volumes of water may be moving at high velocities, potentially causing severe damage to buildings, infrastructure, trees, and other large objects. Levee failures are generally worse when they occur abruptly with little warning and result in deep, fast-moving water through highly developed areas (FEMA 2021).

The environmental impacts of a levee failure can include significant water quality and debris disposal issues. Flood waters can back up sanitary sewer systems and inundate wastewater treatment plants, causing raw sewage to contaminate residential and commercial buildings and the flooded waterway. The contents of unsecured containers of oil, fertilizers, pesticides, and other chemicals get added to flood waters. Hazardous materials may be released and distributed widely across the floodplain. Water supply and wastewater treatment facilities could be offline for weeks. After the flood waters subside, contaminated and flood-damaged building materials and contents must be properly disposed of. Contaminated sediment must be removed from buildings, yards, and properties. In addition, severe erosion is likely; such erosion can negatively impact local ecosystems.

The effects of a levee failure are exacerbated when the failure occurs abruptly or with little warning and if it results in deep, fast-moving water through highly developed areas. The worst-case scenario for a levee failure in Somerset County would be the complete failure of any of the levee systems in the County. If this occurred during a flood with a 1 percent annual chance of occurrence, the failure would lead to effects consistent with those described in Section 4.3.7 (Flood, Flash Flood, and Ice Jams).

4.3.11.4 Past Occurrence

No known levee failures have been recorded in Somerset County. There have been no FEMA declarations associated with levee failure in Somerset County or the Commonwealth of Pennsylvania.

4.3.11.5 Future Occurrence

A complete levee failure is rather infrequent and typically coincides with events that cause them such as heavy rainfall, storm surge, or hurricanes. Additionally, future climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. Because levee failure is often caused by excessive rainfall, it is appropriate to relate the future vulnerability of levees directly with the potential for increased rainfall in Somerset County.

In Section 4.4, the identified hazards of concern for Somerset County were ranked for relative risk. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and reference to the Pennsylvania State HMP, the probability of occurrence for levee failure events in Somerset County is considered *unlikely*. Section 4.4 includes further information on the Pennsylvania Emergency Management Agency's (PEMA) risk factor methodology and the risk factors used to determine each hazard's risk ranking.

Effects of Climate Change

Levee failures are often a secondary effect, resulting from another hazard, such as heavy rainfall from a hurricane or tropical storm. Levees are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs (flow over time). Changes in weather patterns can have significant effects on the hydrograph used for the design of a levee. If the hydrograph changes, it is conceivable that the structure can lose some or all its designed margin of safety. Loss of designed margins of safety may cause floodwater to overtop or breach the levee more readily or create unintended loads. Such situations could lead to a levee failure. Therefore, levee characteristics and climate change trends influence a structure's potential to fail.

Since levee breaching and overtopping is often caused by excessive rainfall, it is appropriate to relate the future vulnerability of levees directly with the potential for increased rainfall in Somerset County. Somerset County is expected to experience increased precipitation due to climate change, which may likewise increase the likelihood for a levee failure to occur. In Pennsylvania, precipitation is expected to increase year-round, particularly in the winter. The eastern half of the Commonwealth, which contains Somerset County, is projected to experience 10 to 12 percent higher mean annual precipitation between 2041 and 2070, compared to historical averages from 1971 to 2000 (PEMA 2018). The west central area, including Somerset County, is expected to have the highest amounts of precipitation in the Commonwealth.

Additionally, future climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. The failure probability of low, significant, and under-designed high hazard levee may increase.

4.3.11.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets exposed and/or vulnerable within the identified hazard area. For the levee hazard, the areas protected by the Levee Systems are examined. This section evaluates and estimates the potential impact of flooding in Somerset County in the following subsections:

- Impact on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist in understanding this hazard over time

Impact on Life, Health, and Safety

Impacts of levee failure on life, health, and safety depend on several factors, including severity of the event, protection level of the level, and whether adequate warning time is provided to residents. Assumedly, the population living in or near floodplain areas and in the levee-protected area could be impacted by a failure event. To estimate the population exposed to the levee failure hazard, the levee-protected area boundary was overlaid on the 2022 ACS 5- Year Estimates U.S. Census population data in using geographic information system (GIS) technology. The U.S. Census blocks do not follow the boundaries of the levee-protected area data. When utilizing the centroids or intersects of the U.S. Census blocks with the levee failure hazard area, the population exposed may be grossly overestimated or underestimated. The limitations of these analyses are recognized, and as such, the results are used only to provide a general estimate. More information on the impact on life, health, and safety is included in Section 4.3.7, Flood, Flash Flood, and Ice Jam Hazard Profile. According to the analysis, Meyersdale Borough has 434 people located within a levee-protected, the highest number of people in the county.

Table 4.3.11-2. Population Located in Areas Protected by Levees

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population in the Aggregated Levee Area	
		Number of Persons	% of Jurisdiction Total
Addison (B)	272	0	0.0%
Addison (T)	945	0	0.0%
Allegheny (T)	669	0	0.0%
Benson (B)	139	0	0.0%
Berlin (B)	2,297	0	0.0%
Black (T)	868	0	0.0%
Boswell (B)	1,411	0	0.0%
Brothersvalley (T)	2,002	0	0.0%
Callimont (B)	52	0	0.0%
Casselman (B)	64	0	0.0%
Central City (B)	1,045	0	0.0%
Conemaugh (T)	6,759	0	0.0%
Confluence (B)	596	313	52.5%
Elk Lick (T)	2,423	80	3.3%
Fairhope (T)	85	0	0.0%
Garrett (B)	409	0	0.0%

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Population in the Aggregated Levee Area	
		Number of Persons	% of Jurisdiction Total
Greenville (T)	865	0	0.0%
Hooversville (B)	722	0	0.0%
Indian Lake (B)	314	0	0.0%
Jefferson (T)	1,313	0	0.0%
Jenner (T)	3,713	0	0.0%
Jennerstown (B)	1,182	0	0.0%
Larimer (T)	536	0	0.0%
Lincoln (T)	1,305	0	0.0%
Lower Turkeyfoot (T)	425	0	0.0%
Meyersdale (B)	2,118	434	20.5%
Middlecreek (T)	644	0	0.0%
Milford (T)	1,428	0	0.0%
New Baltimore (B)	147	0	0.0%
New Centerville (B)	118	0	0.0%
Northampton (T)	282	0	0.0%
Ogle (T)	493	0	0.0%
Paint (B)	1,122	0	0.0%
Paint (T)	3,038	0	0.0%
Quemahoning (T)	1,661	0	0.0%
Rockwood (B)	816	127	15.6%
Salisbury (B)	619	0	0.0%
Seven Springs (B)	7	0	0.0%
Shade (T)	2,342	0	0.0%
Shanksville (B)	166	0	0.0%
Somerset (B)	6,030	0	0.0%
Somerset (T)	11,775	0	0.0%
Southampton (T)	628	0	0.0%
Stonycreek (T)	2,271	0	0.0%
Stoystown (B)	410	0	0.0%
Summit (T)	1,911	9	0.5%
Upper Turkeyfoot (T)	1,073	0	0.0%
Ursina (B)	214	0	0.0%
Wellersburg (B)	148	0	0.0%
Windber (B)	3,930	376	9.6%
Somerset County (Total)	**73,802**	**1,339**	**1.8%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2024
Note: %= percent

Impact on General Building Stock

After consideration of the population exposed, the built environment was evaluated. Similar to the population, the building stock data are presented by U.S. Census block. To estimate the number of buildings and value of building stock exposed to the levee failure hazard, the levee-protected area boundary was overlaid on the Hazards U.S.-Multi-hazard (HAZUS-MH) building stock data in GIS. Using the HAZUS-MH default general building stock, the replacement cost values of the Census blocks with their centroids in the area were totaled. Approximately $209,960,744 worth of buildings and their contents are exposed to the hazard area in Confluence Borough. This represents 355 buildings (55.3 percent of total building stock in the borough).

To estimate the number of structures exposed to the levee failure hazard, the county's spatial layer of structures was overlaid with the hazard area. As described above, the U.S. Census blocks do not follow hazard area boundaries and these estimates should only be used for planning purposes.

Table 4.3.11-3. General Building Stock Located in Areas Protected by Levees

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Levee Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,465	0	0.0%	$0	0.0%
Addison (T)	2,429	$1,136,703,437	0	0.0%	$0	0.0%
Allegheny (T)	1,509	$781,809,472	0	0.0%	$0	0.0%
Benson (B)	173	$89,274,721	0	0.0%	$0	0.0%
Berlin (B)	1,392	$895,269,284	0	0.0%	$0	0.0%
Black (T)	1,515	$834,474,737	0	0.0%	$0	0.0%
Boswell (B)	826	$474,400,294	0	0.0%	$0	0.0%
Brothersvalley (T)	3,330	$2,064,465,986	0	0.0%	$0	0.0%
Callimont (B)	55	$30,930,873	0	0.0%	$0	0.0%
Casselman (B)	119	$41,086,890	0	0.0%	$0	0.0%
Central City (B)	912	$442,954,504	0	0.0%	$0	0.0%
Conemaugh (T)	6,338	$3,880,986,714	0	0.0%	$0	0.0%
Confluence (B)	753	$379,399,641	355	47.1%	$209,960,744	55.3%
Elk Lick (T)	3,334	$1,853,364,019	66	2.0%	$45,455,143	2.5%
Fairhope (T)	304	$114,953,744	0	0.0%	$0	0.0%
Garrett (B)	377	$163,199,308	0	0.0%	$0	0.0%
Greenville (T)	1,145	$619,817,620	0	0.0%	$0	0.0%
Hooversville (B)	581	$284,259,840	0	0.0%	$0	0.0%
Indian Lake (B)	1,148	$775,063,497	0	0.0%	$0	0.0%
Jefferson (T)	3,395	$1,763,883,579	0	0.0%	$0	0.0%
Jenner (T)	5,016	$2,687,221,806	0	0.0%	$0	0.0%
Jennerstown (B)	641	$404,635,410	0	0.0%	$0	0.0%
Larimer (T)	839	$411,045,802	0	0.0%	$0	0.0%
Lincoln (T)	1,981	$1,209,799,393	0	0.0%	$0	0.0%
Lower Turkeyfoot (T)	1,168	$528,650,209	0	0.0%	$0	0.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in the Aggregated Levee Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Meyersdale (B)	1,529	$888,796,373	325	21.3%	$149,140,621	16.8%
Middlecreek (T)	2,860	$1,361,478,007	0	0.0%	$0	0.0%
Milford (T)	2,434	$1,414,705,761	0	0.0%	$0	0.0%
New Baltimore (B)	174	$77,842,527	0	0.0%	$0	0.0%
New Centerville (B)	171	$104,468,378	0	0.0%	$0	0.0%
Northampton (T)	763	$355,524,703	0	0.0%	$0	0.0%
Ogle (T)	687	$335,973,192	0	0.0%	$0	0.0%
Paint (B)	553	$294,837,290	0	0.0%	$0	0.0%
Paint (T)	3,474	$2,072,241,492	0	0.0%	$0	0.0%
Quemahoning (T)	2,464	$1,472,027,871	0	0.0%	$0	0.0%
Rockwood (B)	619	$349,683,802	117	18.9%	$77,625,978	22.2%
Salisbury (B)	639	$345,399,685	0	0.0%	$0	0.0%
Seven Springs (B)	82	$139,517,399	0	0.0%	$0	0.0%
Shade (T)	3,461	$1,759,474,604	0	0.0%	$0	0.0%
Shanksville (B)	178	$97,994,103	0	0.0%	$0	0.0%
Somerset (B)	3,433	$3,277,246,043	0	0.0%	$0	0.0%
Somerset (T)	8,899	$6,489,508,286	0	0.0%	$0	0.0%
Southampton (T)	1,001	$469,896,734	0	0.0%	$0	0.0%
Stonycreek (T)	3,547	$1,868,134,699	0	0.0%	$0	0.0%
Stoystown (B)	266	$142,664,600	0	0.0%	$0	0.0%
Summit (T)	3,085	$1,765,406,355	10	0.3%	$4,212,906	0.2%
Upper Turkeyfoot (T)	2,126	$1,035,009,396	0	0.0%	$0	0.0%
Ursina (B)	279	$118,221,649	0	0.0%	$0	0.0%
Wellersburg (B)	261	$117,923,548	0	0.0%	$0	0.0%
Windber (B)	2,673	$1,756,688,270	270	10.1%	$146,483,807	8.3%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**1,143**	**1.3%**	**$632,879,199**	**1.3%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2024
Note: % = Percent

Impact on Critical Facilities

In addition to considering general building stock at risk, the hazard risk for critical facilities, utilities, and user-defined facilities was evaluated. There are three critical facilities in Somerset County located within the hazard area. Table 4.3.11-4 provides a breakdown of the number of lifelines by category within the levee protected.

Table 4.3.11-4 Lifelines Located in Areas Protected by Levees

FEMA Lifeline Category	Number of Lifelines	Number of Lifelines Located in Areas Protected by Levees
Communications	54	4
Energy	14	0
Food, Water, Shelter	0	0
Hazardous Materials	82	1
Health and Medical	3	1
Safety and Security	134	5
Transportation	390	1
Water Systems	0	0
Other Critical Facilities	36	0
Somerset County (Total)	**713**	**12**

Source: Somerset County 2024; USACE 2024

Impact on the Economy

Section 4.3.7 (Flood, Flash Flood, and Ice Jams) includes more information regarding the impact of levee failure and flooding on the economy in Somerset County.

Impact on the Environment

The environmental impacts of a levee failure result in significant water quality and debris disposal issues. Flood waters will back up sanitary sewer systems and inundate wastewater treatment plants, causing raw sewage to contaminate residential and commercial buildings and the flooding waterway. The contents of unsecured containers of oil, fertilizers, pesticides, and other chemicals get added to flood waters. Water supplies and wastewater treatment could be offline for weeks. After the flood waters subside, contaminated and flood-damaged building materials and contents must be properly disposed. Contaminated sediment must be removed from buildings, yards, and properties (USACE 2018)

Future Changes That May Impact Vulnerability

Future Growth and Development

As discussed in Section 2.4, areas targeted for future growth and development have been identified across Somerset County. Any areas of growth could be impacted by the flood hazard if the areas are within identified hazard areas. The county intends to discourage development in vulnerable areas or to encourage higher regulatory standards on the local level.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation, but also by the type, frequency, and intensity of weather events. Both globally and at the local level, climate change can alter the prevalence and severity of extremes such as flood events. While predicting changes of flood events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (EPA 2023)

The Pennsylvania Department of Environmental Protection (PADEP) was directed by the Climate Change Act (Act 70 of 2008) to initiate a study of potential impacts of global climate change on the Commonwealth. The

January 2021 Pennsylvania Climate Impact Assessment's main findings indicate that Pennsylvania is very likely to undergo increased temperatures in the 21st century. An increase in variability of temperature and precipitation may lead to increased frequency and/or severity of storm events. An average increase of 5.9 º F and an increase of 8 percent average annual precipitation is projected for mid-century time periods. Summer floods and general stream flow variability are projected to increase due to increased precipitation. Even with the anticipated increase in winter precipitation occurring as rain rather than snow, increased winter temperatures and a reduced snowpack may decrease rain-on-snow events and thus affect major flooding events in Pennsylvania. This conclusion regarding trends toward increased temperatures, however, remains speculative until further studies can validate it. Future improvements in modeling smaller-scale climatic processes are expected and will lead to improved understanding of the ways in which the changing climate will alter temperature, precipitation, storms, and flood events in Pennsylvania (ICF 2021).

4.3.11.7 Additional Next Steps

For future plan updates, levee failure inundation areas may be used to estimate potential impacts to life, buildings, and critical assets.

4.3.12 Opioid Addiction Response

4.3.12.1 Hazard Description

Opioid is a broad term including opiates, which are drugs naturally extracted from types of poppy plants, and narcotics that are generally synthetically made to mimic opiates (PEMA 2023). As determined by the Planning Team and planning partners, opioid addiction is a hazard of concern for Somerset County.

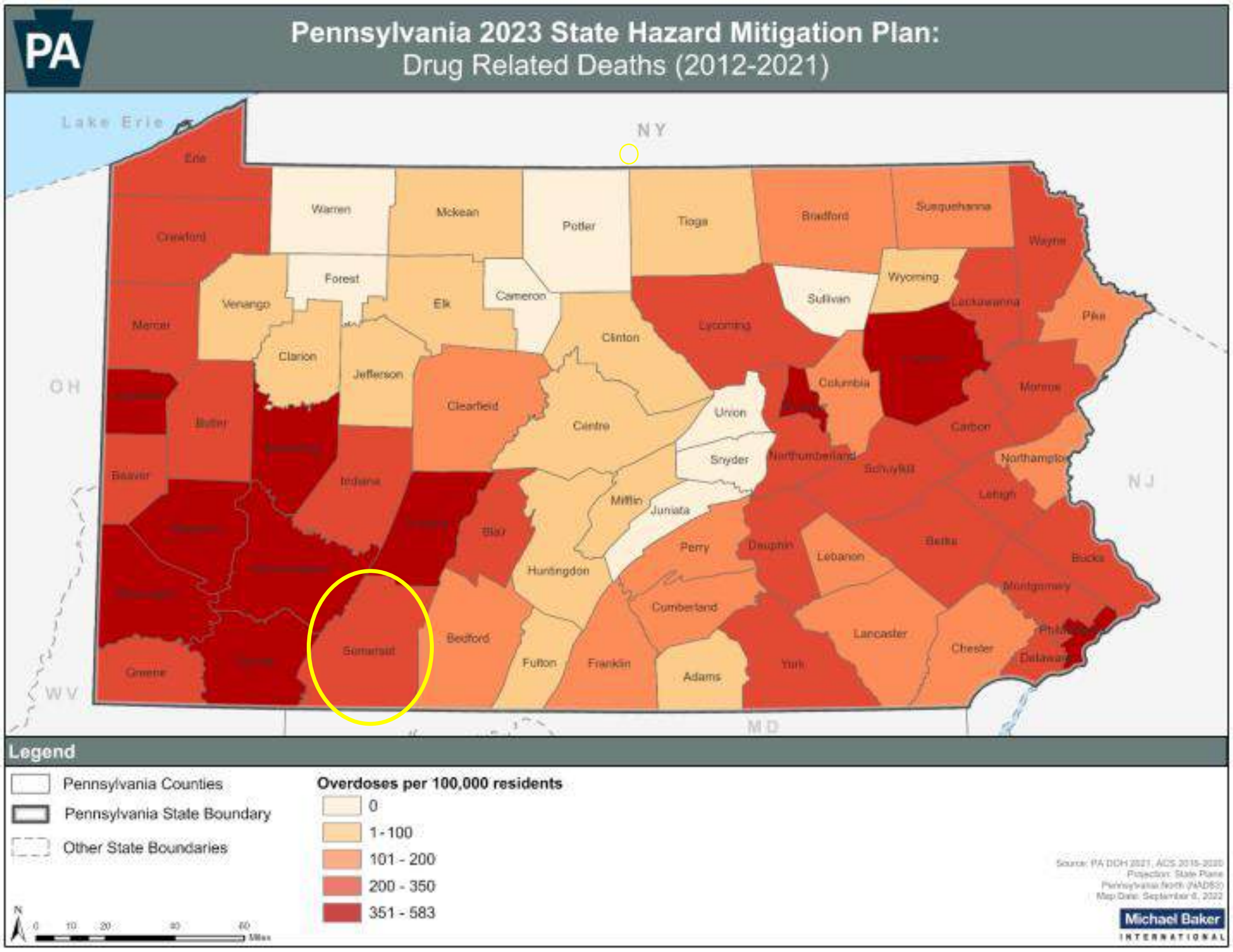
The Centers for Disease Control and Prevention (CDC) defines the following as the three most common types of opioids:

- **Prescription Opioids** are medications prescribed by doctors for pain treatment. Prescription opioids can be synthetic (methadone, oxycodone [OxyContin], or hydrocodone [Vicodin]) or natural (morphine).
- **Fentanyl** is a synthetic opioid that is 50 to 100 times more powerful than morphine and used for treating severe pain. Illegally made and distributed fentanyl is becoming more prevalent.
- **Heroin** is an illegal, highly addictive natural opioid processed from morphine that is also becoming more commonly used in the United States. It is commonly used along with other substances including cocaine and prescription opioids (PEMA 2023).

An opioid addiction is when an individual is physically dependent upon opioids to function. Opioids react with the nervous system by blocking the ability to feel pain and cause a sense of euphoria (PEMA 2020). Those who abuse opioids generally build a tolerance, requiring them to take more of the opioid to achieve the same effect.

Pennsylvania is experiencing an unprecedented epidemic of drug abuse and drug-related deaths, affecting residents throughout the state. Pennsylvania is typically among the hardest-hit states from total drug overdose deaths each year, ranking fourth in 2020 behind California, Florida, and New York (PEMA 2023). In 2023, 4,719 drug overdose deaths were identified statewide which is a 9 percent decrease compared to 2022 (ODSMP 2024). Of those deaths, 82.9 percent have been confirmed to be opioid-related (ODSMP 2024). Figure 4.3.12-1 shows the overall number of drug-related deaths per 100, 000 people in each Pennsylvania county between 2012 and 2020.

Figure 4.3.12-1. Number of Drug-Related Deaths Per 100,000 People



Source: (PEMA 2023)
Note: The yellow circle indicates the location of Somerset County

In 2017, the U.S. Drug Enforcement Administration (DEA) Philadelphia Division and the University of Pittsburgh prepared a document titled, "Analysis of Overdose Deaths in Pennsylvania, 2016" to assist law enforcement's efforts to identify and combat drug suppliers, and ultimately drug abuse and related overdoses (DEA 2017). The drugs included in the analysis (listed in Table 4.3.12-1) were selected based on (1) law enforcement intelligence regarding the frequency of abuse and diversion, and (2) the most common drugs present in drug-related overdose deaths according to national public safety and public health sources.

Table 4.3.12-1. Drugs Included in Analysis of Drug-Related Overdose Deaths, Pennsylvania, 2017

Drug Category	Substances Included in Analysis		
Benzodiazepines	Alprazolam Chlordiazepoxide Clonazepam Delorazepam	Diazepam Estazolam Flurazepam Lorazepam	Midazolam® Oxazepam Temazepam
Cocaine			
Fentanyl/Fentanyl-Related Substances (FRS)/Non-Prescription Synthetic Opioids (NPSO)	3-Methylfentanyl 4-Methoxy-Butyryl Fentanyl Acetyl Fentanyl Acryl Fentanyl	Carfentanil Fentanyl Fluorobutyrfentanyl Fluorofentanyl	Furanyl Fentanyl Para-Fluoro-Isobutyryl Fentanyl/FIBF Sufentanil U-47700
Heroin			
Other Illicit Drugs	Lysergic Acid Diethylamide (LSD) Methylenedioxy-amphetamine (MDA) 3,4-Methylenedioxymethamphetamine (MDMA)		Methamphetamine Phencyclidine (PCP)
Prescription Opioids	Hydrocodone Hydromorphone Meperidine	Morphine Oxycodone Oxymorphone	Tapentadol Tramadol

Source: (DEA 2017)

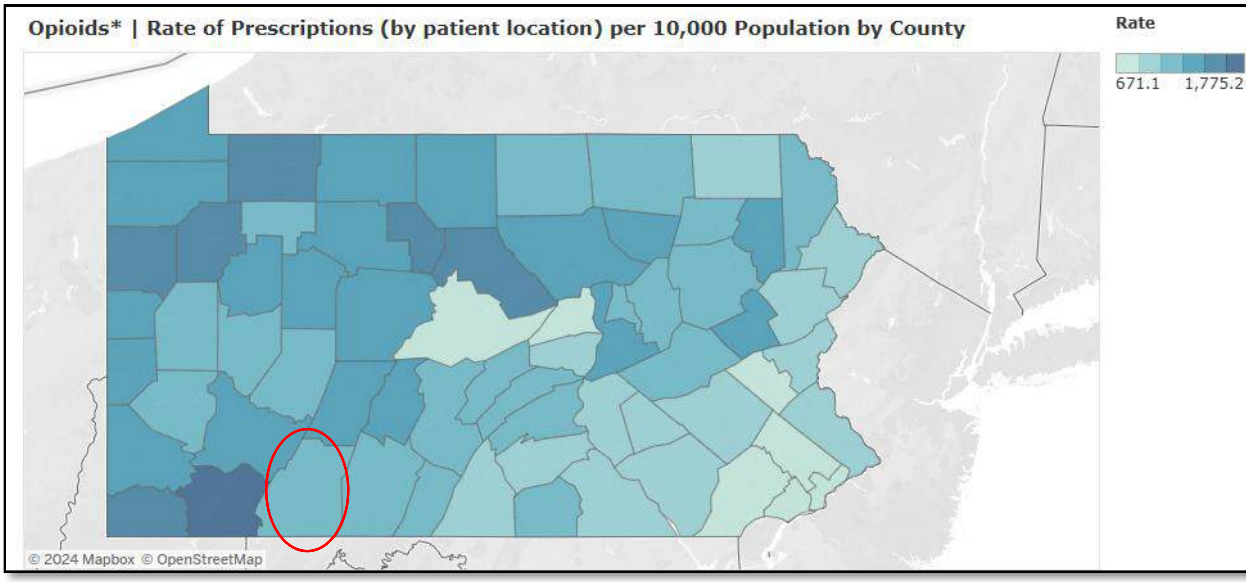
4.3.12.2 Location and Extent

Opioid addiction impacts the entire state. The PDH Office of Drug Surveillance and Misuse Prevention (ODSMP) tracks both prescriptions (the number of prescriptions written by a medical professional) and dispensations (the amount of medication provided by pharmacists). Figure 4.3.12-2 illustrates the rate of opioid prescriptions per 10,000 residents in each county. Somerset County circled in red, has a moderate rate (1,187.2 per 10,000 population) of opioid prescriptions compared to the rest of the state (PDH-ODSMP 2024).

Although people under the age of 35 do not have the highest access to prescriptions, they are still particularly vulnerable to the opioid crisis. A contributing factor to this heightened susceptibility to prescription abuse could be that brain development is not complete until the age of 25 (Arain M 2013). During the brain development stage, substance use is increasingly more impactful on behavior and health. Conversely, those 65 and older have the most access to opioid drugs through a high prescription and dispensation rate but have the lowest vulnerability to opioid addiction due to the lifespan rate (PDH-ODSMP 2024). Figure 4.3.12-3 illustrates the distribution by age of the total number of dispensations in Somerset County for the second quarter (Q2) of 2024. Figure 4.3.12-4 illustrates the distribution by age of the total number of prescriptions in Somerset County in 2024 Q2.

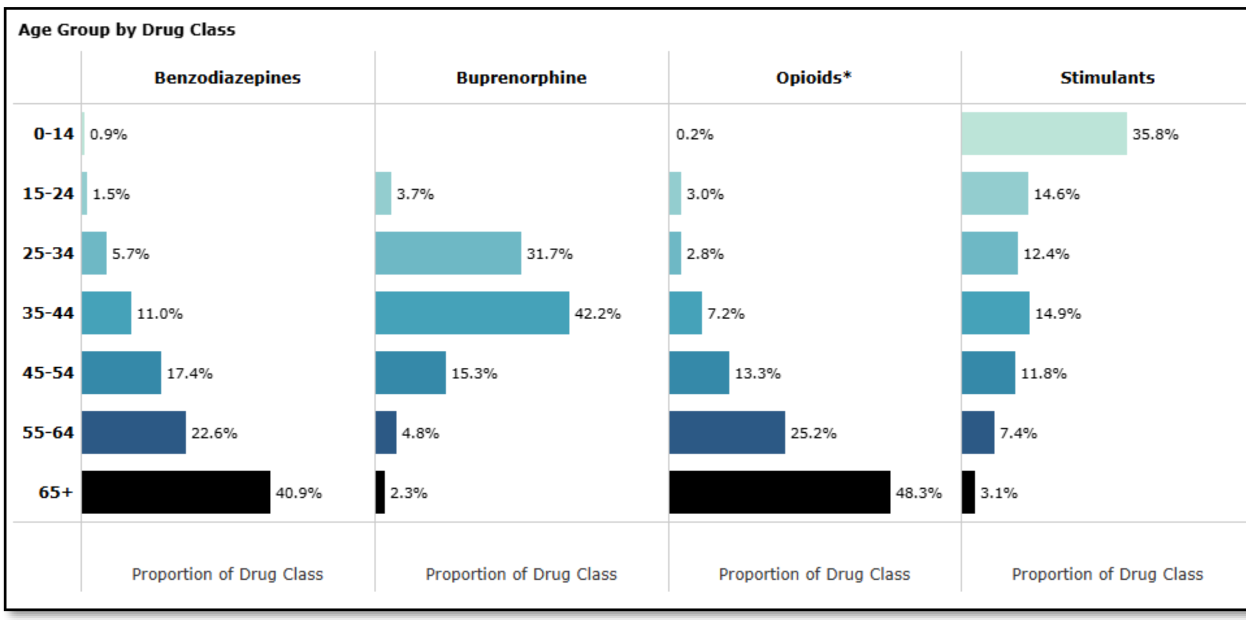
PDH ODSMP has found opioids were involved in 83.3 percent of drug overdose deaths across the state in 2023. At least 76.7 percent of these drug overdose deaths resulted from fentanyl. See Figure 4.3.12-5 for drug classes contributing to overdose mortality across the state.

Figure 4.3.12-2. Rate of Opioid Prescriptions per 10,000 Population by County



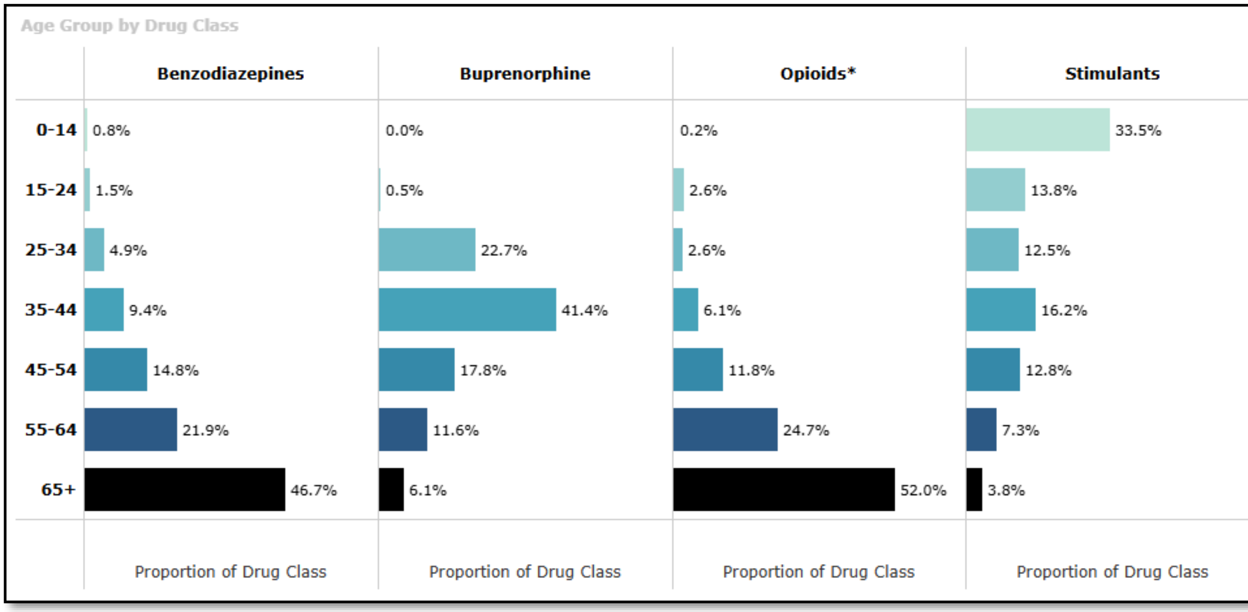
Source: PDH-ODSMP 2024
Note: Somerset County indicated by red oval

Figure 4.3.12-3. Number of Dispensations by Age for Somerset County in 2024 Q2



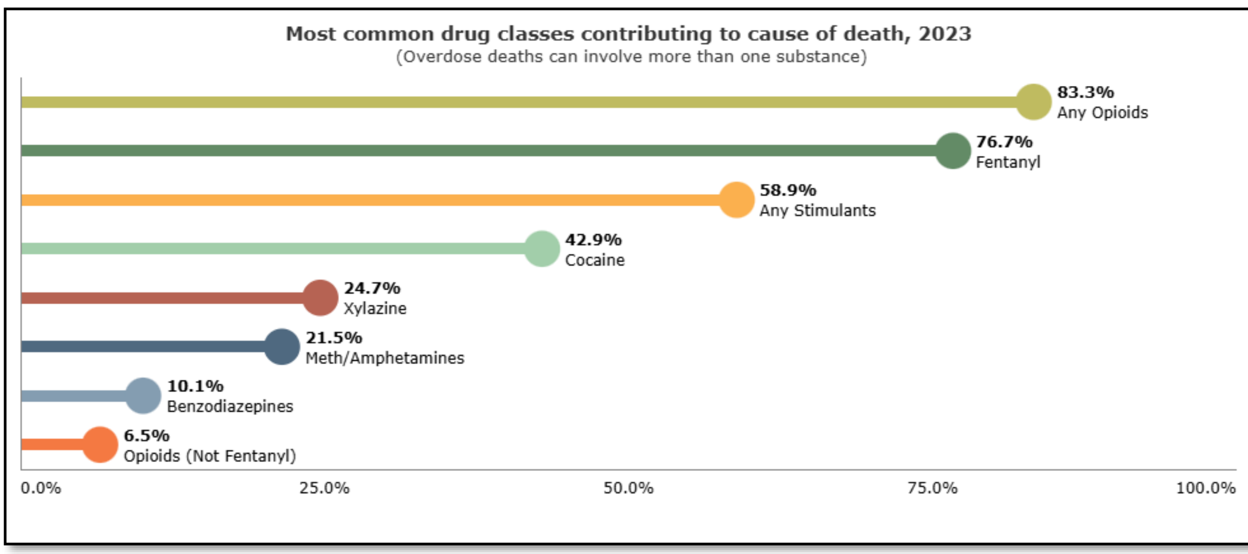
Source: PDH-ODSMP 2024
Note: This graphic shows the number of dispensations by pharmacy locations.

Figure 4.3.12-4. Number of Prescriptions by Age for Somerset County in 2024 Q2



Source: PDH-ODSMP 2024
Note: This graphic shows the number of dispensations by patient location.

Figure 4.3.12-5. Most Common Drug Classes Contributing to Cause of Death in Pennsylvania, 2023



Source: PDH-ODSMP 2024

4.3.12.3 Range of Magnitude

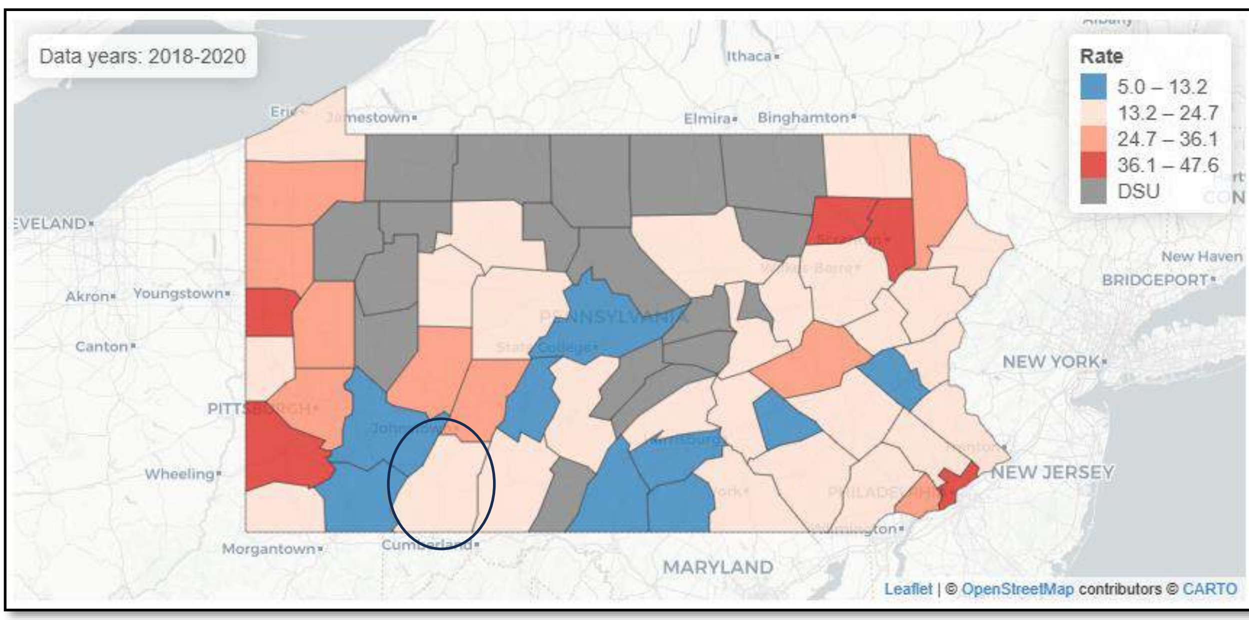
Opioid addiction often develops over time in a three-step process—opioid tolerance, opioid dependence, and opioid addiction—and can go undetected until it is too late:

- **Opioid tolerance** is defined by the CDC as a person who has a "reduced response to medication" and in turn, "requires more opioids to experience the same effect" (CDC 2021). It is not always easy to recognize opioid tolerance, but many people can comfortably stop the usage of opioids during this phase.
- **Opioid dependence** is when the "body adjusts its normal functioning around regular opioid use" (CDC 2021). When a person is in this phase, it is more difficult to stop opioid usage as it often will cause "unpleasant" physical symptoms to occur (CDC 2021). Sometimes rehabilitation and hospitalization are needed to quit opioids at this stage of the process.
- **Opioid addiction** is the last phase and most dangerous to overcome. It is often called "opioid use disorder." It occurs when a person is physically and mentally unable to stop the usage of opioids (CDC 2021). Often, the person who presents opioid addiction struggles with social problems and upholding obligations. This stage is most dangerous and increases the risk of withdrawal. Generally, a person with opioid addiction will need further medical assistance and rehabilitation to return to normal

4.3.12.4 Past Occurrence

PDH data show that Somerset County has one of the lower rates of opioid overdose mortality in the state, with 18.9 deaths per 100,000 residents between 2018 and 2020, as shown in Figure 4.3.12-6 (PDH 2020). This rate is up from the 2017 to 2019 period when the opioid mortality rate was 17.1 deaths per 100,000 residents.

Figure 4.3.12-6. Opioid Overdose Death Rate, 2018 to 2020



Source: PDH 2020

Note: Somerset County is indicated by a black oval.

Publicly available data on the annual number of fatal overdoses includes not only opioid-related deaths but all deaths related to substance use (excluding alcohol) (ODSMP 2024). According to the data, overdose deaths increased from 2014 to 2022. However, preliminary data indicates a decrease in 2023 and 2024. For detailed information, please refer to Table 4.3.12-2.

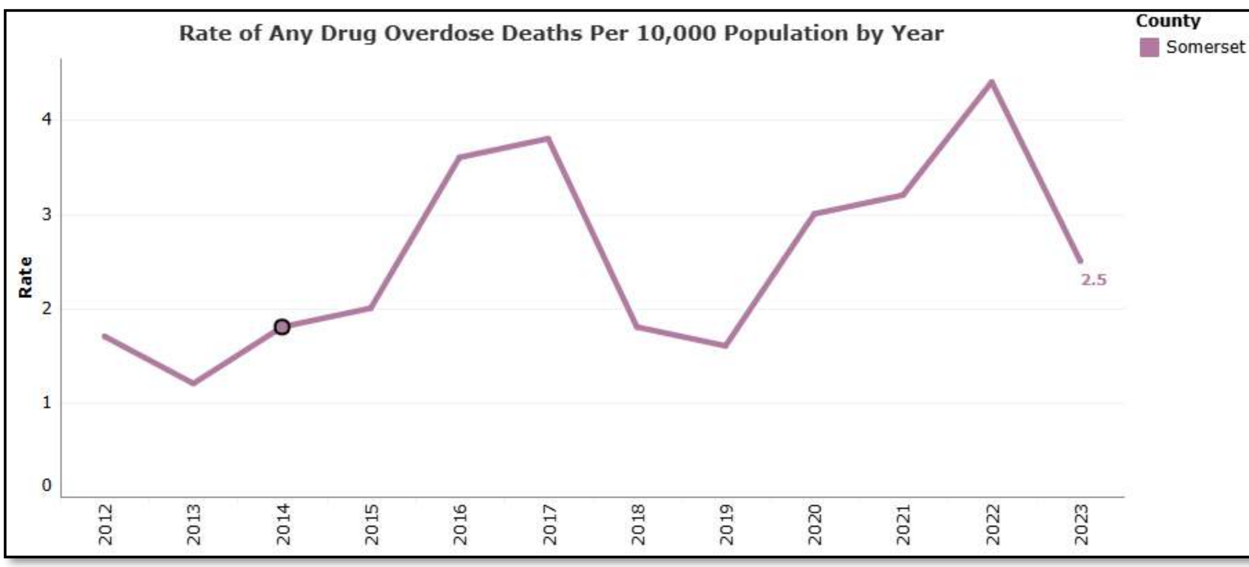
Table 4.3.12-2. Accidental Drug-Related Deaths, Somerset County, Pennsylvania 2014–2024

Year	Drug-Related Deaths
2014	14
2015	15
2016	27
2017	28
2018	13
2019	12
2020	22
2021	23
2022	32
2023*	18
2024*	12

Source: (ODSMP 2024)
*Note: * = Counts are preliminary*

Figure 4.3.12-7 shows the changes in overdose death rates per 10,000 population from 2012 to 2023 for Somerset County. In 2023, Somerset County's rate was 2.5 deaths per 10,000 persons (ODSMP 2024).

Figure 4.3.12-7. Any Drug-Related Overdose Deaths, Somerset County, 2012–2023



Source: (ODSMP 2024)

4.3.12.5 Future Occurrence

One of the most important components in reducing drug-related deaths is to prevent initial drug use; as such, the impact of education and prevention strategies in use today are geared to reduce the number of overdose deaths that will be shown in future years. The DEA Philadelphia Field Division will continue efforts, in conjunction with law enforcement and public health partners, to define and address the factors impacting the availability and abuse of illicit drugs and diverted pharmaceuticals in Pennsylvania, which will ultimately impact the number of overdose deaths.

Future occurrences of substance use and misuse, overdose, and fatalities are ever-changing as the state moves forward with overdose prevention initiatives. In January 2018, Governor Tom Wolf declared Pennsylvania's opioid addiction epidemic a disaster emergency. This declaration enhanced coordination and data collection between state and local responders, improved tools for families and first responders, and expanded treatment access. Naloxone, a lifesaving drug that reverses the effects of a drug overdose, has become more available as a result. In addition, a new Opioid Coordination Group was housed within the Pennsylvania Emergency Management Agency (Commonwealth of Pennsylvania 2018). These measures may have contributed to the large decreases in deaths from 2017-2019, yet deaths increased to similar levels to 2017 in both 2020 and 2021.

These increases may not be the fault of inadequate policies, but instead an unfortunate consequence of how the COVID-19 pandemic increased opioid and stimulant use across the country (PEMA 2023). Research has documented that isolation and solitude negatively impact the experience of those in recovery and the survival of those with substance use disorder frequently depends upon maintaining social networks (Roe, et al. 2021). In addition to increased usage, the delivery and effectiveness of prevention and treatment programs may have been severely impacted by the pandemic. Our understanding of the factors, demographics, and substances involved in this crisis is constantly evolving, and treatments should reflect this (PEMA 2023).

The best available data on opioid-related events was used to calculate the probability of future such events in the County. Information from the PDH, and the 2023 Commonwealth of Pennsylvania HMP were used to identify the number of events that occurred between 2018 and 2023. Table 4.3.12-3 shows these statistics, as well as the estimated percent chance of an incident occurring in a given year.

Table 4.3.12-3. Probability of Future Opioid Events

Hazard Type	Number of Occurrences Between 2014 and 2024	% Chance of Occurrence in Any Year
Opioid Response Events	216	100%

Source: (PEMA 2023) (ODSMP 2024)

The identified hazards of concern for Somerset County were ranked for relative risk in Section 4.4 of this plan. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records, the probability of occurrence of drug overdose events in Somerset County is considered *highly likely*. Section 4.4 provides further information on PEMA's risk factor methodology and the risk factors used to determine each hazard's risk rank.

Effects of Climate Change

The probability for climate change to have impacts on opioid addiction is very low. At the very most, secondary impacts through changes such as increased frequency of natural disasters and storm events may have influence on people who suffer from opioid addiction, affecting the frequency with which they use opioids.

4.3.12.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed and potentially vulnerable to the identified hazard. The following sections evaluate and estimate the potential impact of drug overdose deaths on Somerset County, including:

Impact on (1) life, health, and safety; (2) general building stock and critical facilities; (3) economy; (4) the environment; and (6) future growth and development (7) Effects of climate change on vulnerability.

Impact on Life, Health, and Safety

General Population

Opioid use disorder has significant life, health, and safety impacts on the residents of Somerset County. Emergency medical services (EMS) and other emergency and medical service providers working in direct patient care are vulnerable to fentanyl exposure (PEMA 2023). According to DEA, it only takes 2 to 3 milligrams of fentanyl for respiratory depression, arrest, and even death to occur. Fentanyl is difficult to differentiate from other narcotics and powdered substances, therefore first responders take extra precautions when dealing with calls related to drug abuse (DEA 2022). The DEA recommends that all first responders carry personal protection equipment in case of fentanyl exposure.

Socially Vulnerable Population

A 2020 study found that poverty, disability, and educational attainment are key indicators of the risk of death due to opioid overdose across the United States. Unemployed residents who had a disability or had obtained only a high school degree were at higher risk of a fatal overdose than their peers (Altekruse, et al. 2020). Somerset County has 10.2 percent (7,513 persons) of its total population that is below the poverty level and may be at higher risk for opioid use disorder and potentially fatal overdose.

Opioid addiction is also able to be passed along from a woman to a child in her womb. This condition is known as neonatal abstinence syndrome (PEMA 2023). According to the National Institute on Drug Abuse, neonatal abstinence syndrome increased in 2012, with over 22,000 babies born with this condition and $1.5 billion in hospital charges nationwide (Uma M. Reddy 2018).

General Building Stock and Critical Facilities

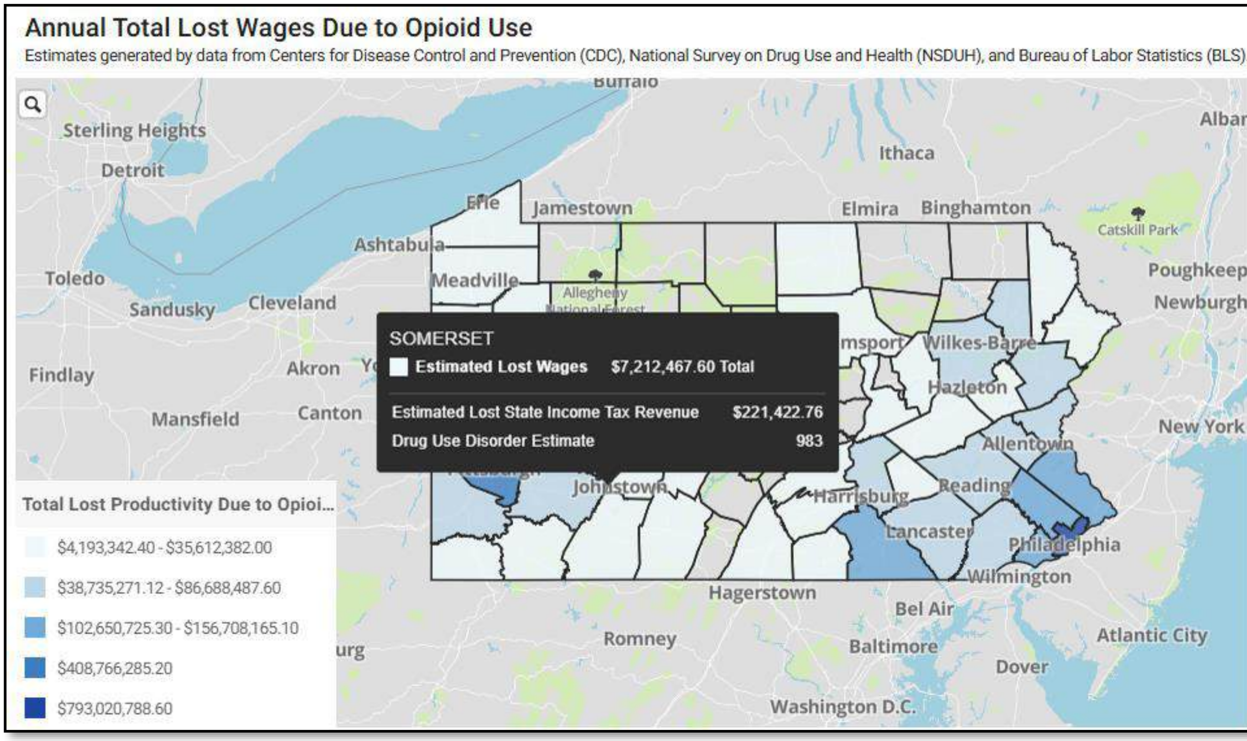
No structures are anticipated to be affected directly by drug-related overdose deaths.

Economy

Opioid addiction can directly impact the economy through unscheduled worker absenteeism, reduced productivity, hospitalizations that cost days of work, unemployment, and exits from the labor force (PDH; University of Pittsburgh n.d.).

On average, substance use disorder has been estimated to reduce total per-person productivity by 17 percent. Because wages are tied to productivity, PDH and University of Pittsburgh School of Public Health researchers multiplied the 17 percent reduction in productivity associated with substance use disorder by the estimated number of people with substance use disorder and by the annual average wage in each Pennsylvania county (PDH; University of Pittsburgh n.d.). Based on that calculation, Somerset County lost $7.2 million in wages due to opioid use disorder in 2020; this is a downward trend, nearly $1 million less than $8.2 million in 2019. See Figure 4.3.12-8 for 2020 annual lost wages (PDH; University of Pittsburgh n.d.).

Figure 4.3.12-8. Annual Total Lost Wages Due to Opioid Use, 2020



Source: (PDH; University of Pittsburgh n.d.)
Note: Estimates based on counts less than 11 are not displayed.

Environment

According to a recent study, environmental scientists at the Cary Institute of New York found traces of opioids and other drugs in streams, rivers, and lakes. These traces came from human urine and feces, and medications that have been flushed down the toilet. However, the ecological and environmental impacts are unknown. The U.S. Environmental Protection Agency (EPA) suggests that while the risks of pharmaceuticals found in wastewater, ambient water, and drinking water are low, further research is needed (EPA 2023).

Future Changes That May Impact Vulnerability

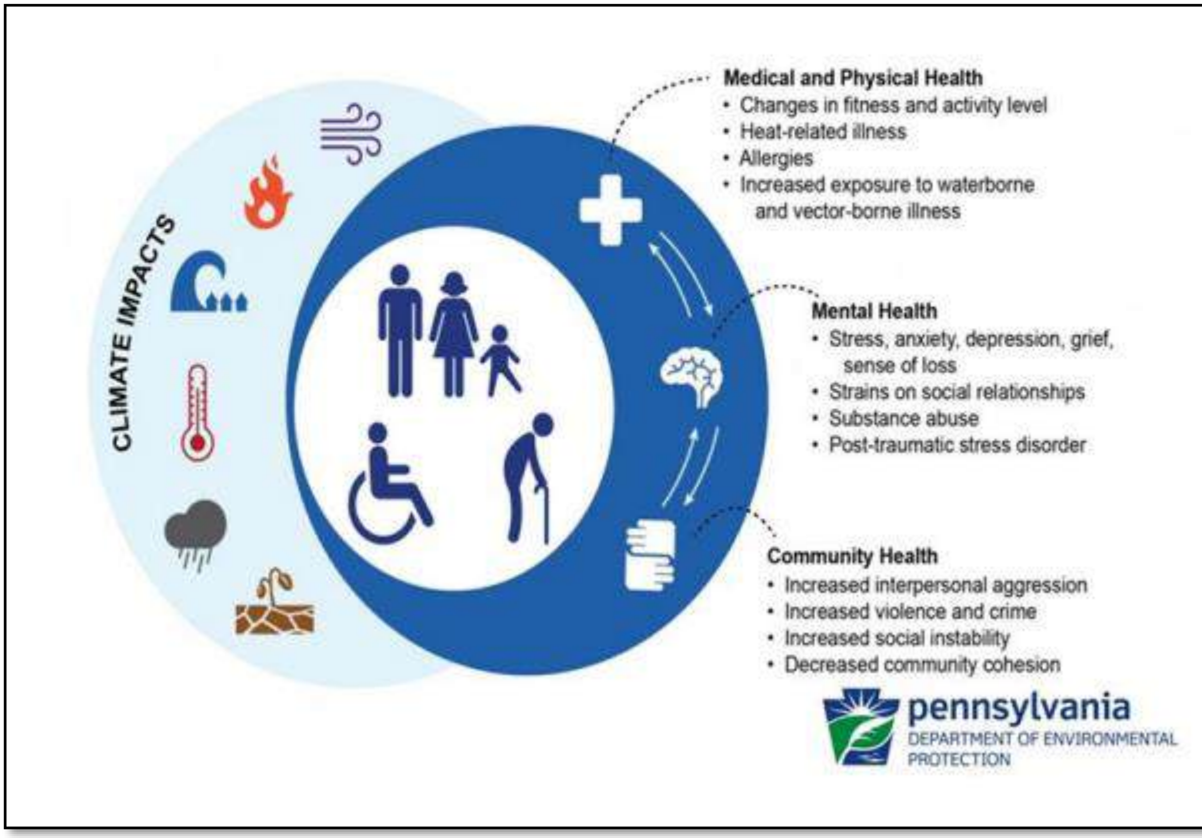
Future Growth and Development

Areas targeted for potential future growth and development in the next 5 to 10 years have been identified across Somerset County (further discussed in Section 2.4 of this HMP). Any areas of growth could be potentially impacted by the drug overdose hazard because the entire county is exposed and potentially vulnerable.

Effect of Climate Change on Vulnerability

The impacts of climate change, such as increasing temperatures, flooding, and severe storms, are expected to affect mental and community health by increasing stress, straining social relationships, increasing social instability, and decreasing community cohesion (see Figure 4.3.12-9) (PEMA 2023). Negative impacts on mental and community health have the potential to contribute to opioid use.

Figure 4.3.12-9. Impacts of Climate Change on Public Health



Source: PEMA 2023

4.3.12.7 Additional Data and Next Steps

For the HMP update, any additional information regarding localized concerns and past impacts will be collected and analyzed. These data will be developed to support future revisions to the plan. Future mitigation efforts could include building on existing state, county, and local efforts.

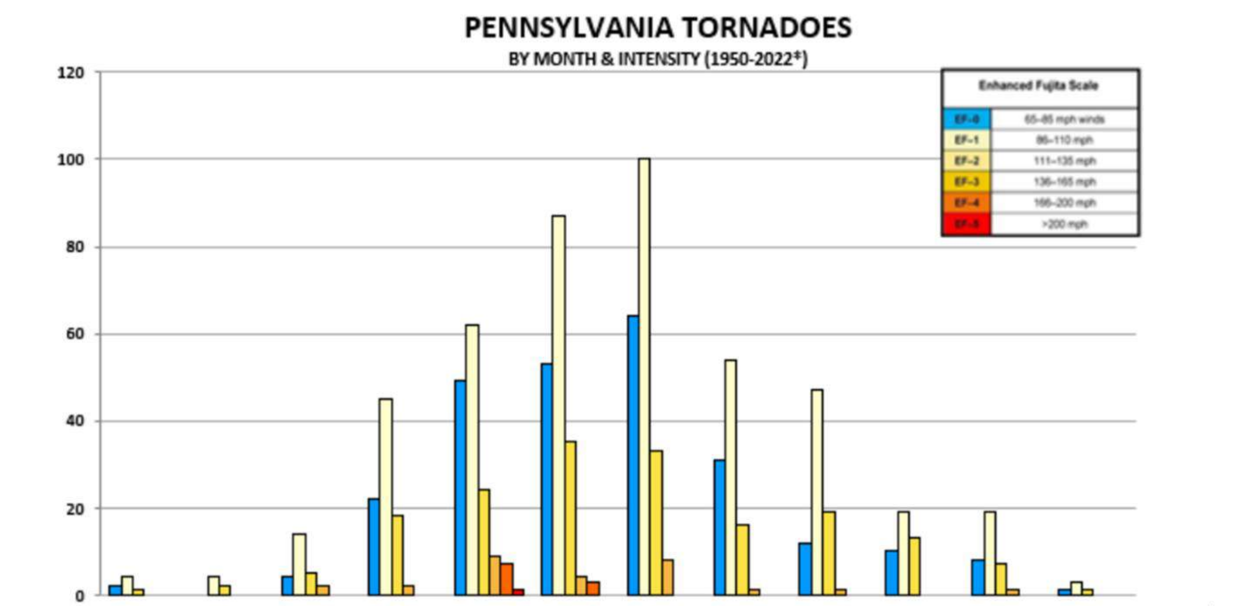
4.3.13 Tornado, Windstorm

4.3.13.1 Hazard Description

This section provides a profile and vulnerability assessment of the tornado and windstorm hazard. The wind hazard includes various types of wind events, including windstorms and tornadoes, which are defined below.

A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 250 miles per hour (mph). Damage paths can be greater than 1 mile wide and 50 miles long (NOAA/NWS 2015). Tornadoes typically develop from either a severe thunderstorm or hurricane as cool air rapidly overrides a layer of warm air. Tornadoes typically move at speeds between 30 and 125 mph and can generate combined wind speeds (forward motion and speed of the whirling winds) exceeding 300 mph. The ground time of a tornado can last up to several hours; however, the general ground time is between 5 to 10 minutes (NOAA/NWS 2015). Tornadoes can occur at any time of the year, with peak seasons at different times for different states (NSSL 2013). According to the National Weather Service (NWS), tornadoes in Pennsylvania are most frequent between May and July (NWS, Months of Peak Tornado Occurance n.d.).

Figure 4.3.13-1Pennsylvania Tornado Magnitude and Frequency by Month



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
EF-0	2	0	4	22	49	53	64	31	12	10	8	1	256
EF-1	4	4	14	45	62	87	100	54	47	19	19	3	458
EF-2	1	2	5	18	24	35	33	16	19	13	7	1	174
EF-3	0	0	2	2	9	4	8	1	1	0	1	0	28
EF-4	0	0	0	0	7	3	0	0	0	0	0	0	10
EF-5	0	0	0	0	1	0	0	0	0	0	0	0	1

Data Source: NWS Storm Prediction Center, NWS Public Information Statements
Note: Note Fujita (F) Scale upgraded to Enhanced Fujita (EF) Scale in 2007
**2015-2022 Data are Preliminary*

Source: PEMA 2023

Wind is air moving from areas of higher pressure to areas of lower pressure, and this horizontal movement of air (as opposed to an air current) is caused by uneven heating of the Earth's surface. It occurs at all scales, from local breezes generated by heating of land surfaces and lasting tens of minutes to global winds resulting from solar heating of the Earth (USEA 2023). Types of damaging winds include straight-line winds, downdrafts, downbursts, microbursts, gust fronts, derechos, as well as others (NOAA/NSSL 2012). Frequently, these types of wind events can be detected on doppler radar by what is referred to as a “bow echo” or “hook echo.” These radar signatures as well as the aforementioned damaging wind types are further described below.

Straight-line Wind is any thunderstorm wind not associated with rotation (e.g., tornadic winds). Straight-line winds are movements of air from areas of higher pressure to areas of lower pressure—the greater the difference in pressure, the stronger the winds (NOAA/NSSL 2012).

A Downdraft is a small-scale column of air that rapidly sinks toward the ground and usually results in a downburst (NOAA/NSSL 2012).

A Downburst is a strong downdraft with horizontal dimensions larger than 2.5 miles, resulting in an outward burst or damaging winds on or near the ground. It is usually associated with thunderstorms but can occur with rainstorms too weak to produce thunder (NOAA/NSSL 2012).

A Microburst is a small, concentrated downburst that produces an outward burst of damaging winds near the surface. It is typically short-lived, lasting only five to ten minutes, with maximum wind speeds of up to 168 miles per hour (mph) (NOAA/NSSL 2012).

A Gust Front is the leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. It is characterized by a wind shift, temperature drop, and gusty winds ahead of a thunderstorm (NOAA/NSSL 2012).

A Derecho is a widespread and long-lived windstorm associated with thunderstorms that are often curved. A derecho generally consists of several microbursts, downbursts, and downburst clusters, and these types of wind events are unique in that they travel great distances. “By definition, if the wind damage swath extends more than 240 miles and includes wind gusts of at least 58 mph or greater along most of its length, then the [wind] event may be classified as a derecho.” (NOAA/NSSL 2012).

A Bow Echo is a radar echo that is linear but bent outward in a bow shape. Damaging straight-line winds often occur near the center of a bow echo (crest). Bow echoes can be more than 200 kilometers long, last between three and six hours, and produce extensive swaths of wind damage at the ground (AMS 2012).

A Hook Echo is a radar echo that is the most recognized and well-known radar signature for a tornadic supercell. This “hook-like” feature occurs when the strong counter-clockwise winds circling the mesocyclone (rotating updraft) are strong enough to wrap precipitation around the rain-free updraft area of the storm.

Table 4.3.16-1 lists wind classifications used by the National Weather Service (NWS) used in their forecast discussions.

Table 4.3.13-1 NWS Wind Descriptions

Descriptive Term	Sustained Wind Speeds
Light/ light and variable wind	0-5 mph
None	5-10 mph / 10-15 mph/ 10-20 mph
Breezy (mild weather) Brisk or Blustery (cold weather)	15-25 mph
Windy	20-30 mph
Very Windy	30-40 mph
Strong, dangerous, high, damaging (High Wind Warning criteria)	40 mph or greater

Source: (NOAA/NWS 2009)

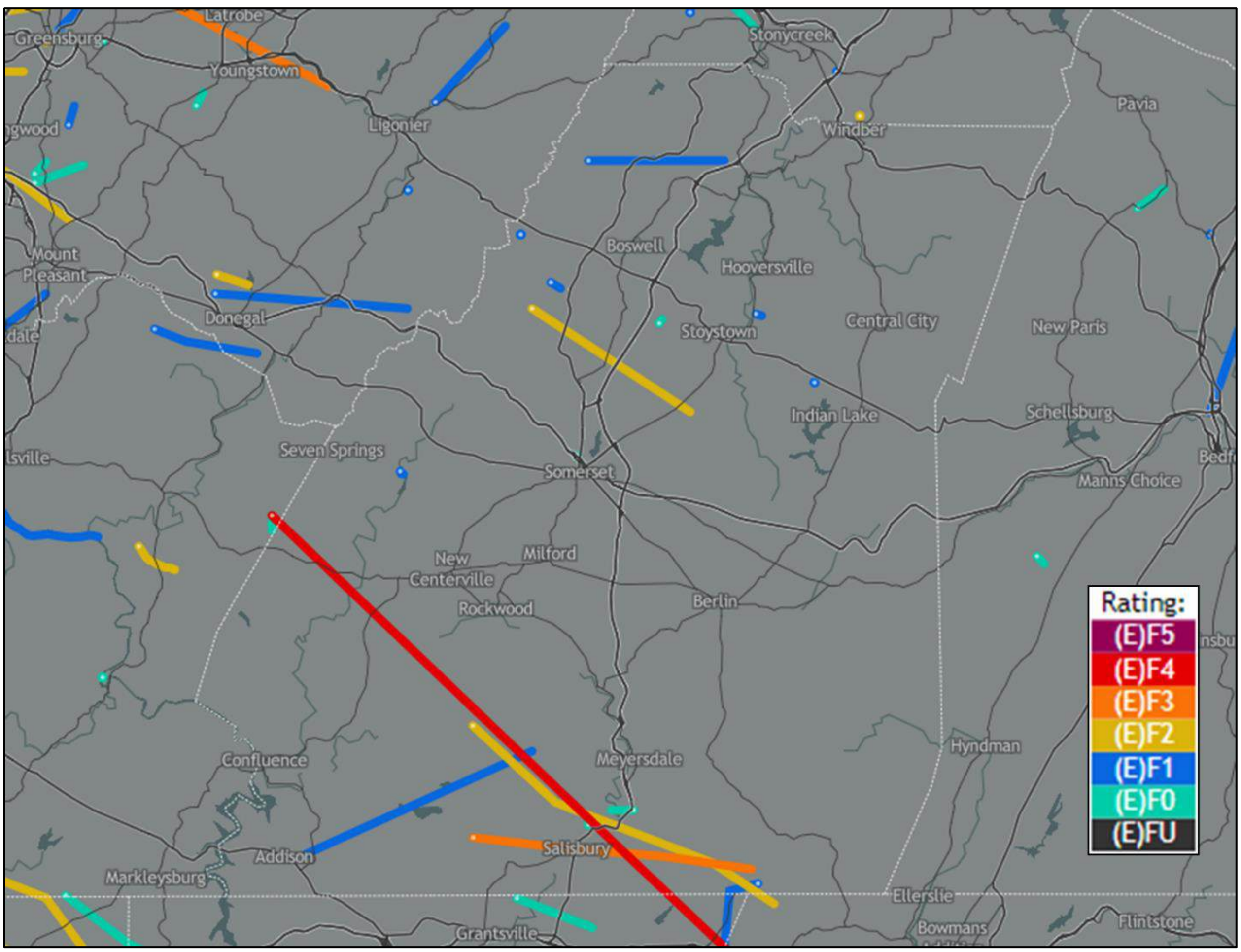
The following sections discuss location and extent, range of magnitude, past occurrences, future occurrences, and vulnerability assessment associated with the wind and tornado hazard within Somerset County.

4.3.13.2 Location and Extent

Tornadoes and windstorms can occur throughout Somerset County, though events are usually localized. Tornadoes can occur at any time during the day or night but are most frequent during late afternoon into early evening, between 4 and 9 pm on the warmest hours of the day (NWS, Months of Peak Tornado Occurance n.d.). Tornadoes are generally characterized by their estimated wind speeds as well as by their forward progression across the ground. NWS damage surveys allow forecasters to estimate a tornado's width (usually measured in yards) as well as how far it traveled while on the ground. A tornado’s track can be anywhere from less than 100 feet wide to more than a mile wide. Their forward movement is also highly variable, with short-lived tornadoes producing damage for a few hundred feet while others can travel several hundred miles (NOAA/NSSL 2012). An average of 1,250 tornadoes touchdown in the United States each year, with approximately 16 of them hitting Pennsylvania (NOAA/NSSL 2012). Figure 4.3.13-2 shows the historic tornado tracks and intensities occurring in and near to Somerset County, PA since 1950.

All of Somerset County experiences straight-line winds and windstorms since both occur on a region-wide scale. Tornadoes, on the other hand, are much more isolated types of wind events.

Figure 4.3.13-2 Tornadoes in Somerset County, 1950 to 2024



Source: Tornado Archive 2024

4.3.13.3 Range of Magnitude

Windstorms are generally defined as storms with sustained wind speeds of 40 mph or greater lasting for one hour or longer. Once wind speeds exceed 58 mph, the NWS classifies them as severe. Wind events can vary in spatial size from small microscale events which take place over only a few hundred meters to large-scale synoptic wind events often associated with warm or cold fronts (PEMA 2020).Windstorms are generally defined as sustained wind speeds of 40 mph or greater, lasting for 1 hour or longer, or winds of 58 mph or greater for any duration. After 2007, the magnitude of tornado events are classified according to the Enhanced Fujita Scale (EF Scale), and prior to that, the Fujita Scale (F Scale). Further discussion is provided below.

Tornado was initially categorized according to the Fujita Scale (F Scale), introduced by Ted Fujita from the University of Chicago Pearson Fujita Scale introduced in 1971, and this methodology was retroactively applied to tornado databases back to 1950. The scale classifies tornadoes into six categories, ranging from F0 to F5 (see below Table 4.3.16-2 (Edwards 2013).

Changes were made after certain limitations were understood, and in February 2007, the F Scale was decommissioned and was replaced with the Enhanced Fujita Scale (EF Scale), presented in Table 4.3.16-3. The primary limitations are a lack of Damage Indicators (DI), no account of construction quality and variability, and no definitive correlation between damage and wind speed. These limitations have led to inconsistent ratings of tornadoes and, in some cases, overestimated winds within a tornado. These shortcomings led to the development of the Enhanced Fujita Scale (EF Scale), which debuted in 2007 (NWS 2024). Updates to the classification system were a result of collaborative efforts between the Texas Tech University Wind Science and Engineering (WISE) Center as well as a forum of nationally renowned meteorologists and wind engineers from across the country, developed the EF Scale (NWS 2024). Since February 1, 2007, NWS forecasters have performed post-storm damage surveys to investigate evidence of damage, and using known damage indicators, also referred to as Degrees of Damage (DOD), surveys yield a more accurate estimate range of wind speeds associated with tornado events. From that, a rating is assigned, similar to that of the F Scale, with six categories from EF0 to EF5, representing increasing degrees of damage (NWS 2024). Below are some general damage descriptions of the types of damages common with each type of tornado event.

Table 4.3.13-2Fujita (F) Tornado Damage Scale*

Scale	Estimated Wind Speeds	Typical Damage
F0	<73 mph	Light damage: some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112 mph	Moderate damage: peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157 mph	Considerable damage: roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
F3	158-206 mph	Severe damage: roofs and some walls torn off well-constructed houses; trains overturned; most trees in the forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260 mph	Devastating damage: well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.

F5	261-318 mph	Incredible damage: strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Source: NOAA/SPC n.d.
*Notes: *no longer in use*

Table 4.3.13-3 Enhanced Fujita (EF) Tornado Damage Scale

Scale	Wind Estimate (mph)	Typical Damage
EF0	65-85	'Minor' damage: Shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow-rooted trees toppled.
EF1	86-110	'Moderate' damage: More significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.
EF2	111-135	'Considerable' damage: roofs torn off well-constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed
EF3	136-165	Severe damage: entire stories of well-constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.
EF4	166-200	'Extreme' damage: well-constructed homes are leveled, cars are thrown significant distances, top-story exterior walls of masonry buildings would likely collapse
EF5	>200	'Massive/incredible' damage: well-constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.

Sources: NWS 2024, ICC Building Safety Journal 2020, NOAA/NWS 2022

Assigning a tornado rating is the sole authority of the National Weather Service, and their goal is to assign an EF rating based on the highest wind speed that occurred along the tornado's damage path. Trained NWS forecasters will identify storm damage indicators (DI) from a list of 28 listed in Table 4.3.16-4 below. "The construction or description of a building should match the DI being considered, and the observed damage should match one of the eight degrees of damage (DOD) used by the scale (NWS 2024)." Each DOD in every category is assigned an estimated range of expected wind speeds. Once wind speeds are estimated, the appropriate EF rating can be assigned.

Table 4.3.13-4 Damage Indicators Used in the EF Scale

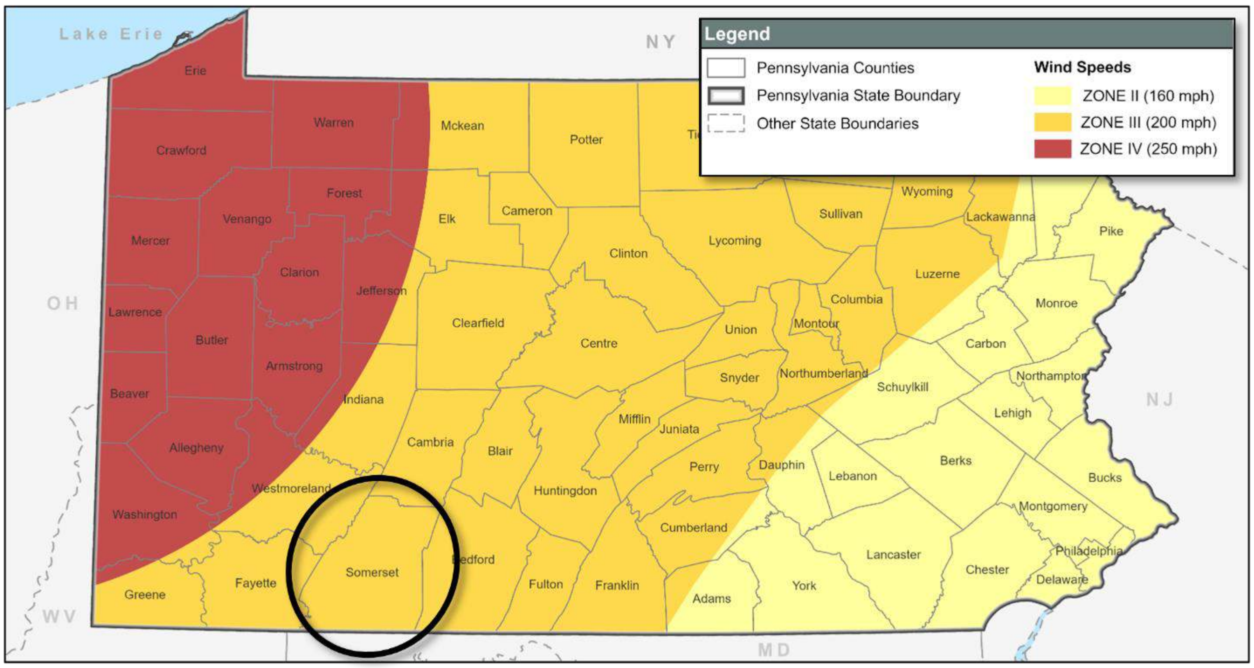
#	Damage Indicator
1	Small barns, farm outbuildings
2	One- or two-family residences
3	Single-wide mobile home
4	Double-wide mobile home
5	Apt., condominium, townhouse (3 stories or less)
6	Motel
7	Masonry apartment or motel
8	Small retail building (fast food)
9	Small professional (doctor's office, branch bank)
10	Strip mall
11	Large shopping mall
12	Large, isolated ("big box") retail building
13	Automobile showroom
14	Automotive service building
15	School – 1-story elementary (interior or exterior halls)
16	School – junior or senior high school
17	Low-rise (1-4 story) building
18	Mid-rise (5-20 story) building
19	High-rise (over 20 stories)
20	Institutional building (hospital, govt.. or university)
21	Metal building system

22	Service station canopy
23	Warehouse (tilt-up walls or heavy timber)
24	Transmission line tower
25	Free-standing tower
26	Free-standing pole (light, flag, luminary)
27	Tree – hardwood
28	Tree – softwood

Source: NWS 2024

Previous occurrences and losses associated with historical tornado events, described in the Past Occurrences section of this hazard profile, are classified based on the F Scale.

Figure 4.3.13-3 Design Wind Speeds for Tornado Shelters



Source: FEMA 2014, PEMA 2023
Note: The black circle identifies the location of Somerset County, PA

Figure 4.3.16-3 shows wind speed zones developed by the American Society of Civil Engineers based on information including 40 years of tornado history and over 100 years of hurricane history. It identifies wind speeds that could occur across the United States to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities. According to the figure, Somerset County falls within Zone II, meaning design wind speeds for shelters and critical facilities should be able to withstand a 3-second gust up to 160 mph, regardless of whether the gust is the result of a tornado, hurricane, tropical storm, or windstorm event. Therefore, these structures should be able to withstand speeds experienced in an EF3 tornado.

Since tornado events are typically localized, environmental impacts are rarely widespread. However, where these events occur, severe damage to plant species is likely. This includes loss of trees and an increased threat of wildfire in areas where dead trees are not removed. Hazardous material facilities should meet design requirements for the wind zones identified in Figure 4.3.16-3 to prevent release of hazardous materials into the environment.

In evaluating the potential for hazard events of a given magnitude, a mean return period (MRP) is often used. The MRP provides an estimate of the magnitude of an event that may occur within any given year based on past recorded events. MRP is the average period of time, in years, between occurrences of a particular hazard event, equal to the inverse of the annual frequency of exceedance (Dinicola, 2009).

Figure 4.3.16-4 and Figure 4.3.16-5 shows the estimated maximum 3-second gust wind speeds that can be anticipated in the County when associated with a 100-year MRP event and a 500-year MRP event. These peak wind speed projections were generated using Hazards U.S. Multi-Hazard (HAZUS-MH) model runs. HAZUS-MH 6.1 estimated the maximum 3-second gust wind speeds for Somerset County range from 39 to 129 mph for the 100-year and 500-year MRP event (category III hurricane). The associated impacts and losses from the 500-year MRP wind event model runs are reported in the Vulnerability Assessment

Figure 4.3.13-4 100-Year Peak Wind Gusts for Somerset County, PA

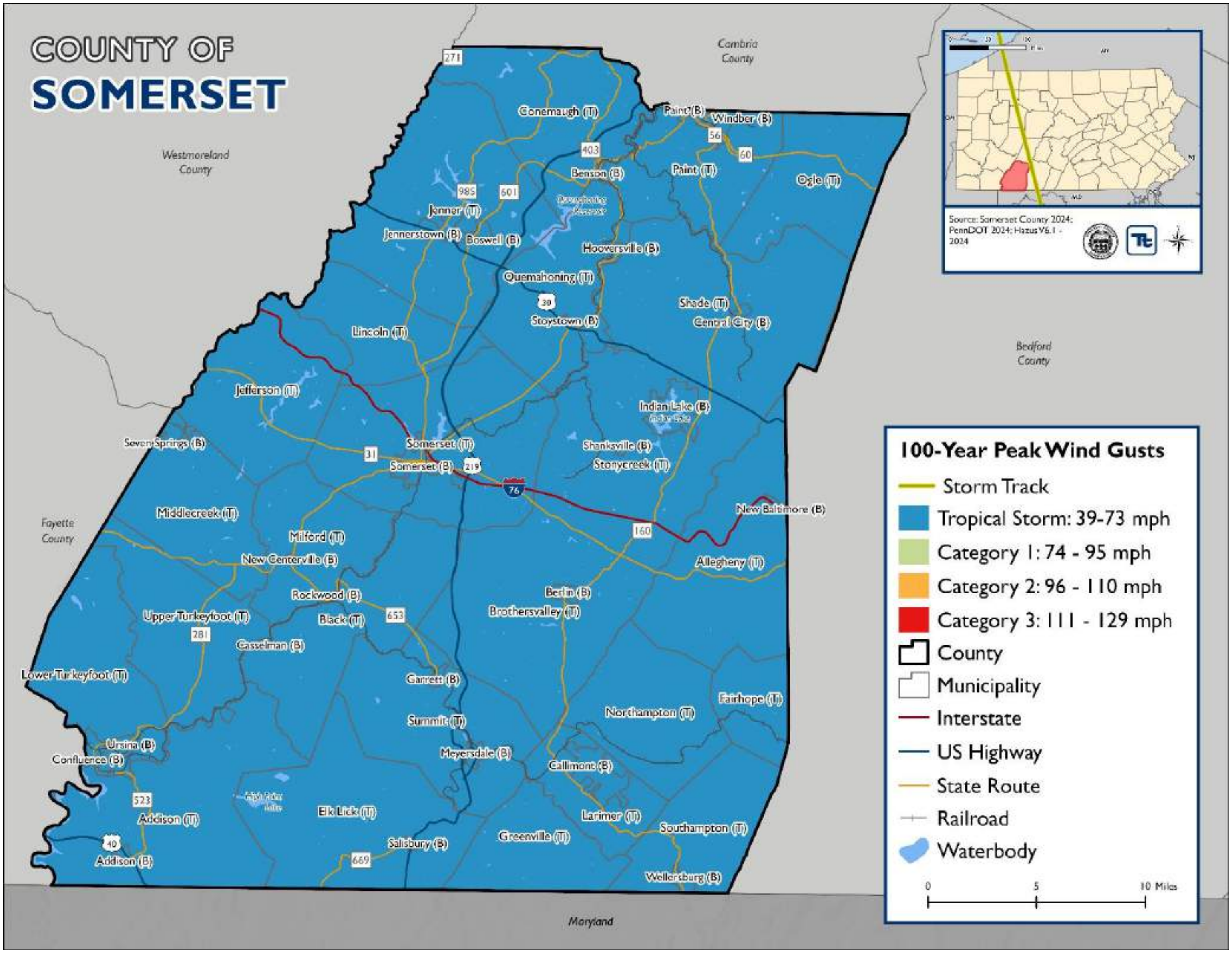
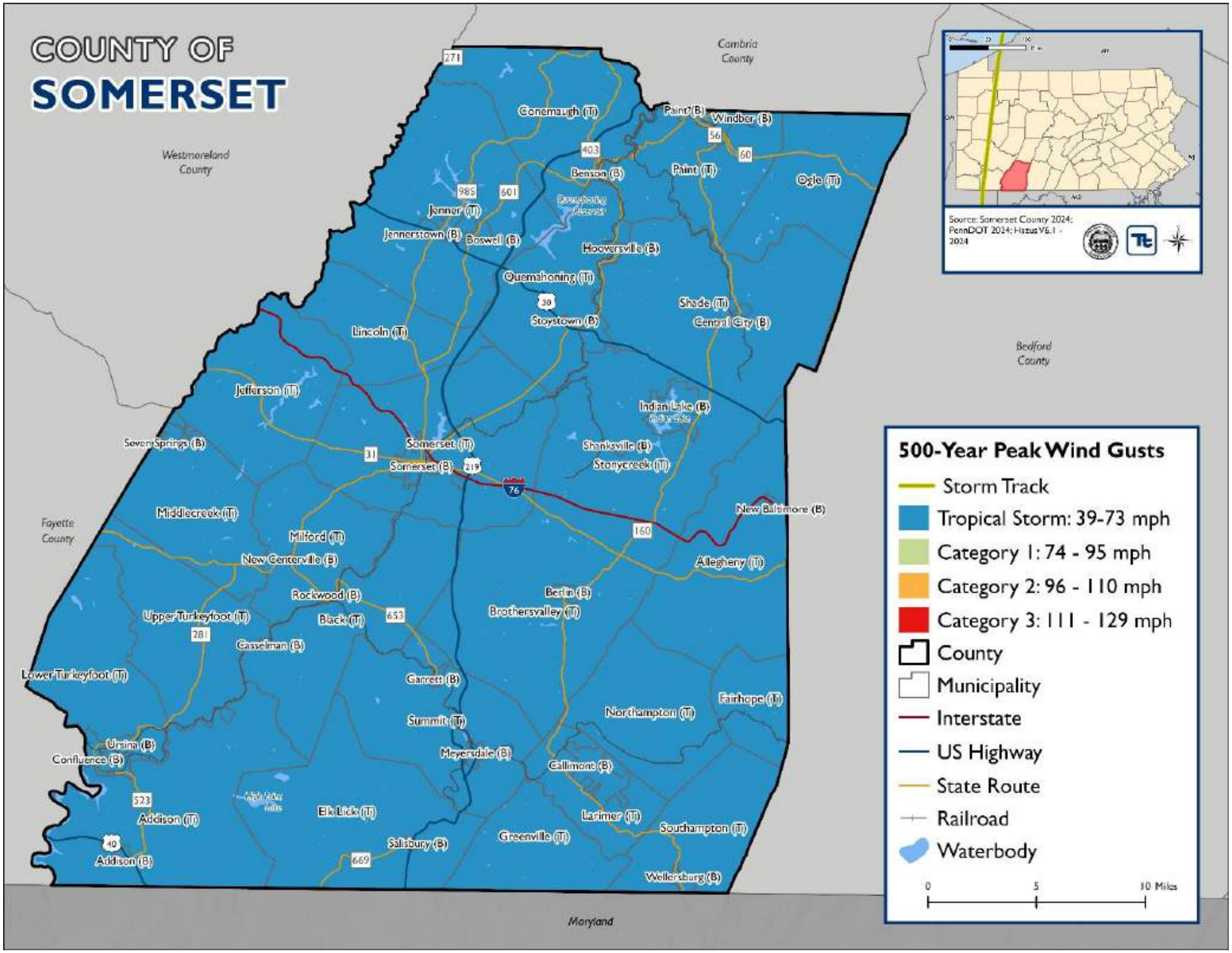


Figure 4.3.13-5 500-Year Peak Wind Gusts for Somerset County, PA



4.3.13.4 Past Occurrence

Between 1954 and 2024, statewide disaster declarations have been made for a variety of severe weather-related events, including tornadoes and high windstorms. Several declarations were specific only to Somerset County, and Table 4.3.16-5 summarizes these disasters.

Table 4.3.13-5 Major Disaster Declarations for Tornado, Windstorm-related Events in Somerset Co.

FEMA Declaration	Declaration Date	Incident Type	Declaration Title	Incident Begin Date	Incident End Date
DR-1555-PA	9/19/2004	Severe Storm	SEVERE STORMS AND FLOODING ASSOCIATED WITH TROPICAL DEPRESSION FRANCES	9/8/2004	9/9/2004
DR-1485-PA	8/23/2003	Severe Storm	SEVERE STORMS, TORNADOES, AND FLOODING	7/21/2003	9/12/2003
DR-1219-PA	6/8/1998	Severe Storm	SEVERE STORMS, TORNADOES, AND FLOODING	5/31/1998	6/2/1998
DR-1093-PA	1/21/1996	Flood	SEVERE STORMS AND FLOODING	1/19/1996	2/1/1996
DR-754-PA	11/9/1985	Flood	SEVERE STORMS & FLOODING	11/3/1985	11/6/1985
DR-721-PA	8/27/1984	Flood	SEVERE STORMS & FLOODING	8/27/1984	8/27/1984
DR-537-PA	7/21/1977	Flood	SEVERE STORMS & FLOODING	7/21/1977	7/21/1977
DR-58-PA	5/21/1956	Severe Storm	SEVERE STORM	5/21/1956	5/21/1956

Source: (FEMA 2024)

The NOAA-NCEI Storm Events database records tornado and windstorm events. According to the database, 13 tornadoes were recorded in Somerset County between 1950 and 2023. These tornadoes include four with an intensity of F/EF0, five with an intensity of F/EF1, and four with an intensity of F2 or higher. Between 1950 and June 2023, there have been 3 strong wind events, 26 high wind events, and 157 thunderstorm wind events, according to the NOAA-NCEI Storm Events database (NOAA/NCEI 2024).

For this plan update, Table 4.3.16-6 identifies the more notable tornado and/or major windstorm events that have impacted Somerset County between January 1993 and December 2023. With documentation for Pennsylvania and Somerset County being extensive, not all sources have been identified or researched. Table 4.3.16-6 documents events listed in the NOAA-NCEI database and the Storm Prediction Center severe weather database.

Table 4.3.13-6 Recent Tornado, Windstorm Events Impacting Somerset Co., PA (1993 to 2024)

Date	Event	Magnitude	Total Fatalities	Total Injuries	Total Property Damage	Description
June 15, 1994	Thunderstorm Wind	N/A	0	0	$5,000	Trees and powerlines were downed just north of Somerset. Power was reported out to a radius of eight miles of Somerset. Numerous roads were flooded. Flooding was observed along several streams.
November 11, 1995	Thunderstorm Wind	N/A	1	4	$0	Trees and power lines were down across the county including in Somerset. A tree fell on a car fatally injuring a woman. 4 others with minor injuries.
May 31, 1998	Tornado	F3	1	15	$4,000,000	The tornado touched down just east of Mt. Davis and traveled east-southeast into downtown Salisbury. The storm then continued eastward for 8 miles ending east of the town of Pocahontas. The tornado was rated as an F2 (113 to 157 mph) through the town of Salisbury, but probably reached F3 (158 to 206 mph) intensity briefly near Pocohontas. Along the 15 mile path, damages were estimated to reach between $3 million to $4 million. The path length of the tornado was probably close to 15 miles. F0 damage (40-72 mph) was in a swath about 1/2 mile wide, with F2 damage confined to an area about 2 blocks wide in Salisbury. Near Pocohontas, a farmhouse was completely destroyed indicating winds of F3 intensity (158 to 206 mph) in an area about 50 yards wide. Fifteen people were injured from the tornado. One person, a 13 year old female in a van, lost her life when a tree fell onto the vehicle. 150 people were sheltered overnight Sunday. A 51-year old male and 15-year old female died from carbon monoxide poisoning when a portable generator malfunctioned 3 days after the event. The tornado struck downtown Salisbury around 8:50pm. Ten to fifteen businesses were significantly damaged. Siding and parts of roofs were removed from a number of homes, and part of a roof was removed from a church. The roof was completely ripped off of a furniture factory. Several tractor trailers at the factory were overturned. *DR-1219-PA*
June 2, 1998	Tornado	F2	0	0	$0	This F2 tornado was the first of two tornadoes to cross southern Somerset County on the evening of June 2. It would cross the path of the May 31st tornado that struck Salisbury. The tornado initially touched down about 4 miles southeast of Markleton, then tracked southeast for 12 miles across the Boynton area and ended in Pocahontas crossing the May 31st track about 6 miles east of Salisbury. The town of Boynton was hard hit, but most of the remaining damage in Pennsylvania was to trees. A carpentry shop near Pocahontas that had been destroyed by the May 31st tornado on Sunday was already being rebuilt by Amish farmers when the framing was blown over by this tornado. There were no deaths or injuries. See additional details in the Seven Springs to Frostburg tornado that paralleled the track of this storm just two hours later. *DR-1219-PA*
June 2, 1998	Tornado	F3	0	0	$0	The second tornado of the evening, and the third to strike Somerset County in 3 days, this F3 was by far the longest and strongest of the trio. The storm created a path of damage 33 or more miles long, from Fayette County southeast across southern Somerset County into Maryland. The tornado crossed into Somerset County just southwest of the Seven Springs resort, tracked 26 miles across the county to the Maryland state line, 5 miles southeast of Salisbury. From there, the tornado continued southeast for more than 5 miles to Frostburg, Maryland. It, too, would cross the path of the May 31st storm, just 3 miles east of Salisbury. In some locations, the tornado was up to one mile wide. Damage from this

Date	Event	Magnitude	Total Fatalities	Total Injuries	Total Property Damage	Description
						tornado was rated at F3 on the Fujita scale, with winds of 158 to 206 mph. Many farms were completely destroyed as this tornado moved through generally rural areas in southern Somerset County. A family in Laurel Falls near Summit Mills and St. Paul took shelter in a basement corner behind a television set. As the twister passed, they looked up to find all three stories of their house were gone, along with eight rows of foundation blocks. A battery operated clock found the next morning had stopped at 9:38 p.m. A neighbor told of losing electricity, then getting a phone call from his brother to warn him. He and his family took shelter in a hall closet because they had no basement. They told of hearing a buzzing noise like a giant bee's nest. Another neighbor found her mobile home flipped on its roof after taking shelter at her son's house. When the first tornado of the evening missed a Laurel Falls family mobile home, they proceeded to a neighbor's home. The second storm blew the trailer off its foundation. Residents of Boynton were cleaning up trees with chainsaws and front end loaders from the first tornado around 7:30pm when firefighters came by and told them to get back inside because another tornado was on its way. The second tornado broke all the windows from one house, ripped the roof off another and a barn. One person told of seeking shelter from rain in a shed when the first tornado passed, then going to the home basement when the second came through, mentioning that she was unable to pull the basement door shut behind her. The shed disappeared during the second storm. Estimated damage from the Tuesday evening tornadoes included 30 to 40 properties, including permanent and seasonal residences and farms. There were no deaths or injuries from this severe tornado. However, over 100 head of cattle were killed in one barn alone, which was completely destroyed. Many other farms lost tens of cattle and other livestock. *DR-1219-PA*
June 30, 1998	Tornado	F1	0	0	$0	This small (F1) tornado had just a 1/4-mile path, but was embedded within a larger area of downburst winds that began at the top of Laurel Mountain in Forbes State Forest and extended east-southeast for nearly 23 miles. Width of the damage was about 70 yards, with downburst damage nearly a mile wide. No one witnessed the tornado, but several told of hearing a roar, with wind and rain beginning simultaneously. About 100 trees were taken down by the storm.
June 2, 1999	Thunderstorm Wind	N/A	0	0	$10,000	Trees were down in New Centerville and Meyersdale
July 9, 1999	Thunderstorm Wind	N/A	0	0	$5,000	Tree down on Route 601.
July 28, 1999	Thunderstorm Wind	N/A	0	0	$5,000	Tree down in Somerset.
July 31, 2000	Tornado	F0	0	0	$5,000	This small F0 tornado touched down around 1:30 p.m. EDT near Hunsrick Summit, about 2 miles south of Meyersdale on Route 219. The storm slightly moved a mobile home on its foundation then, oddly enough, moved almost due west across Route 219 and down a ravine crossing a farm of a Weather Service Cooperative Observer. The farmer watched the funnel pick up a homemade raft from a farm pond and toss it several yards. Several dozen trees were blown down in the ravine, but no damage was

Date	Event	Magnitude	Total Fatalities	Total Injuries	Total Property Damage	Description
						done to a nearby barn. The storm continued west for about a mile before dissipating as it crossed the Casselman River.
December 12, 2000	High Wind	N/A	0	0	$13,900	N/A
May 21, 2004	Thunderstorm Wind	58 mph	0	0	$50,000	National Weather Service storm survey found that straight-line winds felled numerous trees along Route 31 between Bakersville and Lavansville. One home in Bakersville sustained major structural damage when a large oak tree fell onto the structure.
May 21, 2004	Thunderstorm Wind	58 mph	0	0	$5,000	Thunderstorm winds struck a sporting goods store in Somerset. Four campers were blown over and destroyed, along with 1 snow mobile trailer.
February 11, 2009	Thunderstorm Wind	58 mph	0	0	$20,000	Thunderstorm winds of 50 to 60 mph tore a roof off a house in Stoystown. Several trees and wires were also reported down.
February 12, 2009	High Wind	64 mph	0	0	$300,000	Non-thunderstorm wind gusts between 55 and 65 mph toppled approximately 100 trees, 40 power lines and 14 utility poles. The high winds caused four buildings to collapse. Several trees fell onto houses and roofs resulting in significant structural damage. Nearly ten-thousand customers were without power at some point during the wind event.
March 23, 2011	Thunderstorm Wind	58 mph	0	0	$7,500	Thunderstorm winds estimated near 60 mph knocked down several large trees along SR 281 in Geiger. The damaging winds also brought down utility wires and produced minor roof damage to a manure plant and several single family homes in Somerset Borough.
August 25, 2011	Thunderstorm Wind	58 mph	1	0	$5,000	Thunderstorm winds estimated near 60 mph knocked down a tree which fell onto a residential home on Stepping Stone Road on the south-side of Somerset, causing significant damage. A 10-year old female in the house was killed by the falling tree.
October 29, 2012	High Wind	58 mph	0	0	$0	High winds knocked down numerous trees and utility wires, causing widespread power outages county-wide. High latitude blocking over the North Atlantic and the interaction with a strong upper-air disturbance over the central Appalachians allowed Sandy to take a sharp left turn and accelerate northwest from the western Atlantic into southern New Jersey and across southern Pennsylvania. The center of post-tropical Sandy moved westward across the state beginning late in the evening on the 29th. The remnants of Sandy, a weakening low pressure system, exited northwestern Pennsylvania into Canada on October 31, 2012. ||The highest recorded storm-total rainfall amount obtained in PA for the Oct 28-31, 2012 period was 7.94 inches at Schellsburg 2.6 WNW in Bedford County. There was an unconfirmed report of 8.15 inches at Hanover 5.4 S in York County which has not been verified. There was widespread storm-total rainfall amounts of 3 to 5 inches over the central and south portions of the Commonwealth with locally up to near 8 inches along the MD border region. However despite the heavy rainfall, hydrologic impacts were rather limited. Most of the significant flooding occurred in the

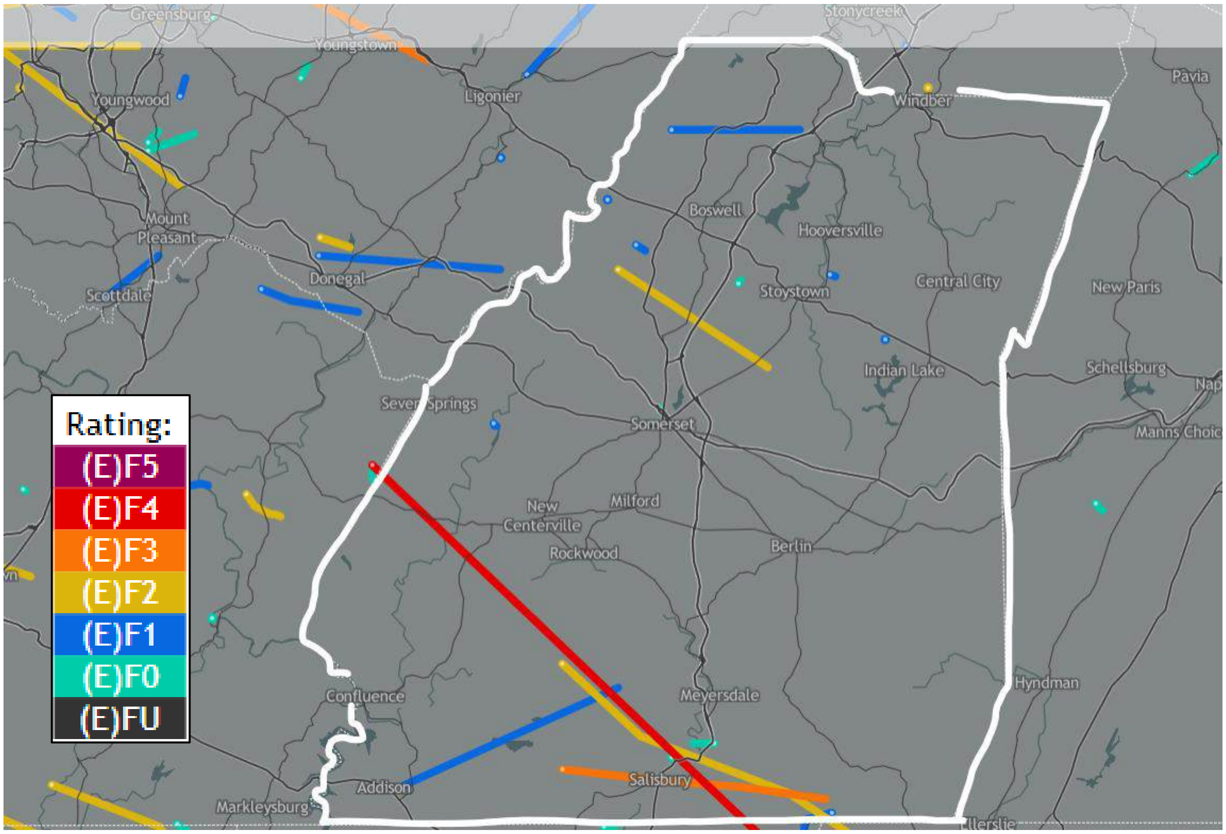
Date	Event	Magnitude	Total Fatalities	Total Injuries	Total Property Damage	Description
						southern most counties bordering Maryland, where the heaviest rainfall totals occurred. Areal Flood Warnings and Advisories were issued for the region. Six river forecast points rose above flood stage, with all but the Conestoga River at Lancaster (with moderate flooding) experiencing minor flood crests. ‖The impacts from the strong winds were widespread, with peak wind gusts were measured in the 50 to 60 mph range. High wind watches and warnings were issued well in advance of the storm. There were several reports of roof and other minor structural damage to homes and businesses. Widespread reports of trees down and power lines down were received. Wind damage caused significant power outages at the height of the storm. ‖Cold air was drawn into the southwest-side of the storm and produced heavy snows from October 29-31 across the southern Laurel Mountains. Amounts in excess of a foot were reported at several locations over the highest elevations including 14 inches at Laurel Summit in Somerset County. The ridges in Cambria County received between 2 and 4 inches. ‖There was one indirect storm-related fatality that occurred on the evening of the 29th. A person was killed in a Somerset County traffic accident, when their car slid off snow and slush covered road into a farm pond.‖A disaster emergency was issued by the Governor on October 26, 2012. This was followed by a Presidential Emergency Declaration on October 29, 2012. ‖In summary, Superstorm Sandy was an enduring late season tropical cyclone which developed during a period of high-latitude blocking over the Atlantic Basin. The storm came ashore in New Jersey with significant impact to the coastal regions of the Mid-Atlantic states. The interaction of hurricane Sandy with a strong upper-air disturbance produced one of the more memorable and destructive storms in the Mid-Atlantic region in over 100 years. *DR-3356-PA*
August 7, 2013	Thunderstorm Wind	81 mph	0	0	$5,000	Thunderstorm straight-line winds estimated near 80 mph knocked down the front and back walls and took the roof of a metal barn (the side walls remained standing). A steel wagon in the barn was turned on its side. Pieces of the roof were located several hundred yards to the east in a field along with several downed trees. The damage occurred in Lincoln Township along Keysertown and Bell Lane Road.
August 7, 2013	Funnel Cloud	N/A	0	0	$0	A funnel cloud was sighted a few miles southeast of Windber.
August 7, 2013	Tornado	EF0	0	0	$2,000	A storm survey conducted in Quemahoning Township in Somerset County confirmed a brief, weak EF0 tornado occurred a few miles east of Ralphton near Horner Church Road. One home sustained minor damage and one barn roof was partially torn off. Over 2 dozen trees were knocked down or damaged. The estimated maximum wind speed was between 70-80 mph. The maximum path width was 75 yards with a path length of about 0.25 miles. There were no injuries or fatalities.
June 27, 2015	Strong Wind	40 mph	0	0	$2,000	Strong winds around 40 mph knocked down trees in saturated soils around Somerset and Hooversville.
April 3, 2016	High Wind	60 mph	0	0	$2,000*	Non-thunderstorm wind gusts estimated around 60 mph knocked down trees and wires in Conemaugh and Lincoln Townships.

Date	Event	Magnitude	Total Fatalities	Total Injuries	Total Property Damage	Description
May 1, 2017	Thunderstorm Wind	60 mph	0	0	$7,000	A severe thunderstorm producing winds estimated near 60 mph knocked down trees in the Meyersdale area.
May 13, 2018	Thunderstorm Wind	81 mph	0	0	$15,000	A severe thunderstorm producing winds estimated near 80 mph destroyed a large machine shed on Saint Clair Drive west of Gray.
May 13, 2018	Tornado	EF1	0	0	$50,000	The tornado started northwest of the intersection of Beam Church Rd and Wigstrom Rd where several trees fell and a house sustained minor siding damage. The tornado crossed Beam Church Rd and continued east southeast into Gray. Several buildings sustained roof or siding damage from downed trees. Many trees were completely uprooted because of saturated soil with standing water underneath the root ball. The tornado crossed W 3rd street, where it flipped a carport and moved a trailer about 6 feet. A large patch of shingles was tossed over a house and landed on a car windshield. Further east, several healthy trees were snapped 10-30 feet off the ground, consistent with winds of up to 90 mph. Healthy pines fell in a convergent pattern perpendicular to storm motion. This pattern is consistent with a tornado. The tornado appears to have lifted right before a stream in the block bordered by W 3rd Street, E 1st Street, Main St and Center St.
April 14, 2019	Thunderstorm Wind	60 mph	0	0	$15,000	A severe thunderstorm producing winds estimated near 60 mph knocked down several trees across Somerset County, including a tree onto a residence in Cairnbrook.
April 8, 2020	Thunderstorm Wind	70 mph	0	0	$15,000	A severe thunderstorm producing winds estimated near 70 mph damaged a press box, bleachers, a scoreboard, sheds and fences at Meyersdale High School.
July 21, 2020	Thunderstorm Wind	96 mph	0	0	$10,000	A severe thunderstorm microburst produced straight-line wind damage near the town of Ashtola, Pennsylvania, which is about 4 miles SE of Windber. Approximately 75-100 trees on private property just west of the Gallitzin State Forest and east of Crum Rd were downed by strong winds. Most of the damage was confined to an area about 100 yards wide and 500 yards long. Winds were estimated at 85-95 mph. We thank Somerset County and Ogle Township Emergency Management for providing aerial imagery for the damage analysis.
July 29, 2021	Tornado	EF1	0	0	$0	An EF-1 tornado impacted Laurel Hill State Park during the afternoon of July 29, 2021. The tornado had estimated peak winds of just over 100mph, a path length of just under a quarter of a mile, and a maximum path width of 65 yards. Numerous trees along its path were uprooted in various directions, while a few were also snapped, resulting in damage to some of the conservation buildings. Estimated maximum winds reached 102 mph as the tornado tracked through this portion of the park, before turning to the east and producing additional tree damage east of Laurel Hill Park Drive.
June 8, 2022	Thunderstorm Wind	85 mph	0	0	$60,000	A severe thunderstorm producing winds estimated between 75 and 85 mph produced wind damage in the Eagle Ridge housing development. Multiple homes in the Eagle Ridge housing development sustained minor structural damage ranging from sheds/outbuildings to roofs (shingles or fallen tree branches) and siding/downspouts. One residence received moderate damage due to a collapsed

Date	Event	Magnitude	Total Fatalities	Total Injuries	Total Property Damage	Description
						detached garage which also impacted vehicles that were parked underneath the garage and nearby. Several trees were also uprooted or knocked down. No injuries were reported. The damage was determined by an EMA/NWS coordinated damage assessment to have been straight-line in nature.
March 4, 2023	High Wind	60 mph	0	0	$60,000	Northwesterly winds occasionally gusting to near 60 mph occurred for several hours in Somerset County, resulting in numerous reports of trees and wires down across the county. Route 653 in Black Township and Route 423 in Coolbaugh Township were both closed due to downed trees and wires. Additionally, there was a tree downed onto a porch in Somerset Borough.
March 25, 2023	Strong Wind	49 mph	0	0	$10,000	Strong post-frontal winds estimated near 50 mph knocked down a tree onto a mobile home at 128 Double D Drive in Somerset Township, causing structural damage.
August 25, 2023	Thunderstorm Wind	60 mph	0	0	$8,000	A severe thunderstorm producing winds estimated near 60 mph knocked multiple trees and wires down across County Line Road near Laurel Hill State Park in Middlecreek Township.
August 25, 2023	Thunderstorm Wind	60 mph	0	0	$10,000	A severe thunderstorm producing winds estimated near 60 mph damaged trees and tore off a section of roofing from a barn west of Berlin.
May 26, 2024	Thunderstorm Wind	60 mph	0	0	$6,000	A severe thunderstorm producing winds estimated near 60 mph knocked down trees in and around Confluence. This same storm knocked down trees onto Stepping Stone Road between Status Lane and South Center Avenue near Somerset. Estimated property damage
August 31, 2024	Thunderstorm Wind	60-70 mph	0	0	$40,000	A severe thunderstorm producing wind gusts estimated near 60-70 mph knocked down multiple trees near the intersection of Turkeyfoot Road and Listonburg Road southeast of Confluence. Multiple trees were down on Water Level Road north of Rockwood. Thunderstorm winds also resulted in a partial uplift of roof on two open bars along with minor damage to a home on Huckleberry Highway northeast of Berlin. There were almost many large tree limbs down with this storm. Estimated property damages were $25,000
August 31, 2024	Tornado	EF0	0	0	$65,000	An emergency manager confirmed an EF0 Tornado in Greenville Township during the afternoon of August 31, 2024. The estimated peak winds were 85 mph with a path length of 0.10 miles. The max width of the tornado was 50 yards.
November 20, 2024	Strong Wind	45 mph	1	0	$7,000	Gusty winds, estimated near 45 mph, knocked down a tree onto Cumberland Highway near the intersection of Palo Alto Road in Southampton Township. Rainfall close to sunset in an area with no streetlights led to a vehicle running into the tree, killing the driver of the vehicle. There were no other fatalities or injuries from this incident

Source: NOAA/NCEI 2024, FEMA 2024
Notes: Bolded dates are those events which contributed to disaster declarations in Somerset County, PA.

Figure 4.3.13-6 Historic Tornado Tracks across Somerset County, PA (1950-2023)



Source: (Tornado Archive 2023)
Note: Tornados not shown are those that occurred in 2024, as this data was not yet published on this website

4.3.13.5 Probability of Future Occurrence

According to the National Weather Service, the Commonwealth of Pennsylvania has an annual average of 10 tornadoes with two related deaths (PEMA 2019). While the chance of being hit by a tornado is small, the damage that results when the tornado arrives is devastating. An F4 tornado can carry wind velocities of 200 mph, resulting in a force of more than 100 pounds per square foot of surface area. This is a "wind load" that exceeds the design limits of most buildings.

For the 2025 HMP update, the most up-to-date historic data was collected to calculate the probability of future occurrence of tornado and windstorm events for Somerset County. Information and data from NOAA-NCEI Storm Events database was used to identify the number of tornado and wind events that occurred between 1950 and 2024. Table 4.3.16-7 presents the probability of future occurrence of tornado events in Somerset County. Based on these statistics, there is an estimated nearly 100-percent chance of a windstorm event occurring in any given year in Somerset County.

Table 4.3.13-7 Probability of Future Tornado and Windstorm Events

Hazard Event Type	Number of Occurrences Between 1950 and 2024	Percent chance of occurrence in any given year
High Wind	26	35%

Hazard Event Type	Number of Occurrences Between 1950 and 2024	Percent chance of occurrence in any given year
Strong Wind	5	7%
Thunderstorm Wind	275	100%
Funnel Cloud	2	3%
Tornado	16	21%
TOTAL	324	100%

Sources:(NOAA/NCEI 2024)
Note: the most updated NCEI data was used in this table, historical records spanning from 01/01/1950 to 11/30/2024

In Section 4.4, the hazards of concern identified for Somerset County are ranked according to relative risk. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. The probability of occurrence for severe tornado and windstorm events in Somerset County is considered highly likely (greater than 90% annual probability) as defined by the Risk Factor Methodology probability criteria (Section 4.4).

Effects of Climate Change

Some studies predict that climate change could provide the opportunity for more severe thunderstorms to form. However, this does not necessarily mean that more tornadoes will occur (National Geographic, 2023). The fourth National Climate Assessment summarizes the relationship between tornadoes and climate change: “Some types of extreme weather (e.g., rainfall and extreme heat) can be directly attributed climate change. Other types of extreme weather, such as tornadoes, are also exhibiting changes which may be linked to climate change, but scientific understanding isn’t detailed enough to project direction and magnitude of future change” (CSSR, 2017). The fifth National Climate Assessment notes that while the average annual number of tornadoes has remained relatively constant, there is evidence that tornado outbreaks have become more frequent, that tornado power has increased, and that “Tornado Alley” has shifted eastward (CSSR, 2023).

Tornadoes and windstorms are localized and episodic, which can make it difficult to extrapolate long-term climatic trends. However, monthly variability of tornadoes has increased since the 1970s, with record storm months following record calm months (Yale Climate Connections, 2021). Research also suggests that increasing temperatures may lead to more off-season tornadoes (NOAA, 2023a).

4.3.13.6 Vulnerability Assessment

The vulnerability assessment for the tornado and wind hazard includes a qualitative assessment of exposure and tornado impacts as well as a quantitative Hazus analysis of the impacts of 500-year mean return period (MRP) straight-line wind (hurricane) event.

Life, Health, and Safety

General Population

Impacts of a tornado or windstorm on life, health, and safety depend on several factors, including severity of the event and whether adequate warning time was provided to residents. All residents in Somerset County are exposed to the tornado hazard.

Residents may be displaced or require temporary to long-term sheltering. In addition, downed trees, damaged buildings, and debris carried by high winds can lead to injury or loss of life. Similar to other natural hazards, socially vulnerable populations are most susceptible based on a number of factors, including their physical and financial ability to react or respond during a hazard, and locations and construction quality of their housing.

Socially Vulnerable Populations

Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact on their family and may not have funds to evacuate. The population over the age of 65 is also more vulnerable and, physically, they may have more difficulty evacuating. The elderly is considered most vulnerable because they may require extra time or outside assistance during evacuations and are more likely to need medical attention that may not be available due to isolation during a storm event. Section 2 (County Profile) presents the statistical information regarding these populations in the county. First responders' safety is also at risk during on-scene operations and they may have limited access to roads to respond to incidents. First responders may experience a higher than normal call volume and demand and have additional duties such as traffic control.

Impact on General Building Stock and Critical Facilities

The entire county's building stock and critical facilities are exposed to the tornado hazard. Manufactured housing (i.e., mobile homes) is particularly vulnerable to high winds and tornadoes. The U.S. Census Bureau defines manufactured homes by the "Code" as "movable dwellings, 8 feet or wider and 40 feet or more long, designed to be towed on its own chassis, with transportation gear integral to the unit when it leaves the factory, and without need of a permanent foundation (US Census Bureau 2023)." They can include multi-wide types and expandable manufactured homes but exclude travel trailers, motor homes, and modular housing. Because of their lightweight and often unanchored design, manufactured housing is extremely vulnerable to high winds and will generally sustain the most damage. Table 4.3.16-8 displays the number of manufactured housing units per municipality in Somerset County.

Table 4.3.13-8 Manufactured Housing Units per Municipality in Somerset County

Jurisdiction	Total Number of Manufactured Homes
Addison (B)	12
Addison (T)	163
Allegheny (T)	43
Benson (B)	6
Berlin (B)	161
Black (T)	77
Boswell (B)	67
Brothersvalley (T)	157
Callimont (B)	1
Casselman (B)	13
Central City (B)	37
Conemaugh (T)	120
Confluence (B)	52
Elk Lick (T)	82
Fairhope (T)	14

Jurisdiction	Total Number of Manufactured Homes
Garrett (B)	43
Greenville (T)	26
Hooversville (B)	22
Indian Lake (B)	0
Jefferson (T)	71
Jenner (T)	215
Jennerstown (B)	17
Larimer (T)	42
Lincoln (T)	67
Lower Turkeyfoot (T)	65
Meyersdale (B)	67
Middlecreek (T)	205
Milford (T)	92
New Baltimore (B)	4
New Centerville (B)	4

Jurisdiction	Total Number of Manufactured Homes
Northampton (T)	12
Ogle (T)	23
Paint (B)	12
Paint (T)	167
Quemahoning (T)	94
Rockwood (B)	18
Salisbury (B)	27
Seven Springs (B)	0
Shade (T)	123
Shanksville (B)	0
Somerset (B)	31
Somerset (T)	691
Southampton (T)	54
Stonycreek (T)	93
Stoystown (B)	7
Summit (T)	116
Upper Turkeyfoot (T)	83
Ursina (B)	33
Wellersburg (B)	5
Windber (B)	0
Somerset Co. (Total)	3,534

Source: Somerset County 2024; USACE 2022

According to HAZUS-MH's wind model, direct wind-induced damage (wind pressures and windborne debris) to buildings is dependent upon the performance of components and cladding, including roof covering (shingles, tiles, membrane), roof sheathing (wood frame construction only), windows, and doors and is modeled as such. Structural wall failures can occur for masonry and wood frame walls and uplift of whole roof systems due to failure at the roof/wall connections. Foundation failures (i.e., sliding, overturning and uplift) can potentially take place in manufactured homes.

Table 4.3.16-9 provides an overview of the estimated debris generated during a 500-year MRP hurricane wind event across various jurisdictions in Somerset County. This data is crucial for understanding the potential impacts on general building stock and planning effective hazard mitigation strategies. The total estimated debris from brick and wood across all jurisdictions is 1,245 tons only from brick and wood.

These observations have important implications for hazard mitigation. Jurisdictions with higher debris estimates will require more resources for debris management and recovery efforts. Additionally, the absence of concrete and steel debris indicates a potential area for improving building resilience through the use of more durable materials.

Table 4.3.13-9 Estimated Debris Created During 500-Year MRP Hurricane Wind Event

Jurisdiction	Estimated Debris Created During the 500-Year Mean Return Period Hurricane Wind Event			
	Brick and Wood (tons)	Concrete and Steel (tons)	Tree (tons)	Eligible Tree Volume (tons)
Addison (T)	65	0	0	0
Allegheny (T)	5	0	0	0
Benson (B)	1	0	0	0
Berlin (B)	26	0	0	0
Black (T)	35	0	0	0
Boswell (B)	14	0	0	0
Brothersvalley (T)	62	0	0	0
Callimont (B)	0	0	0	0
Casselman (B)	3	0	0	0
Central City (B)	2	0	0	0
Conemaugh (T)	48	0	0	0
Confluence (B)	20	0	0	0
Elk Lick (T)	56	0	0	0
Fairhope (T)	1	0	0	0
Garrett (B)	6	0	0	0

Jurisdiction	Estimated Debris Created During the 500-Year Mean Return Period Hurricane Wind Event			
	Brick and Wood (tons)	Concrete and Steel (tons)	Tree (tons)	Eligible Tree Volume (tons)
Greenville (T)	4	0	0	0
Hooversville (B)	2	0	0	0
Indian Lake (B)	7	0	0	0
Jefferson (T)	82	0	0	0
Jenner (T)	84	0	0	0
Jennerstown (B)	11	0	0	0
Larimer (T)	3	0	0	0
Lincoln (T)	48	0	0	0
Lower Turkeyfoot (T)	28	0	0	0
Meyersdale (B)	26	0	0	0
Middlecreek (T)	65	0	0	0
Milford (T)	57	0	0	0
New Baltimore (B)	1	0	0	0
New Centerville (B)	4	0	0	0
Northampton (T)	3	0	0	0
Ogle (T)	1	0	0	0
Paint (B)	1	0	0	0
Paint (T)	7	0	0	0
Quemahoning (T)	7	0	0	0
Rockwood (B)	14	0	0	0
Salisbury (B)	11	0	0	0
Seven Springs (B)	2	0	0	0
Shade (T)	6	0	0	0
Shanksville (B)	1	0	0	0
Somerset (B)	91	0	0	0
Somerset (T)	200	0	0	0

Jurisdiction	Estimated Debris Created During the 500-Year Mean Return Period Hurricane Wind Event			
	Brick and Wood (tons)	Concrete and Steel (tons)	Tree (tons)	Eligible Tree Volume (tons)
Southampton (T)	3	0	0	0
Stonycreek (T)	23	0	0	0
Stoystown (B)	1	0	0	0
Summit (T)	49	0	0	0
Upper Turkeyfoot (T)	50	0	0	0
Ursina (B)	8	0	0	0
Wellersburg (B)	1	0	0	0
Windber (B)	4	0	0	0
Somerset County (Total)	1,245	0	0	0

Source: Hazus v6.1

After the population exposed to the tornado or windstorm hazard has been considered, the general building stock replacement value exposed to and damaged 500-year MRP events was examined. Wind-only impacts are reported based on the probabilistic hurricane runs using HAZUS-MH v6.1 Potential damage is the modeled loss that could occur to the exposed inventory, including damage to structural and content value based on the wind-only impacts associated with a hurricane (using the methodology described in Section 4.4). Although the estimate is based on a hurricane event, the data can also be used to estimate potential damage from other windstorm events.

It is assumed that the entire County's general building stock is exposed to the wind hazard. Expected building damage was evaluated by HAZUS-MH v6.1 across the following wind damage categories: no damage/very minor damage, minor damage, moderate damage, severe damage, and destruction. Table 4.3.16-10 summarizes the definitions of the damage categories.

Table 4.3.13-10 Description of Damage Categories

Qualitative Damage Description	Roof Cover Failure	Window Door Failures	Roof Deck	Missile Impacts on Walls	Roof Structure Failure	Wall Structure Failure
No Damage or Very Minor Damage Little or no visible damage from the outside. No broken windows, or failed roof deck. Minimal loss of roof over, with no or very limited water penetration.	≤ 2%	No	No	No	No	No
Minor Damage Maximum of one broken window, door, or garage door. Moderate roof cover loss	> 2% and ≤ 15%	One window, door, or	No	< 5 Impacts	No	No

Qualitative Damage Description	Roof Cover Failure	Window Door Failures	Roof Deck	Missile Impacts on Walls	Roof Structure Failure	Wall Structure Failure
that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.		garage door failure				
Moderate Damage Major roof cover damage, moderate window breakage. Minor roof sheathing failure. Some resulting damage to interior of building from water.	> 15% and ≤ 50%	> the larger of 20% & 3 and ≤ 50%	1 to 3 Panels	Typically 5 to 10 Impacts	No	No
Severe Damage Major window damage or roof sheathing loss. Major roof cover loss. Extensive damage to interior from water.	> 50%	> one and ≤ the larger of 20% & 3	> 3 and ≤ 25%	Typically 10 to 20 Impacts	No	No
Destruction Complete roof failure or failure of wall frame. Loss of more than 50 percent of roof sheathing.	Typically > 50%	> 50%	> 25%	Typically > 20 Impacts	Yes	Yes

Source: FEMA 2018

Table 4.3.16-11 provides a detailed assessment of the expected damage severity to various occupancy classes during a 500-year MRP hurricane. This information is essential for developing a comprehensive hazard mitigation plan.

For residential buildings, which include single and multi-family dwellings, there are a total of 30,826 structures. The vast majority, 30,737 buildings (99.7%), are expected to experience no damage. Only 87 buildings (0.3%) are anticipated to suffer minor damage, 2 buildings expected to face moderate, and no buildings expected to face severe, or destruction-level damage.

Commercial buildings, totaling 43,803, show a similar pattern. Most of these buildings, 43,411 (99.1%), are projected to remain undamaged. Roughly 362 buildings (0.8%) may incur minor damage, 30 buildings are expected to face moderate damage, and no buildings to expect severe or destruction-level damage.

Industrial buildings, numbering 228, are also largely resilient, with 227 buildings (99.6%) expected to sustain no damage. Only one building is anticipated to have minor damage, and no buildings to expect moderate, severe or destruction-level damage.

Lastly, government, religion, agricultural, and education buildings, which total 10,333, are predominantly expected to remain intact, with 10,302 buildings (99.7%) facing no damage. There are 27 buildings (0.3%) that are expected to face minor damage. However, only three buildings (0.2%) are projected to suffer moderate damage, one building expected to experience severe damages, and no buildings to face destruction-level damage.

Table 4.3.13-11 Severity of Expected Damage, 500-Year MRP Hurricane

Occupancy Class	Total Number of Buildings in Occupancy	Severity of Expected Damage	500-Year Mean Return Period Hurricane	
			Building Count	Percent Buildings in Occupancy Class
Residential Exposure (Single and Multi-Family Dwellings)	30,826	NONE	30,737	99.7%
		MINOR	87	0.3%
		MODERATE	2	<0.1%
		SEVERE	0	0.0%
		DESTRUCTION	0	0.0%
Commercial Buildings	43,803	NONE	43,411	99.1%
		MINOR	362	0.8%
		MODERATE	30	0.1%
		SEVERE	0	0.0%
		DESTRUCTION	0	0.0%
Industrial Buildings	228	NONE	227	99.6%
		MINOR	1	0.4%
		MODERATE	0	0.0%
		SEVERE	0	0.0%
		DESTRUCTION	0	0.0%
Government, Religion, Agricultural, and Education Buildings	10,333	NONE	10,302	99.7%
		MINOR	27	0.3%
		MODERATE	3	<0.1%
		SEVERE	1	<0.1%
		DESTRUCTION	0	0.0%

Source: Hazus v6.1; Somerset County 2024; USACE 2022

As noted earlier in the profile, HAZUS-MH v6.1 estimates the 500-year MRP peak gust wind speeds for Somerset County to range from 39 to 129 mph. This wind speed equates to a Category III Hurricane and approximately $2,713,461 in damage to the general building stock. Table 4.3.17-9 summarizes the estimated building losses (all occupancies) damage estimated for the 500-year MRP wind-only event by occupancy class.

Table 4.3.13-12 Estimated Building Losses by the 500-Year MRP Winds for All Occupancy Classes

Jurisdiction	Building Loss - 500-Year Mean Return Period Hurricane				
	Estimated Building Losses (All Occupancies)	Estimated Building Losses (Residential)	Estimated Building Losses (Commercial)	Estimated Building Losses (Industrial)	Estimated Damages (All Other Occupancies)
Addison (T)	$723,843	$621,887	$61,519	$91	$40,346
Allegheny (T)	$73,090	$47,697	$10,099	$87	$15,207
Benson (B)	$29,373	$26,884	$1,326	$98	$1,065
Berlin (B)	$198,679	$158,031	$15,082	$1,007	$24,558
Black (T)	$367,483	$301,470	$29,072	$2,835	$34,106
Boswell (B)	$143,647	$126,089	$9,738	$395	$7,425
Brothersvalley (T)	$475,970	$378,590	$36,197	$2,410	$58,774
Callimont (B)	$2,659	$1,731	$368	$3	$556
Casselman (B)	$28,868	$23,684	$2,282	$223	$2,679
Central City (B)	$55,484	$43,604	$6,564	$457	$4,858
Conemaugh (T)	$934,935	$843,834	$51,621	$2,769	$36,711
Confluence (B)	$224,394	$192,788	$19,071	$28	$12,507
Elk Lick (T)	$618,863	$529,249	$33,189	$2,008	$54,417
Fairhope (T)	$14,694	$9,570	$2,033	$17	$3,075
Garrett (B)	$58,409	$48,161	$3,861	$207	$6,180
Greenville (T)	$55,346	$36,043	$7,658	$62	$11,582
Hooversville (B)	$60,069	$50,071	$5,046	$1,391	$3,561
Indian Lake (B)	$139,626	$122,472	$10,224	$50	$6,879
Jefferson (T)	$960,356	$838,104	$57,561	$2,463	$62,228
Jenner (T)	$848,748	$734,413	$56,557	$1,599	$56,178
Jennerstown (B)	$106,192	$90,831	$6,978	$127	$8,256
Larimer (T)	$40,555	$26,411	$5,612	$46	$8,487
Lincoln (T)	$560,312	$488,968	$33,577	$1,438	$36,330
Lower Turkeyfoot (T)	$298,281	$247,691	$24,090	$27	$26,473
Meyersdale (B)	$296,463	$266,848	$20,990	$2,202	$6,423

Jurisdiction	Building Loss - 500-Year Mean Return Period Hurricane				
	Estimated Building Losses (All Occupancies)	Estimated Building Losses (Residential)	Estimated Building Losses (Commercial)	Estimated Building Losses (Industrial)	Estimated Damages (All Other Occupancies)
Middlecreek (T)	$765,613	$684,282	$59,032	$247	$22,053
Milford (T)	$590,493	$484,468	$46,679	$4,558	$54,788
New Baltimore (B)	$8,411	$5,477	$1,164	$9	$1,760
New Centerville (B)	$41,483	$34,033	$3,279	$320	$3,850
Northampton (T)	$36,881	$24,018	$5,103	$41	$7,718
Ogle (T)	$61,867	$52,031	$6,006	$248	$3,582
Paint (B)	$49,800	$41,883	$4,835	$200	$2,883
Paint (T)	$312,934	$263,182	$30,404	$1,257	$18,092
Quemahoning (T)	$254,821	$212,417	$21,403	$5,898	$15,103
Rockwood (B)	$150,164	$123,197	$11,871	$1,160	$13,937
Salisbury (B)	$118,612	$101,437	$6,361	$385	$10,430
Seven Springs (B)	$21,951	$19,619	$1,693	$7	$632
Shade (T)	$210,559	$165,477	$24,911	$1,734	$18,437
Shanksville (B)	$21,649	$18,990	$1,585	$8	$1,067
Somerset (B)	$1,063,704	$932,883	$87,227	$18,414	$25,179
Somerset (T)	$2,021,188	$1,626,032	$264,580	$1,926	$128,650
Southampton (T)	$48,385	$31,510	$6,695	$54	$10,126
Stonycreek (T)	$430,941	$377,862	$31,590	$224	$21,265
Stoystown (B)	$27,501	$22,924	$2,310	$637	$1,630
Summit (T)	$478,422	$394,647	$31,633	$1,702	$50,440
Upper Turkeyfoot (T)	$515,721	$418,397	$41,252	$22	$56,050
Ursina (B)	$83,142	$71,431	$7,066	$10	$4,634
Wellersburg (B)	$12,616	$8,216	$1,746	$14	$2,640
Windber (B)	$286,182	$240,563	$39,959	$2,131	$3,529
Somerset County (Total)	$14,929,379	$12,610,098	$1,248,698	$63,247	$1,007,336

Source: Hazus v6.1; Somerset County 2024; USACE 2022; RS Means 2024

Because of differences in building construction, residential structures are generally more susceptible to wind damage than commercial and industrial structures. Wood and masonry buildings, regardless of their occupancy class, usually experience more damage than concrete or steel buildings. The damage counts include buildings damaged at all severity levels from minor damage to total destruction. Total damage dollar amounts reflect the overall impact to buildings at an aggregate level.

Out of $50,126,777,010 in total residential replacement value (structure) for the entire County, an estimated over $12,610,098 in residential building damage can be anticipated for the 500-year event. Residential building damage accounts for nearly 100-percent of total damage for the 500-year wind-only event. This information illustrates residential structures are the most vulnerable to the wind hazard.

Impact on Economy

Tornadoes also impact the economy, including loss of business function (e.g., tourism, recreation), damage to inventory, relocation costs, and wage loss and rental loss due to repair/replacement of buildings. Impacts on transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could sustain damage and impacts could result in loss of power, which could also affect business operations and provision of heating or cooling to the population.

Impact on the Environment

Tornado events are typically localized; therefore, environmental impacts are rarely widespread. Impacts of windstorms on the environment usually occur over a larger area. Severe damage to plant species is likely from both tornado and windstorm events. This includes uprooting or total destruction of trees, and increased threat to wildfire in areas of tree debris.

Future Changes That May Impact Vulnerability

Future Growth and Development

As discussed in Section 4.4 (Hazard Vulnerability Summary), areas targeted for future growth, development and re-development have been identified across Somerset County. Any areas of growth could be affected by the tornado and windstorm hazard because the entire county is exposed and potentially vulnerable to the wind hazard. Residential development, specifically manufactured homes, may be considered more vulnerable to the tornado hazard.

Effect of Climate Change on Vulnerability

An increase in storms will produce more wind events and may increase tornado activity. Additionally, an increase in temperature will provide more energy to produce storms that generate tornadoes (National Geographic 2023). With an increased likelihood of strong winds and tornado events, all of the county's assets are at risk for losses as a result of extreme wind events.

4.3.13.7 Additional Data and Next Steps

In time, HAZUS versions will be released with modules that address straight-line wind and tornado events. As updated versions of are released, the county will be able to run analyses for an overall picture of the wind damages and debris generated from tornado events. Over time, Somerset County can obtain additional data to support the analysis of this hazard. This additional data would include details on past hazard events and impacts, and an updated building inventory that would provide specific building information, such as type of construction and details on protective features (for example, shutters and safe rooms).

4.3.14 Pandemic and Infectious Disease

4.3.14.1 Hazard Description

A pandemic is a global outbreak of disease that occurs when a new virus causing serious illness emerges in the human population and spreads easily in a sustained manner. Infectious disease outbreaks may be widely dispersed geographically, impact large numbers of the population, and arrive in waves lasting several months at a time (PEMA 2023).

A pandemic outbreak has several recognizable characteristics, including rapid, large-scale (potentially global) spread causing (1) overloaded healthcare systems; (2) inadequate medical supplies; (3) medical supply shortages; and (4) a disrupted economy and society. Pandemics typically result from infectious diseases. An infectious disease, as defined by the World Health Organization (WHO 2023) is caused by pathogenic organisms (e.g., bacteria, viruses, fungi, or parasites) that spread from one person to another, whether through direct or indirect contact. Zoonotic disease is a type of infectious disease that occurs when animals transmit a disease to humans (WHO 2023). Although any infectious disease can reach pandemic levels, the 2019 Coronavirus (COVID-19), is the most recent pandemic the United States has faced.

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the pandemic and infectious disease hazard for the Somerset County Hazard Mitigation Plan (HMP).

4.3.14.2 Location and Extent

Pandemic and infectious disease events can affect large populations, potentially including the entire population of Pennsylvania. The size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission, and the amount of contact between infected and uninfected individuals. Viruses that transmit from person to person generally spread much faster than vector-borne diseases. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. Pandemic events can occur after other natural disasters, particularly floods, when there is the potential for bacteria to grow and contaminate water (van Seventer and Hochberg 2017).

4.3.14.3 Range of Magnitude

Severity of a pandemic disease depends on several factors, including the aggressiveness of the disease, ease of transmission, and factors associated with the impacted community (e.g., access to medical care, demographic data, and population density). Advancements in medical technologies have greatly reduced the number of deaths caused by influenza, a disease most likely to reach pandemic scale in Pennsylvania. Consequently, global effects of various influenza outbreaks have declined over the past century. High-risk populations considered more vulnerable to various pandemic diseases are described in the vulnerability assessment presented in Section 4.3.14.6.

COVID-19

Transmission and Symptoms

COVID-19 is a disease caused by a virus named SARS-CoV-2. It can be very contagious and spreads quickly from person to person. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes (PEMA 2023). Viruses like COVID-19 constantly change through mutation, which sometimes result in a new variant of the virus. Some changes and mutations may allow the virus to spread more easily or make it resistant to treatments and vaccines. It is essential to track and monitor the incidence of variants during a pandemic to effectively respond to changing trends in transmission and patient care (CDC 2022b).

COVID-19 most often causes respiratory symptoms that can resemble a cold, the flu, or pneumonia. COVID-19 may attack more than a person's lungs and respiratory system. Other parts of the body may also be affected by the disease. Most people with COVID-19 have mild symptoms, but some people become severely ill, and over 1 million people have died in the United States from COVID-19. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness (WHO n.d.).

Some people who have been infected with COVID-19 can experience long-term effects from the infection, known as post- COVID conditions (PCC) or long COVID. PCCs can include a wide range of ongoing health problems that can last weeks, months, or years. General symptoms of PCC can include fatigue, fever, difficulty breathing, chest pain, heart palpitations, headache, dizziness, diarrhea, and joint or muscle pain. These are more often found in people who had severe COVID-19 illness, but anyone who has been infected with COVID-19 can experience PCCs. Those not vaccinated and who become infected may have a higher risk of developing PCCs, than people previously vaccinated. In some cases, a person with PCCs may not have tested positive for the virus or known they were infected (CDC 2024).

Prevention and Testing

There are several actions individuals and communities can take to reduce transmission of COVID-19 and reduce risk of severe illness from the virus. Personal protective equipment such as N95 face masks can reduce spread by protecting the wearer from airborne particles. People infected with the COVID-19 virus can isolate themselves to prevent spreading the virus to others. Contact tracing is a practice that can help reduce the spread of infectious disease. Someone who tests positive for COVID-19 identifies people they have been in close contact with recently to the contact tracer. The contact tracer then takes the time to reach out to each identified person to notify them that they may have been exposed to COVID-19. They can refer individuals to different support services as needed, with the primary goal to get the individual tested for COVID-19 and follow isolation guidelines to stop the spread (CDC n.d.).

There are four approved or authorized COVID-19 vaccines in the United States (CDC 2023). Two are mRNA vaccines, one is a protein subunit vaccine, and one is a viral vector vaccine. People who are up to date on COVID-19 vaccines and boosters have lower risk of severe illness, hospitalization, and death from COVID-19 than those who are unvaccinated or who have only received the primary series.

There are different testing options to identify current infection with COVID-19 (PEMA 2023). The two main types of tests are nucleic acid amplification tests (NAATs) and antigen tests. NAATs, such as PCR-based tests, are most often performed in a laboratory. They are typically the most reliable tests for people with or without symptoms. Antigen tests are rapid tests which product results in 15 to 30 minutes. They are less reliable than NAATs, especially for people who do not have symptoms. Antigen tests are also produced for at-home self-test options.

Influenza

Influenza, also known as the flu, is a contagious disease caused by the influenza virus that most commonly attacks the respiratory tract in humans. Pandemic influenza is easily transmitted, but advances in medical technologies have greatly reduced the number of deaths caused by influenza (Doshi 2008). The magnitude of a pandemic may be exacerbated by the fact that an influenza pandemic will cause outbreaks across the United States, limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventive and therapeutic measures, including vaccines and other medications, will likely be in short supply or will not be available (PEMA 2023).

Pandemic flu should not be confused with seasonal flu. Seasonal flu is a less severe concern because of its regularity of occurrence and predictability. Table 4.3.13-1 lists key differences between pandemic and seasonal flu.

Table 4.3.14-1. Seasonal Flu vs. Pandemic Flu

Pandemic Flu	Seasonal Flu
Rarely happens (three times in 20th century).	Happens annually and usually peaks in January or February.
People have little or no immunity because they have no previous exposure to the virus.	Sufferers usually have some immunity built up from previous exposure.
Healthy people may be at increased risk for serious complications.	Usually only people in vulnerable populations, not healthy adults, are at risk of serious complications.
Healthcare providers and hospitals may be overwhelmed.	Healthcare providers and hospitals can usually meet public and patient needs.
Vaccine probably would not be available in the early stages of a pandemic.	Vaccine is available for annual flu season.
Effective antivirals may be in limited supply	Adequate supplies of antivirals are usually available.
Number of deaths could be high (U.S. death toll during the 1918 pandemic was approximately 675,000).	Seasonal flu-associated deaths in the United States over 30 years ending in 2007 have ranged from about 3,000 per season to about 49,000 per season.
Symptoms may be more severe.	Symptoms include fever, cough, runny nose, and muscle pain.
May cause major impact on the general public, such as widespread travel restrictions and school or business closings.	Usually causes minor impact on the general public; some schools may close, and sick people are encouraged to stay home.
Potential for severe impact on domestic and world economy.	Manageable impact on domestic and world economy.

Source: Flu.gov 2015

Approximately 12,470 Americans died from H1N1 within a roughly 1-year period from April 2009 to April 2010 (CDC 2019). Between October 2014 and late May 2015, 6.4 percent of deaths were attributable to pneumonia and influenza—below the epidemic threshold of 6.6 percent (an epidemic occurs when the incidence rate exceeds the expected rate but is not at the magnitude of a pandemic) (EPA 2024d).

In 2014, CDC updated the Pandemic Intervals Framework (PIF), which describes the progression of an influenza pandemic using six intervals. The framework is used to guide planning for an influenza pandemic and provides recommendations for risk assessment, decision-making, and action in the United States. Descriptions of the CDC pandemic intervals are presented in Table 4.3.13-2

Table 4.3.14-2. CDC Pandemic Intervals Framework

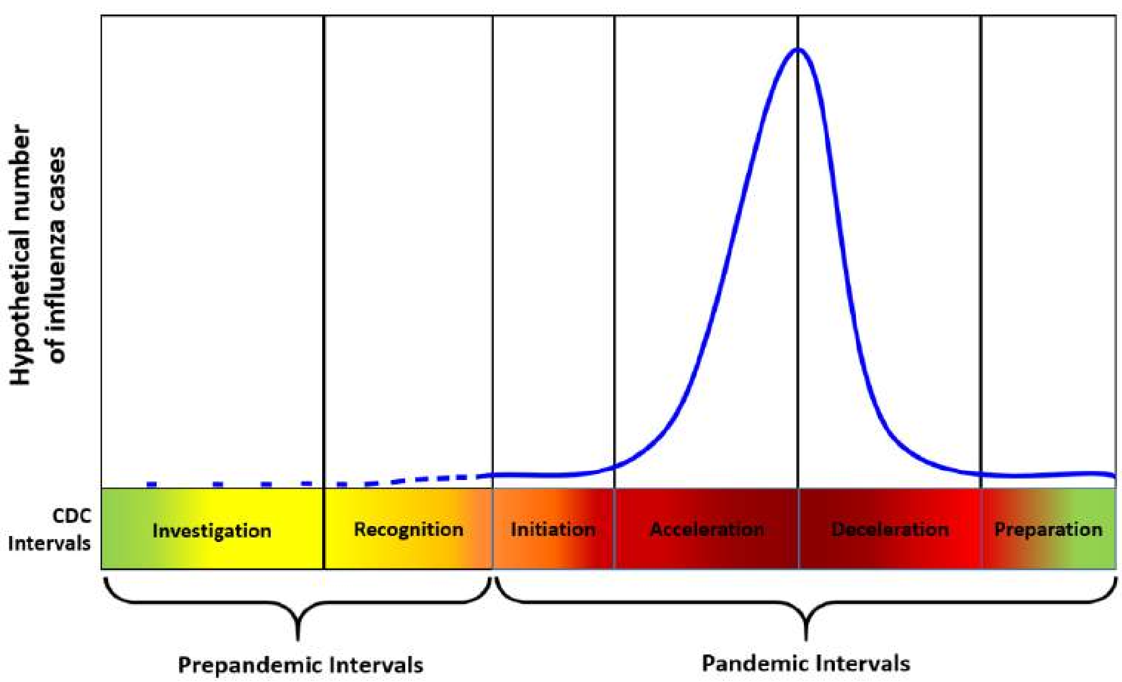
Interval	Description
Interval 1: Investigation of cases of novel influenza A virus infection in humans	When novel influenza A viruses are identified in people, public health actions focus on targeted monitoring and investigation. This can trigger a risk assessment of that virus with the Influenza Risk Assessment Tool, which is used to evaluate whether the virus has the potential to cause a pandemic.
Interval 2: Recognition of increased potential for ongoing transmission of a novel influenza A virus	When increasing numbers of human cases of novel influenza A illness are identified and the virus has the potential to spread from person to person, public health actions focus on control of the outbreak, including treatment of sick persons.

Interval	Description
Interval 3: Initiation of a pandemic wave	A pandemic occurs when people are easily infected with a novel influenza A virus that has the ability to spread in a sustained manner from person to person.
Interval 4: Acceleration of a pandemic wave	The acceleration (or "speeding up") is the upward epidemiological curve as the new virus infects susceptible people. Public health actions at this time may focus on the use of appropriate non-pharmaceutical interventions in the community (e.g., school and child-care facility closures, social distancing), as well the use of medications (e.g., antivirals) and vaccines, if available. These actions combined can reduce the spread of the disease and prevent illness or death.
Interval 5: Deceleration of a pandemic wave	The deceleration (or "slowing down") happens when the number of reported pandemic influenza cases consistently decreases in the United States. Public health actions include continued vaccination, monitoring of pandemic influenza A virus circulation and illness, and reducing the use of non-pharmaceutical interventions in the community (e.g., school closures).
Interval 6: Preparation for future pandemic waves	When pandemic influenza has subsided, public health actions include continued monitoring of pandemic influenza A virus activity and preparing for potential additional waves of infection. It is possible that a second pandemic wave could have higher severity than the initial wave. An influenza pandemic is declared "ended" when enough data show that the reported cases of influenza virus worldwide are similar to cases of seasonal influenza virus in the way they spread and the severity of the illness they can cause.

Source: CDC 2024

Conclusion of Interval 6 leads to the post-peak period, where the pandemic is declared "ended" when enough data show that the influenza virus, worldwide, presents similar to a seasonal influenza virus. Despite a decrease in activity, countries still must be prepared for additional waves of the pandemic. Pandemic waves can be separated by a period of months leading to a long recovery time, to guarantee entry of the pandemic into the post-pandemic interval (CDC 2014). Figure 4.3.13-1 illustrates the six intervals of pandemic influenza described by CDC.

Figure 4.3.14-1 Preparedness and Response Framework for Novel Influenza A Virus Pandemics



Source: CDC 2024

West Nile Virus

West Nile virus is a vector-borne disease that can cause headache, high fever, neck stiffness, disorientation, tremors, convulsions, muscle weakness, paralysis, and, in its most serious form, death. This virus is spread via mosquito bite and is therefore aided by warm temperatures and wet climates conducive to mosquito breeding.

West Nile Virus has high rate of asymptomatic cases—almost 80 percent of cases. The other 20 percent of cases result in mild infection, called West Nile fever, lasting two to seven days. About one in 150 cases results in severe neurological disease or death. Since the appearance of West Nile virus in Pennsylvania in 2000, the worst year was 2003 when 237 Pennsylvanians were infected with the virus and 9 people died (PEMA 2023). The virus is typically more serious in older adults (Johns Hopkins Medicine 2024).

4.3.14.4 Previous Occurrence

Several pandemic influenza outbreaks have occurred worldwide over the past 100 years, as listed in Table 4.3.13-3. Deaths occurred in the U.S. because of Spanish Flu, Asian flu, and Hong Kong Flu outbreaks. In the U.S., approximately 675,000 people died while 22 million caught the Spanish Flu (1918-1920). Pennsylvania, one of the states that was hit the hardest, faced over 60,000 deaths (Shetty 2018). Most deaths resulting from Asian flu occurred between September 1957 and March 1958; within the United States, approximately 70,000 people died, and approximately 15 percent of the population of Pennsylvania was affected. The first cases of Hong Kong Flu in the United States were detected in September 1968, with deaths peaking between December 1968 and January 1969 (Rogers 2020). As of August 2010, H1N1 was in a post-pandemic period. The COVID-19 virus has no "past occurrence" data, as it was first reported in 2019

Table 4.3.14-3. Previous Pandemic Outbreaks

Date	Pandemic/Subtype	Worldwide Deaths (Approx.)
1918-1920	Spanish Flu/H1N1	17-50 Million
1957-1958	Asian Flu/H2N2	1.1 Million
1968-1969	Hong Kong Flu/H3N2	15-50 Million
2009-2010	Swine Flu/H1N1	> 18,000
2019- ongoing	COVID-19	7.1 Million of 6/12/2024

Source: CDC 2010, WHO 2024

Somerset County was included in two major disaster (DR) or emergency (EM) declarations for pandemic or infectious disease related events, as list in Table 4.3.12-3 (FEMA 2024b). Based on all sources researched, known pandemic and infectious disease events that have affected Somerset County and its municipalities resulting in significant case counts, are also listed in Table 4.3.12-4. The table may not include all events that occurred in or impacted Somerset County if additional events are reported in sources other than those reviewed for this HMP.

Table 4.3.14-4. Pandemic and Infectious Disease Events in Somerset County, 1950 to 2024

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Details
September 2018 – September 2019	Biological	Countywide	N/A	N/A	Influenza—338 cases reported in Somerset County
September 2019 – September 2020	Biological	Countywide	N/A	N/A	Influenza—485 cases reported in Somerset County

Date of Event	Event Type	Location	FEMA Declaration Number	County Designated?	Details
January 20, 2020 – May 11, 2023	Biological	Statewide	EM-3441	Yes	COVID-19
January 20, 2020 – May 11, 2023	Biological	Statewide	DR-4506	Yes	COVID-19 Pandemic
October 2021 – October 2022	Biological	Countywide	N/A	N/A	Influenza—213 cases reported in Somerset County
2022	Biological	Countywide	N/A	N.A	West Nile Virus – one case reported in Somerset County
October 2022 – September 2023	Biological	Countywide	N/A	N/A	Influenza—683 cases reported in Somerset County

Source: FEMA 2024; PA DOH 2024
Note: Data Displayed: West Nile Virus data goes from 2000 to 2023 on the PA DEP surveillance page; Influenza data goes from 2018 to 2023, and the 2020-2021 data is not available because influence activity was abnormally low likely due to COVID-19 mitigation measures according to the PA DOH.

The 2019 to 2023 COVID-19 pandemic is the worst-case pandemic event on record in Pennsylvania and in the United States. Between 2020 and 2023, there have been 442 deaths attributed to COVID-19 in Somerset County and over 22,083 documented cases (PEMA 2023).

4.3.14.5 Future Occurrence

The best available data on infectious disease events was used to calculate the probability of future such events in the County. Information from Pennsylvania Department of Health, the 2023 Commonwealth of Pennsylvania HMP, the 2020 Somerset County HMP, and FEMA were used to identify the number of events that occurred between 2020 and 2023. Table 4.3.13-5 shows these statistics, as well as the estimated percent chance of an incident occurring in a given year. Based on these statistics there is a 100-percent chance of a pandemic or infectious disease event occurring in any given year in Somerset County. Therefore, the future occurrence of pandemic and infectious disease events in the County is considered *highly likely*, as defined by the Risk Factor Methodology probability criteria (shown in Table 4.4-1 in Section 4.4 of this HMP).

Table 4.3.14-5. Probability of Future Pandemic or Infectious Disease Events

Hazard Type	Number of Occurrences Between 2020 and 2023	% Chance of Occurrence in Any Year
COVID-19	22,083	100%
Influenza	1,719	100%
West Nile Virus	0	0%
Total	23,802	100%

Source: PA DOH 2024; CDC 2024
Note: The number of hazard occurrences is calculated using the number of occurrences between 2020 and 2023; Influenza 2020-2021 data is not available because influence activity was abnormally low, likely due to COVID-19 mitigation measures according to the PA DOH.

Effects of Climate Change

Many infectious diseases are intensifying, and new threats are emerging because of longer summers, milder winters, more extreme weather events, and other environmental changes. These changes are making it easier for many mosquitoes, ticks, animals, and the infectious germs they spread to expand into new geographic areas and infect more people. The precise nature of climate change impacts on infectious disease remains a topic for ongoing studies (DCNR 2022a).

4.3.14.6 Vulnerability Assessment

A qualitative assessment was performed to evaluate local assets' vulnerability to and potential impacts from the pandemic and infectious disease hazard.

Life, Health, and Safety

General Population

Pandemics and infectious diseases can also affect first responders in many ways including the need for more personal protection equipment to keep them safe and able to perform job duties. There is also an added layer of complexity to triaging patient care and a higher patient volume during pandemics.

Socially Vulnerable Populations

Depending on the characteristics of the disease or virus, certain population groups can be at higher risk of infection than others. About 60 percent of hospitalizations related to seasonal flu and 90 percent of flu-related deaths occur among people 65 and older. However, during the H1N1 pandemic, 90 percent of hospitalizations and 87 percent of H1N1-related deaths occurred in people younger than 65 (CDC 2010). As with seasonal flu, people with underlying health conditions face a much higher probability of contracting H1N1. Schools, convalescent centers, and other institutions are highly conducive to faster transmission of pandemic diseases.

Table 4.3.13-6 shows the demographic change in children and the elderly from 2017 through 2022 in Somerset County. Somerset County has seen population increases individuals over 65 years of age. Therefore, Somerset County is more vulnerable to both seasonal influenza and pandemic influenza, such as the H1N1 pandemic.

Pandemics and infectious diseases can also affect first responders in many ways including the need for more personal protection equipment to keep them safe and able to perform job duties. There is also an added layer of complexity to triaging patient care and a higher patient volume during pandemics.

Table 4.3.14-6. Demographic Trends for Vulnerable Populations

Vulnerable Population	ACS 5-Year Pop Est. 2017 Census	ACS 5-Year Pop Est. 2022	2017 to 2021 Change
Under 5 years	3,416	3,406	-10
18 years and over	61,765	60,424	-1,523
65 years and over	15,816	17,034	1,218

Source: 2017 – 2022 American Community Survey 5-Year Estimates

General Building Stock and Critical Facilities

No structures are anticipated to be directly impacted by a pandemic or infectious disease. However, structures, especially critical facilities, could be damaged due to the lack of maintenance personnel due to the personnel being sick. This is especially true of critical facilities and businesses with processes (e.g., chemical reactions) that occur continuously.

Pandemics and infectious diseases can have profound impacts on community lifelines and critical facilities. The COVID-19 pandemic, for instance, strained healthcare systems, disrupted supply chains, and affected essential services such as water, electricity, and transportation. Workforce shortages due to illness or quarantine measures further exacerbated these disruptions, leading to reduced capacity and efficiency in critical infrastructure (CISA 2021). Essential services may be disrupted by insufficient staffing, insecure supply chains, and fragile critical infrastructure. These vulnerabilities can lead to significant disruptions in vital services during pandemics.

Economy

The impact disease outbreaks have on the economy and estimated dollar losses are difficult to measure and quantify. Costs associated with the activities and programs implemented to conduct surveillance and address pandemic have not been quantified in available documentation. Instead, activities and programs implemented by the County to address this hazard are described below, all of which could impact the local economy.

The COVID-19 outbreak in 2020-2022 resulted in significant negative impacts to economic activity in the County, Commonwealth, and country due to the identified need to enforce social distancing and quarantine conditions until the disease spread was lessened. During the height of the COVID outbreak, all non-essential businesses were forced to close. The virus outbreak has also had a deleterious impact on government finances due to tax delinquency and user fees loss. Decreased revenues can lead to service cuts and prevent the county and community from procuring necessary supplies to weather the outbreak. Though the full-scale of the economic fallout is yet to be quantified, the economic impact from the pandemic was clearly felt in Somerset County.

Smaller-scale disease outbreaks can also cause negative economic impacts, though the extent of impact is variable.

Environment

A pandemic and infectious disease has no direct impact on the environment. However, pandemics and infectious disease can have the following cascading impacts to the environment (not an exhaustive list):

- Pollution of land and waterways/waterbodies due to prophylactic supplies (e.g., masks) being improperly disposed of (e.g., littered).
- Environmental contamination due to waste being improperly disposed of or treated, due to lack of personnel to carry out proper disposal procedures.
- Environmental contamination due to runaway chemical reactions causing releases of hazardous materials from facilities (see Impact on General Building Stock and Critical Facilities).
- A lack of environmental regulators due to them being sick can reduce the effectiveness of environmental programs or requirements, having a detrimental impact on the environment.

Future Changes That May Impact Vulnerability

Future Growth and Development

As the population increases, so too does the possibility for spreading an infectious disease. This is intensified by future growth causing higher density in populated areas.

Climate Change

The relationship between climate change and increase in infectious diseases is difficult to predict with certainty; however, there may be linkages between the two. Changes in the environment may create a more livable habitat for vectors carrying disease as suggested by the Centers for Disease Control and Prevention (CDC 2022a). Localized changes in climate and human interaction may also be a factor in the spread of disease.

The relationship between climate change and infectious diseases is somewhat controversial. The notion that rising temperatures will increase the number of mosquitoes that can transmit malaria among humans (rather than just shift their range) has been the subject of debate over the past decade. Some believe that climate change may affect the spread of disease, while others are not convinced. However, many researchers point out that climate is not the only force at work in increasing the spread of infectious diseases into the future. Other factors, such as expanded rapid travel and evolution of resistance to medical treatments, are already changing the ways pathogens infect people, plants, and animals. As climate change accelerates, it is likely to work synergistically with many of these factors, especially in populations increasingly subject to massive migration and malnutrition (WHO 2020).

4.3.14.7 Additional Data and Next Steps

For future plan updates, Somerset County will work with stakeholders to identify the long-term impacts of pandemics and infectious disease outbreaks, and the long-term solutions that can be implemented to reduce vulnerability to these events. Somerset County will work with the healthcare coalition and other health sector stakeholders to increase participation by these groups in future plan updates.

4.3.15 Subsidence and Sinkholes

4.3.15.1 Hazard Description

Subsidence is the sinking of ground due to underground movement. It is most often caused by the removal of oil, natural gas, or mineral resources out of the ground by pumping, fracking, or mining activities. Subsidence can also be caused by earthquakes, soil compaction, erosion, and sinkholes (NOAA 2022). In Pennsylvania, mine subsidence is a concern due to the number of underground coal and clay mines. Mine subsidence is the movement of the ground surface as a result of the collapse of the roof, floor, or pillars of underground mines (DCNR, Mind Subsidence, Loss & Coverage 2022).

A sinkhole is a subsidence feature that results from the downward movement of surface material resulting in a hole or cavity (DCNR, Sinkholes 2022). Sinkholes are generally found in areas underlain by carbonate bedrock (such as limestone and dolomite), found in large areas of central and eastern Pennsylvania. They occur naturally due to the physical and chemical weathering of the bedrock. Water passing through naturally occurring fractures and bedding planes dissolve the bedrock leaving voids below the surface. Eventually, overburden on top of the voids collapses, leaving surface depressions resulting in karst topography. Characteristics structures associated with karst topography include sinkholes, linear depressions, and caves. Often, sub-surface solution of limestone will not result in the immediate formation of karst features (USGS 2021).

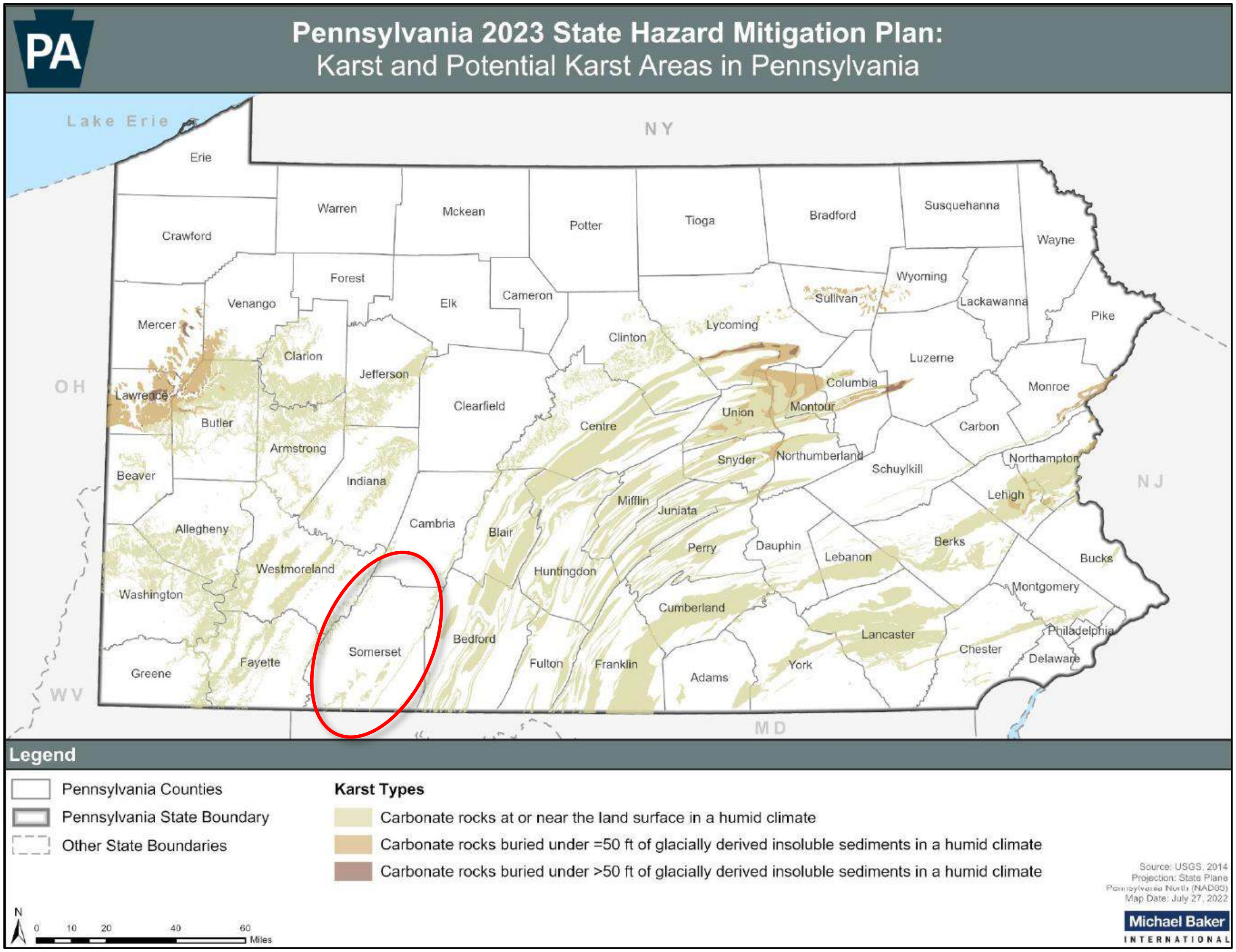
As stated in the 2023 Pennsylvania State Hazard Mitigation Plan, there are two common causes of subsidence in the State: 1) dissolution of carbonate rock such as limestone or dolomite and 2) mining activity. In the first case, water passing through naturally occurring fractures and bedding planes dissolves bedrock leaving voids below the surface. Eventually, overburden on top of the voids collapses, leaving surface depressions resulting in karst topography. Characteristic structures associated with karst topography include sinkholes, linear depressions, and caves. Often, the sub-surface solution of limestone will not result in the immediate formation of karst features. Collapse sometimes occurs only after a large amount of activity or when a heavy burden is placed on the overlying material (PEMA 2023).

The following sections discuss the location and extent, range of magnitude, previous occurrence, future occurrence, and vulnerability assessment associated with the subsidence/sinkhole hazard for Somerset County.

4.3.15.2 Location and Extent

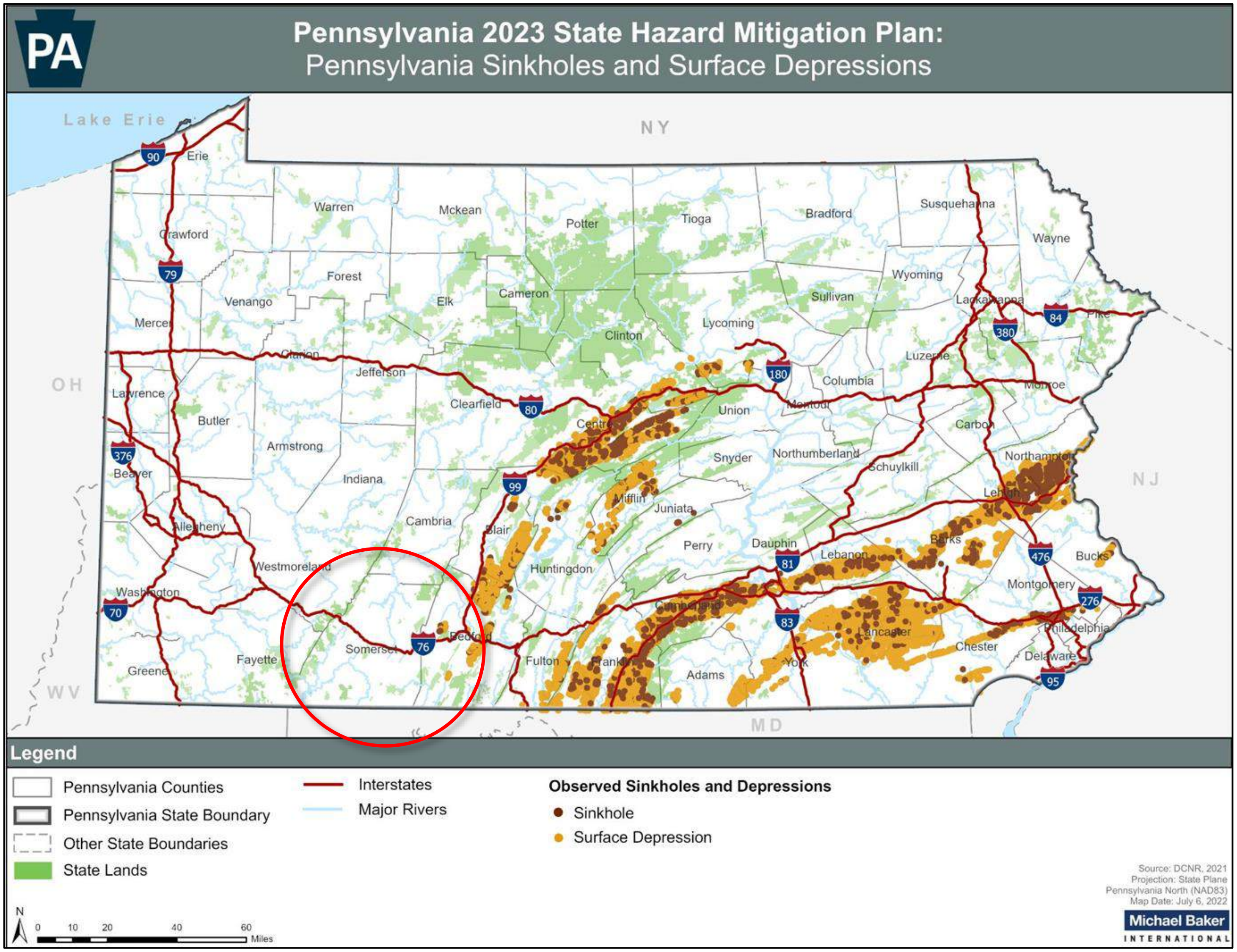
According to Pennsylvania Department of Conservation and Natural Resources (DCNR), Somerset County contains carbonate geology that results in sinkholes. Figure 4.3.15-3 displays the sinkhole hazard areas, as defined by the USGS, for Somerset County. It illustrates where sinkholes are a problem or may become a problem in the future.

Figure 4.3.15-1. Areas in Pennsylvania with Karst or Potential for Karst Development



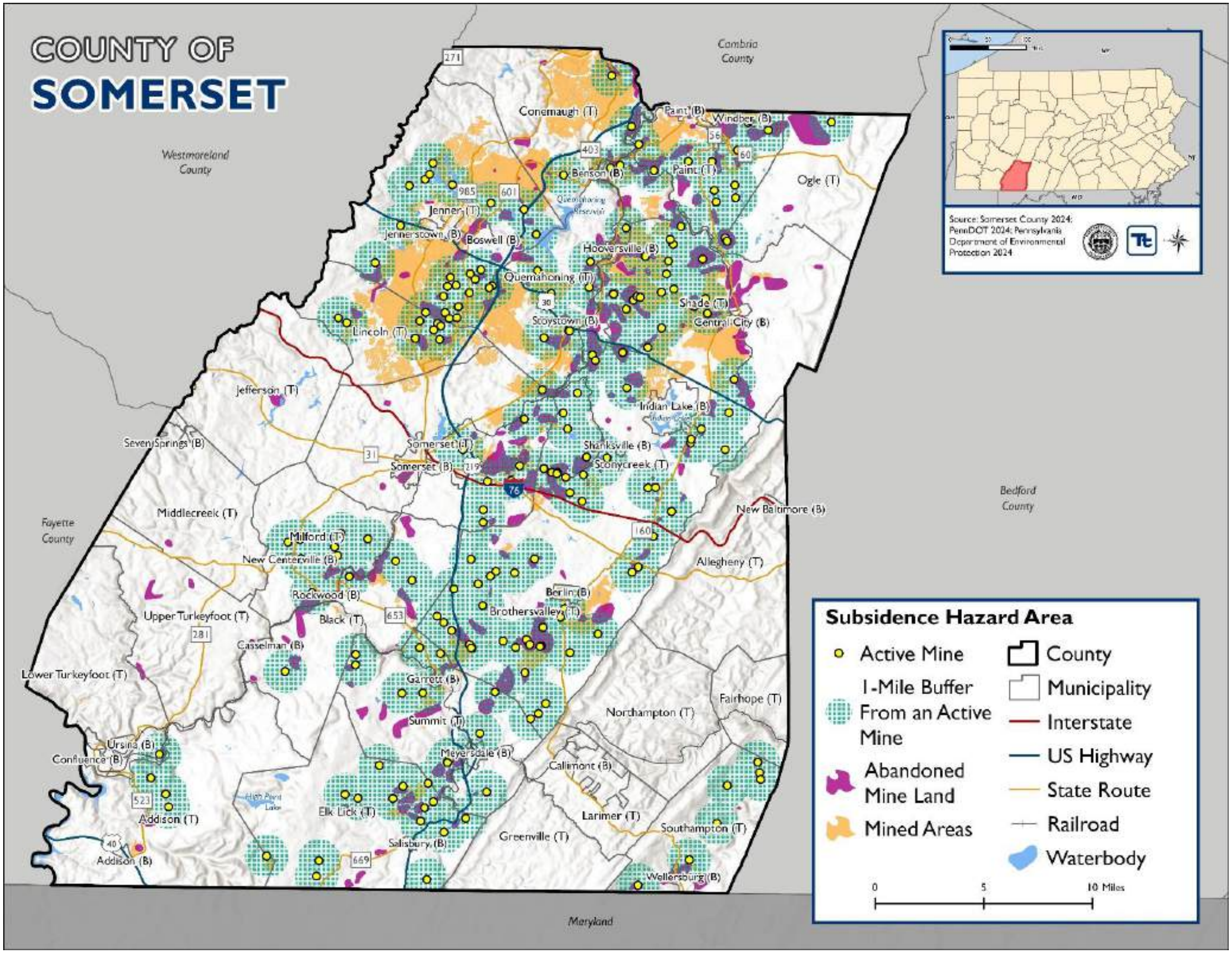
Source: PEMA 2023; Somerset County is circled in red.

Figure 4.3.15-2 Pennsylvania Sinkholes and Surface Depressions



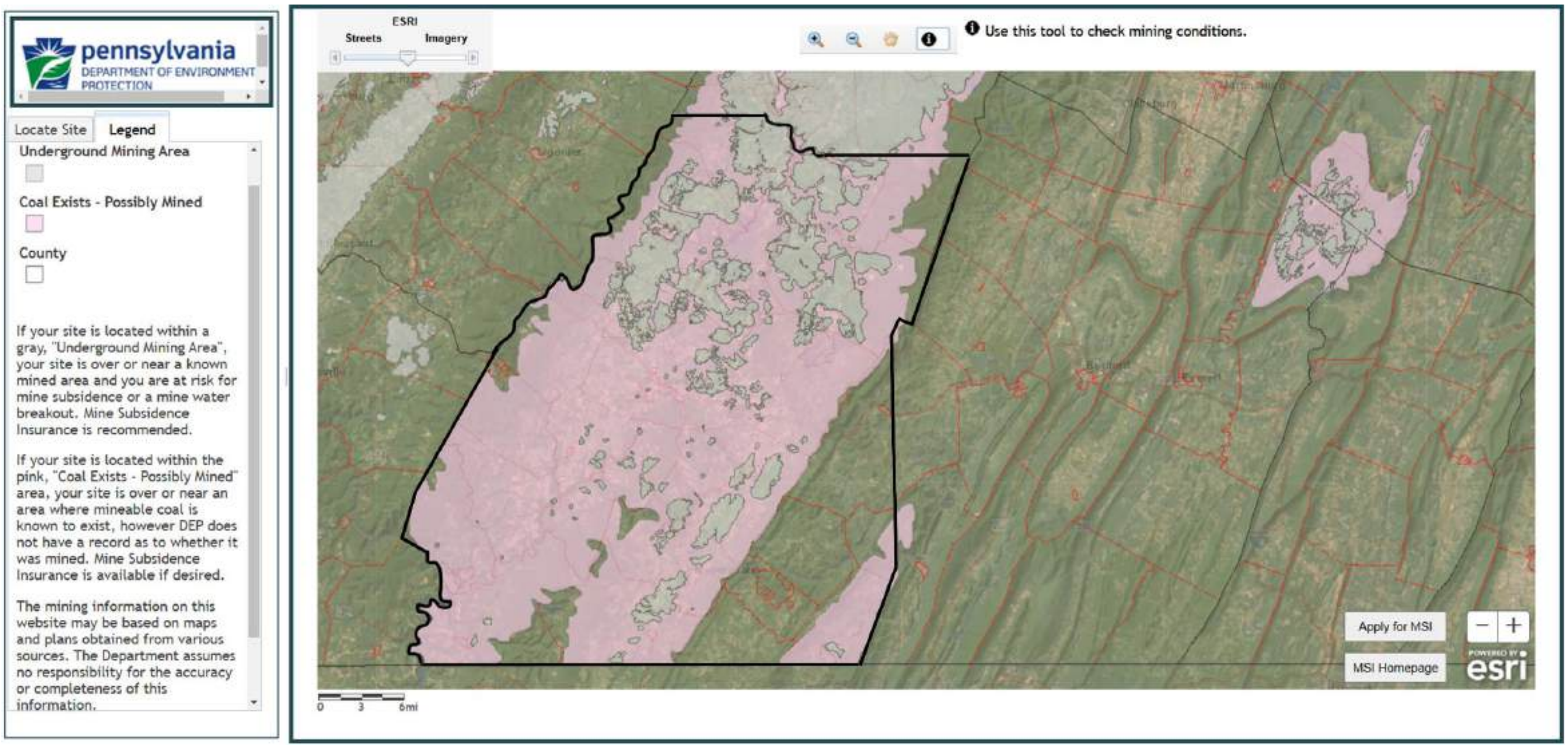
Source: PEMA 2023; Somerset County is circled in red

Figure 4.3.15-3. Subsidence Hazard Area in Somerset County, PA



Pennsylvania's Department of Environmental Protection hosts the Mine Subsidence Insurance webviewer which shows areas across the state where coal exists and is possibly mined. It also shows where underground mining is known, and Figure 4.3.15-4 shows these two areas across Somerset County.

Figure 4.3.15-4 Coal Mining Areas



Source: (PADEP-MSI 2025)

4.3.15.3 Range of Magnitude

Subsidence and sinkhole events may occur gradually or abruptly. Events could result in minor elevation changes or deep, gaping holes in the ground surface. Subsidence and sinkhole events can cause severe damage in urban environments, although gradual events can be addressed before significant damage occurs. If long-term subsidence or sinkhole formation is not recognized and mitigation measures are not implemented, fractures or complete collapse of building foundations and roadways may result.

A worst-case scenario for subsidence and sinkholes would be if a sinkhole occurred beneath a critical facility, such as a hospital or nursing home. Not only could structural damage occur to the building, but there could be injuries to people as well. In addition, part of the facility would have to be closed to repair the structural damage and this would reduce the hospital's capacity and ability to treat people with other illnesses and injuries. In the example of a nursing home, a sinkhole could result in a large number of the elderly population who are immobile and require medical assistance, to be homeless and in need of shelter.

4.3.15.4 Past Occurrence

According to the 2023 Pennsylvania State HMP, there have been no recorded sinkholes in Somerset County (PEMA 2023). In addition, the DCNR Pennsylvania Geologic Data Exploration mapper illustrates that there is limited to no karst terrain located in Somerset County (PA DCNR 2024). This does not mean that sinkholes have not, or may not, occur within the area. Across Somerset County there have been unofficial reports of sinkholes at several locations, which some believe are caused by flooding, poor fill, and construction over streams (WTAJ 2021). In other areas, sinkholes have been more closely linked with abandoned mines.

Table 4.3.15-1 Sinkhole Events in Somerset County

Date	Location	Event	Description
July 5, 2021	Brothersvalley (T)	Sinkhole	Cracks were noticed in the asphalt near the abandoned Ponfeigh Mine No. 1 after the collapse of the 1927 roof structure. On July 4th, a sinkhole opened up where a driver and passenger were taken to the hospital for injuries. "There is undeveloped land adjacent to the area of the road with a sinkhole that contains a dry retention pond. It had been built to collect rainwater by a company that had been preparing to mine for coal there but later changed its decision. Now, instead of rainwater being captured in the retention pond, the rainwater goes down into the mine (Daily American 2021).
December 3, 2024	Unity, PA (Westmoreland Co.)	Sinkhole	In December of 2024, a woman fell into a sinkhole in the community of Unity, just west of Somerset County. DEP Mine Inspectors believe the sinkhole was attributed to the abandoned Marguerite Mine, which was last operated in 1952 (triblive.com 2024). .

Sources: (WTAJ 2021) (triblive.com 2024)

4.3.15.5 Probability of Future Occurrence

For the 2025 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of subsidence and sinkhole events for Somerset County. Information from the 2023 Pennsylvania State HMP, and the PaGEODE interactive map were used to identify the number of events between 1950 and 2023.

Table 4.3.15-2. Probability of Future Sinkhole and Subsidence Events

Hazard Type	Number of Occurrences Between 1950 and 2023	Percent Chance of Occurrence in Any Given Year
Subsidence and Sinkholes	1	0.00

Sources: (WTAJ 2021)

Based on the lack of karst geology but the presence of filled ground and utilities, the future occurrence of subsidence and sinkholes can be considered *possible* as defined by the Risk Factor Methodology probability criteria (see Table 4.4.1-1).

Effects of Climate Change

Changes to the water balance of an area (including over-withdrawal of groundwater, diverting surface water from a large area, and concentrating it in a single point, artificially creating ponds of surface water, and drilling new water wells) will cause sinkholes. These actions can also serve to accelerate the natural processes of bedrock degradation, which can have a direct impact on sinkhole creation. The potential effects of climate change on Somerset County's vulnerability to subsidence/sinkhole events will need to be considered as more information develops regarding regional climate change impacts.

4.3.15.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable in the identified hazard area. The following section includes an evaluation and estimation of potential sinkhole and subsidence impacts on the county, including:

- Data and methodology used for the evaluation.
- Impacts on life, health, and safety; general building stock; critical facilities; economy; environment; and future growth and development.
- Effect of climate change on vulnerability.
- Further data collections that will increase understanding of this hazard over time.

Impact on Life, Health, and Safety

The impacts of land subsidence depend on several factors, including the scale and time of the land collapse. Sinkhole events caused by karst terrain or abandoned mines are typically isolated and impact the population within the immediate area of the incident. However, there are no abandoned mines or karst terrain in Somerset County (PA DCNR 2024). In addition to causing damages to residential buildings and displacing residents, sinkholes can block off or damage major roadways and inhibit travel for emergency responders or populations trying to evacuate the area. Approximately 8.2% percent of Somerset County's population is located in a sinkhole (abandoned mine) hazard area, as shown in Table 4.3.15-3 below.

Table 4.3.15-3. Estimated Population Located in the Sinkhole (Abandoned Mine) Hazard Area

Jurisdiction (B)=Borough (T)=Township	**Total Population** (2022 ACS 5-Year Estimates)	**Estimated Population Located in the Sinkhole (Abandoned Mine) Hazard Area**	
		Number of People	Percent of Total
Addison (B)	272	0	0.0%
Addison (T)	945	0	0.0%
Allegheny (T)	669	0	0.0%

Jurisdiction (B)=Borough (T)=Township	Total Population (2022 ACS 5-Year Estimates)	Estimated Population Located in the Sinkhole (Abandoned Mine) Hazard Area	
		Number of People	Percent of Total
Benson (B)	139	0	0.0%
Berlin (B)	2,297	244	10.6%
Black (T)	868	59	6.8%
Boswell (B)	1,411	167	11.8%
Brothersvalley (T)	2,002	116	5.8%
Callimont (B)	52	0	0.0%
Casselman (B)	64	0	0.0%
Central City (B)	1,045	36	3.4%
Conemaugh (T)	6,759	765	11.3%
Confluence (B)	596	0	0.0%
Elk Lick (T)	2,423	120	5.0%
Fairhope (T)	85	0	0.0%
Garrett (B)	409	23	5.6%
Greenville (T)	865	0	0.0%
Hooversville (B)	722	347	48.1%
Indian Lake (B)	314	0	0.0%
Jefferson (T)	1,313	16	1.2%
Jenner (T)	3,713	636	17.1%
Jennerstown (B)	1,182	11	0.9%
Larimer (T)	536	0	0.0%
Lincoln (T)	1,305	139	10.7%
Lower Turkeyfoot (T)	425	1	0.2%
Meyersdale (B)	2,118	0	0.0%
Middlecreek (T)	644	0	0.0%
Milford (T)	1,428	6	0.4%
New Baltimore (B)	147	0	0.0%
New Centerville (B)	118	0	0.0%
Northampton (T)	282	0	0.0%
Ogle (T)	493	0	0.0%
Paint (B)	1,122	332	29.6%
Paint (T)	3,038	433	14.3%
Quemahoning (T)	1,661	277	16.7%
Rockwood (B)	816	0	0.0%
Salisbury (B)	619	0	0.0%
Seven Springs (B)	7	0	0.0%
Shade (T)	2,342	565	24.1%
Shanksville (B)	166	0	0.0%
Somerset (B)	6,030	118	2.0%
Somerset (T)	11,775	652	5.5%
Southampton (T)	628	5	0.8%
Stonycreek (T)	2,271	150	6.6%
Stoystown (B)	410	0	0.0%
Summit (T)	1,911	63	3.3%
Upper Turkeyfoot (T)	1,073	0	0.0%
Ursina (B)	214	0	0.0%
Wellersburg (B)	148	88	59.5%
Windber (B)	3,930	661	16.8%
Somerset County (Total)	**73,802**	**6,030**	**8.2%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; PA Department of Environmental Protection 2024

More than 13% of the County population lives above the sinkhole (mined out area) hazard area as shown in Table 4.3.15-4.

Table 4.3.15-4. Estimated Population Located in the Sinkhole (Mined Out Area) Hazard Area

Jurisdiction (B)=Borough (T)=Township	**Total Population** (2022 ACS 5-Year Estimates)	**Estimated Population Located in the Sinkhole (Mined Out Area) Hazard Area**	
		Number of People	Percent of Total
Addison (B)	272	0	0.0%
Addison (T)	945	0	0.0%
Allegheny (T)	669	0	0.0%
Benson (B)	139	0	0.0%
Berlin (B)	2,297	204	8.9%
Black (T)	868	38	4.4%
Boswell (B)	1,411	0	0.0%
Brothersvalley (T)	2,002	317	15.8%
Callimont (B)	52	0	0.0%
Casselman (B)	64	0	0.0%
Central City (B)	1,045	193	18.5%
Conemaugh (T)	6,759	3,423	50.6%
Confluence (B)	596	0	0.0%
Elk Lick (T)	2,423	40	1.7%
Fairhope (T)	85	0	0.0%
Garrett (B)	409	0	0.0%
Greenville (T)	865	0	0.0%
Hooversville (B)	722	44	6.1%
Indian Lake (B)	314	0	0.0%
Jefferson (T)	1,313	0	0.0%
Jenner (T)	3,713	1,388	37.4%
Jennerstown (B)	1,182	402	34.0%
Larimer (T)	536	0	0.0%
Lincoln (T)	1,305	638	48.9%
Lower Turkeyfoot (T)	425	0	0.0%
Meyersdale (B)	2,118	0	0.0%
Middlecreek (T)	644	0	0.0%
Milford (T)	1,428	2	0.1%
New Baltimore (B)	147	0	0.0%
New Centerville (B)	118	0	0.0%
Northampton (T)	282	0	0.0%
Ogle (T)	493	0	0.0%
Paint (B)	1,122	116	10.3%
Paint (T)	3,038	366	12.0%
Quemahoning (T)	1,661	320	19.3%
Rockwood (B)	816	0	0.0%
Salisbury (B)	619	0	0.0%
Seven Springs (B)	7	0	0.0%
Shade (T)	2,342	954	40.7%
Shanksville (B)	166	0	0.0%
Somerset (B)	6,030	0	0.0%
Somerset (T)	11,775	975	8.3%
Southampton (T)	628	5	0.8%
Stonycreek (T)	2,271	93	4.1%
Stoystown (B)	410	0	0.0%
Summit (T)	1,911	22	1.2%
Upper Turkeyfoot (T)	1,073	0	0.0%
Ursina (B)	214	0	0.0%
Wellersburg (B)	148	0	0.0%
Windber (B)	3,930	513	13.1%
Somerset County (Total)	**73,802**	**10,053**	**13.6%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024
Note: % = Percent

Socially Vulnerable Populations

Social vulnerability is defined as the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. Social vulnerability considers the social, economic, demographic, and housing characteristics of a community influence its ability to prepare for, respond to, cope with, recover from, and adapt to environmental hazards. According to FEMA's National Risk Index, socially vulnerable populations in Somerset County have a relatively high susceptibility to the adverse impacts of natural hazards, including geological hazards, when compared to the rest of the United States.
Table 4.3.15-5 shows the number of socially vulnerable persons located in sinkole (abandoned mine) hazard areas in the County. The County's population over 65 years of age has the highest population (1,407) located in the sinkhole (abandoned mine) hazard area, followed closely by those with a disability (963), those living in poverty (551), persons under 5 (275), and non-English speaking persons (7).

Table 4.3.15-6 shows the number of socially vulnerable persons located in sinkhole (mined out) hazard areas in the County. The County's population over 65 years of age has the highest population (2,456) located in the sinkhole (mined out) hazard area, followed closely by those with a disability (1,639), those living in poverty (764), persons under 5 (472), and non-English speaking persons (9).

Table 4.3.15-5 Estimated Number of Vulnerable Persons Located in Sinkholes (Abandoned Mine) Hazard Area

Jurisdiction	Estimated Number of Vulnerable Persons Located in Sinkholes (Abandoned Mine) Hazard Area									
	Persons Over 65	% Total	Persons Under 5	% of Total	Non-English Speaking Persons	% of Total	Persons with a Disability	% of Total	Persons in Poverty	% of Total
Addison (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Addison (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Allegheny (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Benson (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Berlin (B)	87	10.6%	16	10.3%	0	0.0%	47	10.5%	28	10.4%
Black (T)	11	6.4%	1	3.6%	0	0.0%	6	6.3%	5	6.8%
Boswell (B)	42	11.8%	11	11.7%	0	0.0%	34	11.9%	38	11.9%
Brothersvalley (T)	25	5.6%	4	4.9%	2	4.4%	18	5.6%	10	5.7%
Callimont (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Casselman (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Central City (B)	9	3.4%	2	3.3%	0	0.0%	6	3.4%	6	3.3%
Conemaugh (T)	231	11.3%	45	11.2%	0	0.0%	126	11.3%	53	11.2%
Confluence (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Elk Lick (T)	20	4.9%	6	4.9%	4	4.8%	11	4.9%	22	4.8%
Fairhope (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Garrett (B)	4	5.1%	0	0.0%	0	0.0%	3	5.1%	3	4.5%
Greenville (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Hooversville (B)	87	48.1%	13	46.4%	0	0.0%	62	47.7%	29	47.5%
Indian Lake (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Jurisdiction	Estimated Number of Vulnerable Persons Located in Sinkholes (Abandoned Mine) Hazard Area									
	Persons Over 65	% Total	Persons Under 5	% of Total	Non-English Speaking Persons	% of Total	Persons with a Disability	% of Total	Persons in Poverty	% of Total
Jefferson (T)	3	0.9%	0	0.0%	0	0.0%	2	1.0%	1	1.0%
Jenner (T)	120	17.1%	25	16.6%	0	0.0%	109	17.1%	57	17.1%
Jennerstown (B)	2	0.7%	0	0.0%	0	0.0%	1	0.5%	1	0.9%
Larimer (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lincoln (T)	32	10.5%	6	9.7%	0	0.0%	20	10.6%	3	10.3%
Lower Turkeyfoot (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Meyersdale (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Middlecreek (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Milford (T)	1	0.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
New Baltimore (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
New Centerville (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Northampton (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ogle (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Paint (B)	108	29.6%	14	28.6%	0	0.0%	47	29.4%	58	29.1%
Paint (T)	119	14.1%	12	14.0%	0	0.0%	57	14.3%	16	13.6%
Quemahoning (T)	47	16.4%	12	15.8%	0	0.0%	54	16.5%	14	16.1%
Rockwood (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salisbury (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seven Springs (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shade (T)	128	24.1%	19	23.8%	0	0.0%	118	23.9%	42	23.7%
Shanksville (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Somerset (B)	27	1.9%	7	1.8%	0	0.0%	23	1.9%	18	1.9%
Somerset (T)	115	5.5%	19	5.5%	1	4.2%	93	5.5%	42	5.5%
Southampton (T)	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Stonycreek (T)	31	6.6%	8	6.6%	0	0.0%	25	6.4%	10	6.6%
Stoystown (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Summit (T)	13	3.2%	6	3.2%	0	0.0%	9	3.3%	9	3.3%
Upper Turkeyfoot (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ursina (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Wellersburg (B)	24	58.5%	2	40.0%	0	0.0%	19	57.6%	8	57.1%
Windber (B)	120	16.8%	47	16.7%	0	0.0%	73	16.6%	78	16.7%
Somerset County (Total)	**1,407**	**8.3%**	**275**	**8.1%**	**7**	**3.1%**	**963**	**8.2%**	**551**	**7.3%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024
Note: % = Percent

Table 4.3.15-6 Estimated Number of Vulnerable Persons Located in Sinkholes (Mined Out Area) Hazard Area

Jurisdiction	Estimated Number of Vulnerable Persons Located in Sinkholes (Mined Out Area) Hazard Area									
	Persons Over 65	% of Total	Persons Under 5	% of Total	Non-English Speaking Persons	% of Total	Persons with a Disability	% of Total	Persons in Poverty	% of Total
Addison (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Addison (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Allegheny (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Benson (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Berlin (B)	73	8.9%	13	8.3%	0	0.0%	39	8.7%	24	8.9%
Black (T)	7	4.1%	1	3.6%	0	0.0%	4	4.2%	3	4.1%
Boswell (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Brothersvalley (T)	70	15.8%	13	15.9%	7	15.4%	51	15.8%	27	15.5%
Callimont (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Casselman (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Central City (B)	48	18.4%	11	18.0%	0	0.0%	32	18.3%	33	18.1%
Conemaugh (T)	1,036	50.6%	203	50.5%	0	0.0%	566	50.6%	240	50.5%
Confluence (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Elk Lick (T)	6	1.5%	2	1.6%	1	1.2%	3	1.3%	7	1.5%
Fairhope (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Garrett (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Greenville (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Hooversville (B)	11	6.1%	1	3.6%	0	0.0%	8	6.2%	3	4.9%
Indian Lake (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Jefferson (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Jenner (T)	262	37.3%	56	37.1%	0	0.0%	238	37.4%	124	37.1%
Jennerstown (B)	95	34.1%	11	31.4%	0	0.0%	64	34.0%	36	33.6%
Larimer (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lincoln (T)	149	48.7%	30	48.4%	0	0.0%	92	48.7%	14	48.3%
Lower Turkeyfoot (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Meyersdale (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Middlecreek (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Milford (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
New Baltimore (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Jurisdiction	Estimated Number of Vulnerable Persons Located in Sinkholes (Mined Out Area) Hazard Area									
	Persons Over 65	% of Total	Persons Under 5	% of Total	Non-English Speaking Persons	% of Total	Persons with a Disability	% of Total	Persons in Poverty	% of Total
New Centerville (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Northampton (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ogle (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Paint (B)	37	10.1%	5	10.2%	0	0.0%	16	10.0%	20	10.1%
Paint (T)	101	12.0%	10	11.6%	0	0.0%	48	12.0%	14	11.9%
Quemahoning (T)	55	19.2%	14	18.4%	0	0.0%	63	19.2%	16	18.4%
Rockwood (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salisbury (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seven Springs (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shade (T)	216	40.7%	32	40.0%	0	0.0%	200	40.6%	72	40.7%
Shanksville (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Somerset (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Somerset (T)	173	8.3%	28	8.1%	1	4.2%	139	8.3%	62	8.2%
Southampton (T)	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Stonycreek (T)	19	4.0%	4	3.3%	0	0.0%	16	4.1%	6	3.9%
Stoystown (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Summit (T)	4	1.0%	2	1.1%	0	0.0%	3	1.1%	3	1.1%
Upper Turkeyfoot (T)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ursina (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Wellersburg (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Windber (B)	93	13.0%	36	12.8%	0	0.0%	57	13.0%	60	12.9%
Somerset County (Total)	**2,456**	**14.4%**	**472**	**13.9%**	**9**	**4.0%**	**1,639**	**14.0%**	**764**	**10.2%**

Source: *U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024*
Note: *% = Percent*

Impact on General Building Stock

Standard loss estimation models do not exist for the subsidence/sinkhole hazard. In general, the built environment located on limestone (carbonate) and abandoned mines is exposed to this hazard. Table 4.3.15-7 below summarizes the risk to the building stock located in the sinkhole (abandoned mines) hazard area and Table 4.3.15-8 summarizes the risk to the building stock located in the sinkhole (mined out) hazard area.

Table 4.3.15-7. Estimated Building Stock Located in the Sinkhole (Abandoned Mine) Hazard Area

Jurisdiction	Jurisdiction Total Buildings		Buildings in Sinkhole (Abandoned Mines) Hazard Area)			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,465	0	0.0%	$0	0.0%
Addison (T)	2,429	$1,136,703,437	7	0.3%	$5,266,000	0.5%
Allegheny (T)	1,509	$781,809,472	0	0.0%	$0	0.0%
Benson (B)	173	$89,274,721	0	0.0%	$0	0.0%
Berlin (B)	1,392	$895,269,284	143	10.3%	$131,142,034	14.6%
Black (T)	1,515	$834,474,737	97	6.4%	$43,294,289	5.2%
Boswell (B)	826	$474,400,294	94	11.4%	$46,826,723	9.9%
Brothersvalley (T)	3,330	$2,064,465,986	203	6.1%	$141,934,487	6.9%
Callimont (B)	55	$30,930,873	0	0.0%	$0	0.0%
Casselman (B)	119	$41,086,890	0	0.0%	$0	0.0%
Central City (B)	912	$442,954,504	41	4.5%	$15,833,905	3.6%
Conemaugh (T)	6,338	$3,880,986,714	604	9.5%	$338,161,530	8.7%
Confluence (B)	753	$379,399,641	0	0.0%	$0	0.0%
Elk Lick (T)	3,334	$1,853,364,019	140	4.2%	$74,885,120	4.0%
Fairhope (T)	304	$114,953,744	0	0.0%	$0	0.0%
Garrett (B)	377	$163,199,308	26	6.9%	$8,568,328	5.3%
Greenville (T)	1,145	$619,817,620	0	0.0%	$0	0.0%
Hooversville (B)	581	$284,259,840	288	49.6%	$142,301,136	50.1%
Indian Lake (B)	1,148	$775,063,497	0	0.0%	$0	0.0%
Jefferson (T)	3,395	$1,763,883,579	73	2.2%	$36,031,362	2.0%
Jenner (T)	5,016	$2,687,221,806	604	12.0%	$287,429,572	10.7%
Jennerstown (B)	641	$404,635,410	6	0.9%	$4,720,840	1.2%

Jurisdiction	Jurisdiction Total Buildings		Buildings in Sinkhole (Abandoned Mines) Hazard Area)			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Larimer (T)	839	$411,045,802	0	0.0%	$0	0.0%
Lincoln (T)	1,981	$1,209,799,393	136	6.9%	$57,788,280	4.8%
Lower Turkeyfoot (T)	1,168	$528,650,209	2	0.2%	$715,007	0.1%
Meyersdale (B)	1,529	$888,796,373	0	0.0%	$0	0.0%
Middlecreek (T)	2,860	$1,361,478,007	6	0.2%	$3,791,840	0.3%
Milford (T)	2,434	$1,414,705,761	23	0.9%	$14,890,272	1.1%
New Baltimore (B)	174	$77,842,527	0	0.0%	$0	0.0%
New Centerville (B)	171	$104,468,378	0	0.0%	$0	0.0%
Northampton (T)	763	$355,524,703	0	0.0%	$0	0.0%
Ogle (T)	687	$335,973,192	0	0.0%	$0	0.0%
Paint (B)	553	$294,837,290	164	29.7%	$95,042,063	32.2%
Paint (T)	3,474	$2,072,241,492	442	12.7%	$267,288,721	12.9%
Quemahoning (T)	2,464	$1,472,027,871	364	14.8%	$197,153,393	13.4%
Rockwood (B)	619	$349,683,802	0	0.0%	$0	0.0%
Salisbury (B)	639	$345,399,685	0	0.0%	$0	0.0%
Seven Springs (B)	82	$139,517,399	0	0.0%	$0	0.0%
Shade (T)	3,461	$1,759,474,604	710	20.5%	$336,828,018	19.1%
Shanksville (B)	178	$97,994,103	0	0.0%	$0	0.0%
Somerset (B)	3,433	$3,277,246,043	71	2.1%	$135,884,659	4.1%
Somerset (T)	8,899	$6,489,508,286	474	5.3%	$296,509,591	4.6%
Southampton (T)	1,001	$469,896,734	8	0.8%	$3,234,774	0.7%
Stonycreek (T)	3,547	$1,868,134,699	225	6.3%	$102,865,948	5.5%
Stoystown (B)	266	$142,664,600	0	0.0%	$0	0.0%
Summit (T)	3,085	$1,765,406,355	119	3.9%	$77,165,325	4.4%
Upper Turkeyfoot (T)	2,126	$1,035,009,396	1	0.0%	$215,872	<0.1%
Ursina (B)	279	$118,221,649	0	0.0%	$0	0.0%
Wellersburg (B)	261	$117,923,548	151	57.9%	$64,352,723	54.6%

Jurisdiction	Jurisdiction Total Buildings		Buildings in Sinkhole (Abandoned Mines) Hazard Area)			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Windber (B)	2,673	$1,756,688,270	427	16.0%	$243,861,540	13.9%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**5,649**	**6.6%**	**$3,173,983,353**	**6.3%**

Source: *Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024; RS Means 2024*
Note: *% = Percent; (B)=Borough; (T)=Township*

Table 4.3.15-8. Estimated Building Stock Located in the Sinkhole (Mined Out Area) Hazard Area

Jurisdiction	Jurisdiction Total Buildings		Buildings in Sinkhole (Mined Out Area) Hazard Area)			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,465	0	0.0%	$0	0.0%
Addison (T)	2,429	$1,136,703,437	2	0.1%	$265,903	<0.1%
Allegheny (T)	1,509	$781,809,472	0	0.0%	$0	0.0%
Benson (B)	173	$89,274,721	0	0.0%	$0	0.0%
Berlin (B)	1,392	$895,269,284	119	8.5%	$81,739,947	9.1%
Black (T)	1,515	$834,474,737	63	4.2%	$31,536,406	3.8%
Boswell (B)	826	$474,400,294	0	0.0%	$0	0.0%
Brothersvalley (T)	3,330	$2,064,465,986	413	12.4%	$203,904,227	9.9%
Callimont (B)	55	$30,930,873	0	0.0%	$0	0.0%
Casselman (B)	119	$41,086,890	0	0.0%	$0	0.0%
Central City (B)	912	$442,954,504	147	16.1%	$64,223,409	14.5%
Conemaugh (T)	6,338	$3,880,986,714	2,992	47.2%	$1,985,461,966	51.2%
Confluence (B)	753	$379,399,641	0	0.0%	$0	0.0%
Elk Lick (T)	3,334	$1,853,364,019	39	1.2%	$17,095,838	0.9%
Fairhope (T)	304	$114,953,744	0	0.0%	$0	0.0%
Garrett (B)	377	$163,199,308	0	0.0%	$0	0.0%
Greenville (T)	1,145	$619,817,620	0	0.0%	$0	0.0%
Hooversville (B)	581	$284,259,840	40	6.9%	$16,881,682	5.9%

Jurisdiction	Jurisdiction Total Buildings		Buildings in Sinkhole (Mined Out Area) Hazard Area)			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Indian Lake (B)	1,148	$775,063,497	0	0.0%	$0	0.0%
Jefferson (T)	3,395	$1,763,883,579	0	0.0%	$0	0.0%
Jenner (T)	5,016	$2,687,221,806	2,003	39.9%	$1,082,432,572	40.3%
Jennerstown (B)	641	$404,635,410	239	37.3%	$136,306,979	33.7%
Larimer (T)	839	$411,045,802	0	0.0%	$0	0.0%
Lincoln (T)	1,981	$1,209,799,393	1,014	51.2%	$634,672,877	52.5%
Lower Turkeyfoot (T)	1,168	$528,650,209	5	0.4%	$1,112,943	0.2%
Meyersdale (B)	1,529	$888,796,373	0	0.0%	$0	0.0%
Middlecreek (T)	2,860	$1,361,478,007	0	0.0%	$0	0.0%
Milford (T)	2,434	$1,414,705,761	6	0.2%	$2,734,279	0.2%
New Baltimore (B)	174	$77,842,527	0	0.0%	$0	0.0%
New Centerville (B)	171	$104,468,378	0	0.0%	$0	0.0%
Northampton (T)	763	$355,524,703	0	0.0%	$0	0.0%
Ogle (T)	687	$335,973,192	0	0.0%	$0	0.0%
Paint (B)	553	$294,837,290	58	10.5%	$29,173,934	9.9%
Paint (T)	3,474	$2,072,241,492	472	13.6%	$325,905,723	15.7%
Quemahoning (T)	2,464	$1,472,027,871	608	24.7%	$312,546,108	21.2%
Rockwood (B)	619	$349,683,802	0	0.0%	$0	0.0%
Salisbury (B)	639	$345,399,685	0	0.0%	$0	0.0%
Seven Springs (B)	82	$139,517,399	0	0.0%	$0	0.0%
Shade (T)	3,461	$1,759,474,604	1,294	37.4%	$676,458,423	38.4%
Shanksville (B)	178	$97,994,103	0	0.0%	$0	0.0%
Somerset (B)	3,433	$3,277,246,043	0	0.0%	$0	0.0%
Somerset (T)	8,899	$6,489,508,286	775	8.7%	$553,110,131	8.5%
Southampton (T)	1,001	$469,896,734	4	0.4%	$1,521,824	0.3%
Stonycreek (T)	3,547	$1,868,134,699	161	4.5%	$88,696,528	4.7%
Stoystown (B)	266	$142,664,600	0	0.0%	$0	0.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in Sinkhole (Mined Out Area) Hazard Area)			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Summit (T)	3,085	$1,765,406,355	42	1.4%	$26,741,423	1.5%
Upper Turkeyfoot (T)	2,126	$1,035,009,396	0	0.0%	$0	0.0%
Ursina (B)	279	$118,221,649	0	0.0%	$0	0.0%
Wellersburg (B)	261	$117,923,548	0	0.0%	$0	0.0%
Windber (B)	2,673	$1,756,688,270	341	12.8%	$214,766,117	12.2%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**10,837**	**12.7%**	**$6,487,289,238**	**12.9%**

Source: *Somerset County 2024; USACE 2022; Pennsylvania Department of Environmental Protection 2024; RS Means 2024*
Note: *% = Percent; (B)=Borough; (T)=Township*

Impact on Critical Facilities

Table 4.3.15-11 summarizes the number of critical facilities as well as community lifelines in the planning area, and in total, the County has 3 critical facilities which are also lifelines located within the sinkhole/subsidence hazard area. This includes both the Abandoned Mines hazard area as well as the Mined Out areas. Section 3, County Profile, provides more information about these critical facilities and lifelines.

Table 4.3.15-9 Number of Facilities in Sinkholes (Abandoned Mine) Hazard Area, by Lifeline Category

Jurisdiction	Number of Facilities in Sinkholes (Abandoned Mine) Hazard Area, by Lifeline Category										
	Communication	Energy	Food, Hydration, Shelter	HazMat	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdictional Total
Addison (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Addison (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Allegheny (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Benson (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Berlin (B)	1	0	0	0	0	1	0	0	0	2	20.0%
Black (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Boswell (B)	0	0	0	0	0	0	1	0	0	1	12.5%
Brothersvalley (T)	0	0	0	2	0	0	1	0	0	3	9.1%
Callimont (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Casselman (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Central City (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Conemaugh (T)	0	0	0	0	0	3	5	0	1	9	18.0%
Confluence (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Elk Lick (T)	0	0	0	0	0	0	3	0	0	3	11.5%
Fairhope (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Garrett (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Greenville (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Hooversville (B)	1	0	0	0	0	0	2	0	0	3	42.9%
Indian Lake (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Jefferson (T)	0	0	0	1	0	0	0	0	0	1	5.0%
Jenner (T)	0	0	0	1	0	1	5	0	0	7	17.9%
Jennerstown (B)	0	0	0	0	0	0	1	0	0	1	11.1%
Larimer (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Lincoln (T)	0	0	0	1	0	0	2	0	0	3	15.0%
Lower Turkeyfoot (T)	0	0	0	0	0	0	1	0	0	1	10.0%
Meyersdale (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Middlecreek (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Milford (T)	0	0	0	0	0	0	1	0	0	1	4.8%
New Baltimore (B)	0	0	0	0	0	0	0	0	0	0	0.0%

Jurisdiction	Number of Facilities in Sinkholes (Abandoned Mine) Hazard Area, by Lifeline Category										
	Communication	Energy	Food, Hydration, Shelter	HazMat	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdictional Total
New Centerville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Northampton (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Ogle (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Paint (B)	0	0	0	0	0	1	1	0	1	3	60.0%
Paint (T)	0	0	0	0	0	0	4	0	0	4	18.2%
Quemahoning (T)	0	0	0	1	0	0	2	0	0	3	13.0%
Rockwood (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Salisbury (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Seven Springs (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Shade (T)	0	0	0	1	0	2	5	0	0	8	24.2%
Shanksville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Somerset (B)	0	0	0	0	0	0	0	0	1	1	3.0%
Somerset (T)	0	0	0	1	0	1	1	0	0	3	4.2%
Southampton (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Stonycreek (T)	0	0	0	1	0	0	2	0	0	3	7.1%
Stoystown (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Summit (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Upper Turkeyfoot (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Ursina (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Wellersburg (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Windber (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Somerset County (Total)	2	0	0	9	0	9	37	0	3	60	8.4%

Source: *Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021; Pennsylvania Department of Environmental Protection 2024*
Note: *% = Percent*

Table 4.3.15-10. Number of Facilities in Sinkholes (Mined Out Area) Hazard Area, by Lifeline Category

Jurisdiction	Number of Facilities in Sinkholes (Mined Out Area) Hazard Area, by Lifeline Category										
	Communication	Energy	Food, Hydration, Shelter	HazMat	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdictional Total
Addison (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Addison (T)	0	0	0	0	0	0	0	0	0	0	0.0%

Jurisdiction	Number of Facilities in Sinkholes (Mined Out Area) Hazard Area, by Lifeline Category										
	Communication	Energy	Food, Hydration, Shelter	HazMat	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdictional Total
Allegheny (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Benson (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Berlin (B)	0	0	0	0	0	3	0	0	0	3	30.0%
Black (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Boswell (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Brothersvalley (T)	0	0	0	2	0	0	3	0	1	6	18.2%
Callimont (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Casselman (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Central City (B)	0	0	0	0	0	0	0	0	1	1	14.3%
Conemaugh (T)	1	0	0	0	0	6	11	0	2	20	40.0%
Confluence (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Elk Lick (T)	1	0	0	0	0	0	0	0	0	1	3.8%
Fairhope (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Garrett (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Greenville (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Hooversville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Indian Lake (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Jefferson (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Jenner (T)	0	0	0	0	0	2	14	0	0	16	41.0%
Jennerstown (B)	0	0	0	0	0	0	1	0	0	1	11.1%
Larimer (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Lincoln (T)	0	0	0	3	0	1	2	0	1	7	35.0%
Lower Turkeyfoot (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Meyersdale (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Middlecreek (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Milford (T)	0	0	0	0	0	0	0	0	0	0	0.0%
New Baltimore (B)	0	0	0	0	0	0	0	0	0	0	0.0%
New Centerville (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Northampton (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Ogle (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Paint (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Paint (T)	0	0	0	1	0	0	0	0	0	1	4.5%
Quemahoning (T)	0	0	0	0	0	0	2	0	0	2	8.7%
Rockwood (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Salisbury (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Seven Springs (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Shade (T)	0	1	0	1	0	0	3	0	0	5	15.2%
Shanksville (B)	0	0	0	0	0	0	0	0	0	0	0.0%

Jurisdiction	Number of Facilities in Sinkholes (Mined Out Area) Hazard Area, by Lifeline Category										
	Communication	Energy	Food, Hydration, Shelter	HazMat	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Jurisdictional Total
Somerset (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Somerset (T)	0	0	0	1	0	1	1	0	0	3	4.2%
Southampton (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Stonycreek (T)	1	0	0	1	0	0	0	0	0	2	4.8%
Stoystown (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Summit (T)	1	1	0	0	0	0	0	0	0	2	5.7%
Upper Turkeyfoot (T)	0	0	0	0	0	0	0	0	0	0	0.0%
Ursina (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Wellersburg (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Windber (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Somerset County (Total)	4	2	0	9	0	13	37	0	5	70	9.8%

Source: *Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021; Pennsylvania Department of Environmental Protection 2024*
Note: *% = Percent; (B)=Borough; (T)=Township*

Table 4.3.15-11. Number of Lifeline Facilities Located in the Sinkhole/Subsidence Hazard Areas

FEMA Lifeline Category	Number of Lifelines Located in the Sinkhole (Abandoned Mines) Hazard Area	Number of Lifelines Located in the Sinkhole (Mined Out Area) Hazard Area
Communications	2	4
Energy	0	2
Food, Water, Shelter	0	0
Hazardous Materials	9	9
Health and Medical	0	0
Safety and Security	9	13
Transportation	37	37
Water Systems	0	0
Other Critical Facilities	3	5
Somerset County (Total)	**60**	**70**

Source: Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021; Tetra Tech 2023

Impact on the Economy

Since there have no previous occurrences of sinkholes in Somerset County, there has been no economic impact of this hazard. However, sinkholes have caused damages to buildings and roadways in other parts of the State, therefore, the possibility of incurring future costs remains. Subsidence and sinkholes can severely impact roads and infrastructure. While there is no clear way to track subsidence costs in Pennsylvania, USGS estimates that sinkhole damages cost $300 million each year. However, because there is no national tracking system for sinkholes, the total cost is likely less (USGS n.d.).

Impact on the Environment

The presence of sinkholes can result in increased potential for groundwater contamination. Due to their porous nature, sinkholes are sometimes used as instruments for enhancing groundwater recharge. However, if hazardous materials are spilled at a recharge point, groundwater can quickly be contaminated due to the lack of soil substrate which normally would slow migrating contaminants. Vegetation is usually damaged during abrupt subsidence events. However, re-growth takes place over time. Land subsidence can also result in more frequent and expansive flooding and changes in river canal and drain flow systems.

Future Changes That May Impact Vulnerability

Future Growth and Development

An increase in development and population can increase likelihood of a sinkhole incident. Future migration to larger jurisdictions may also increase the likelihood of an incident.

Effect of Climate Change on Vulnerability

Climate is defined not simply as average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and at the local level, climate change has the potential to alter the prevalence and severity of weather extremes (EPA 2022).

Climate change factors such as an extended growing season, higher temperatures, and the possibility of more intense and less frequent summer rainfall may lead to changes in water resource availability. As stated earlier in this profile, changes to the water balance of an area (including over-withdrawal of groundwater, diverting surface water from a large area and concentrating it in a single point, artificially creating ponds of surface water, and drilling new water wells) will cause sinkholes. These actions can also serve to accelerate the natural processes of bedrock degradation, which can have a direct impact on sinkhole creation. The potential effects of climate change on Somerset County’s vulnerability to subsidence/sinkhole events will need to be considered as more information develops regarding regional climate change impacts.

4.3.15.7 Additional Data and Next Steps

Somerset County does not have an official record of a significant subsistence-based disaster. However, there have been unofficial reports of sinkholes at several locations in the County, which are believed to be caused by flooding, poor fill, and construction over streams. More data is needed to identify these past events and possible locations to properly mitigate this hazard.

4.3.16 Terrorism

4.3.16.1 Hazard Description

According to the US Department of Homeland Security (DHS), terrorism is any activity that is dangerous to human life, violates US criminal law, and is intended to intimidate or coerce a civilian population, a government policy, or the conduct of government (DHS 2023b). Acts of terrorism include threats of terrorism, assassinations, kidnappings, hijackings, bomb scares and bombings, cyber-attacks (computer-based attacks); and use of chemical, biological, nuclear, and radiological weapons (PEMA 2023). Various types of terrorism are discussed in the sections below.

Agroterrorism

Agroterrorism is the intentional use of plant or animal pathogens to cause devastating disease in the agricultural sector. Acts of agroterrorism share similarities with bioterrorism, but the aim of agroterrorism is to specifically target crops and livestock to cause a significant economic impact or to damage food supplies (FBI 2012).

Armed Attacks and Assassinations

Armed attacks include raids and ambushes. An assassination is the killing of a selected victim, usually by bombings or small arms. A drive-by shooting is a common technique employed by unsophisticated or loosely organized terrorist groups. Historically, terrorists have assassinated specific individuals for psychological effect.

Arson and Firebombing

Incendiary devices are inexpensive and easy to hide. Arson and fire-bombings are easily conducted by terrorist groups that may not be as well organized, equipped, or trained as a major terrorist organization. An act of arson or firebombing against a utility, hotel, government building, or industrial center portrays an image to the public that the ruling government is incapable of maintaining order.

Bioterrorism

Bioterrorism refers to intentional release of toxic biological agents to harm and terrorize civilians in the name of a political or other cause. The U.S. Centers for Disease Control and Prevention (CDC) has classified the viruses, bacteria, and toxins that could be used in an attack. Category A Biological Diseases are most likely to cause the greatest harm (CDC n.d.). They include:

- Anthrax (*Bacillus anthracis*)
- Botulism (*Clostridium botulinum toxin*)
- Plague (*Yersinia pestis*)
- Smallpox (*Variola major*)
- Tularemia (*Francisella tularensis*)
- Hemorrhagic fever caused by Ebola virus or Marburg virus

Bombings

Bombings are the most common type of terrorist act. Typically, improvised explosive devices (IED) are inexpensive and easy to make. Bombs can range from smaller packages to vehicle-borne bombs that are capable of catastrophic damage. Modern devices are smaller and harder to detect and have destructive capabilities. Terrorists responsible for this bombing can use materials readily available to the average consumer to construct a bomb.

Cyber Terrorism

Cyber terrorism can be defined as activities intended to damage or disrupt vital computer systems. These acts can range from taking control of a host website to using networked resources to directly cause destruction and harm (PEMA 2023). For example, cyber terrorists could disable networked emergency systems or hack into networks that house critical financial information. There is wide disagreement about the extent of the existing threat by cyber terrorists.

Hijackings and Skyjackings

Hijacking is seizure by force of a surface vehicle, its passengers, or its cargo. Skyjacking is the overtaking of an aircraft, which creates a mobile hostage barricade situation. A skyjacked aircraft has the potential to provide terrorists with hostages from many nations and draws heavy media attention. Skyjacking also provides mobility for the terrorists to relocate the aircraft to a country that supports their cause and provides them with a human shield, making retaliation difficult.

Intentional Hazardous Materials Release

Intentional hazardous materials release is intentional leak, spillage, discharge, or disposal of hazardous materials or substances (such as explosives, toxic chemicals, and radioactive materials) (DHS 2023a). This could include the intentional release of chemicals commonly used in industry, or the release of chemical agents as a weapon. This might involve attacking hazardous material storage facilities or attacking storage containers in transit. Intentional hazardous materials releases can have a significant impact on human health and the environment.

Kidnappings and Hostage-Takings

Terrorists use kidnapping and hostage-taking to establish a bargaining position and to elicit publicity. Kidnapping is one of the most difficult acts for a terrorist group to accomplish, but a successful kidnapping can gain terrorists money, release of jailed comrades, and publicity for an extended period. Hostage-taking involves seizure of a facility or location and taking hostages present in that facility. Unlike a kidnapping, hostage-taking provokes a confrontation with authorities. It forces authorities to make dramatic decisions or to comply with the terrorist's demands. It is overt and designed to attract and hold media attention. The intended target is the audience affected by the hostage's confinement, not the hostage.

Nuclear/Radiological Terrorism

Nuclear and radiological terrorism refers to a number of different ways nuclear materials might be exploited as a terrorist tactic. These methods include attacking nuclear facilities, purchasing nuclear weapons, or building nuclear weapons or otherwise finding ways to disperse radioactive materials.

4.3.16.2 Location and Extent

Terrorism can occur anywhere within Somerset County depending on an individual's or organization's agenda. Any facility or structure is vulnerable to a terrorist attack, as terrorists have historically sent chemical or biological agents through the mail. High-risk targets include local, county, state, or federal government facilities; major venues and gathering places; sites with historical, cultural, or other significance; and critical infrastructure. Damage to or disruption of operations at government facilities could profoundly impact Somerset County's population, even if the terrorism event is relatively small scale.

An important consideration in evaluating terrorism hazards is the existence of facilities, landmarks, or other buildings of international, national, or regional importance. While Somerset County has many notable landmarks from a local historical perspective, no sites within the county are considered significant landmarks in terms of national or international importance. Nonetheless, terrorism can take many forms, and terrorists have a wide range of personal, political, or cultural agendas. Therefore, no location within Somerset County is immune from being a potential terrorist target.

A few types of terrorist activities are particularly relevant to Somerset County: cyber terrorism, conventional/improvised bomb threat, and armed attacks. A cyber-attack can take the form of data breaches, crippling computer viruses, or even damage to physical technology infrastructure. A bomb threat can be verbal or written to ignite an explosive device to cause property damage, death or injuries to victims, and/or to incite fear. An armed attack is using a weapon to cause property damage, death, injuries, and/or incite fear.

Although Somerset County does not have a large number of facilities that could be considered nationally important targets, it does have critical infrastructure that, if attacked, could have significant effects at the local or regional level. Critical infrastructure can include financial centers, government buildings, media outlets, transportation authorities, power/utilities companies, and telecommunications networks. Several major transportation routes and gas transmission pipelines traverse Somerset County, making intentional hazard material releases a potential threat to citizens and the environment. A complete list of critical facilities is included in Appendix I.

Acts of terrorism can occur anywhere, at any time of day. The National Terrorism Advisory System (NTAS) communicates information about terrorist threats by providing detailed information to the public, government agencies, first responders, airports and other transportation hubs, and the private sector. Information can be distributed through two mediums: Bulletins or Alerts. NTAS Bulletins are used to disseminate critical information regarding terrorism that may not relate to a specific threat (DHS 2022).

When a threat arises, the Secretary of Homeland Security announces an NTAS Alert and shares the news with the public. The alert may include specific information about the nature of the threat, including the geographic region, mode of transportation, or critical infrastructure potentially affected as well as steps that individuals and communities can take to protect themselves and help prevent, mitigate, or respond to the threat. The alert indicates whether the threat is elevated or imminent. Elevated threats are those that include no specific information about the timing or location. Imminent threats are threats believed to be impending or occurring very soon. DHS will issue an NTAS advisory through their website, news media, and its social media channels such as Facebook and Twitter (DHS 2022).

4.3.16.3 Range of Magnitude

The magnitude of a terrorism event depends on the scale of the attack, population involved, equipment and other key assets affected, and duration of the incident or exposure to the agent used. The effect of a terrorism event can vary depending on the type of attack and the magnitude of the event or events. Terrorism events can cause public fear regarding the use of mass transportation or leaving their homes in the event of a biological or nuclear attack. Communication systems, both public and private, can fail because of an overwhelming amount of usage or damage to its infrastructure. Healthcare facilities can become quickly inundated and must be prepared to triage injured patients, handle mass casualties, and conduct decontamination operations. The secondary hazards resulting from a terrorist attack depend on the size and scope of the incident. Some possible secondary hazards include widespread utility failure, health effects such as epidemics or pandemics, flooding (if a dam was destroyed), and environmental contamination.

The worst-case scenario for a terrorism event in Somerset County would be an active threat incident or a mass casualty event. The active threat incident would be a shooting or stabbing resulting in mass casualties—similar to the West Nickel Mines School in Bark Township, Pennsylvania, which occurred on October 2, 2006. Another type of worst-case scenario would be a mass casualty event in the form of a vehicular attack or an improvised explosive device that could result in a combination of mass casualties and fatalities. Generally speaking, any event that results in mass casualties or fatalities could overwhelm the capabilities of Somerset County, emergency services, and healthcare facilities and hospitals.

Furthermore, the threat of a nuclear attack is rare but should not be eliminated. Numerous countries in the world have nuclear warfare capability, and other nations continue to try to obtain that capability. Areas such as cities or buildings that are identified as high-risk areas or target areas would experience the direct effects of the weapon, including blast, radiation, extreme temperatures, wind, and light that is brighter than the sun. Depending on its size, a device could cause total destruction within a 4-mile radius of the blast. Any survivors within a 20-mile radius can expect residual effects including fires, flooding, loss of power, and fuel and water shortages, with additional risk of a release of other hazardous materials that may be in the area. People close to the blast would be killed. As the distance increases, more people will survive; however, people who do survive the initial blast may die due to an increase in exposure to gamma rays.

While Somerset County is not within a metropolitan area, if a major attack were to occur, Somerset County should expect to see a surge of people from impacted metropolitan areas seeking safety.

4.3.16.4 Past Occurrence

Somerset County has never suffered an international terrorist attack, however, the county was nearly a target on September 11, 2001, when Flight 93 crashed in Somerset County. The County has occasionally experienced domestic terrorism incidents. School bomb threats are common, with 17 reported between 2002 and 2016 (Somerset County 2020). Additional information on terrorism incidents and threats was not available at the time of this plan update.

4.3.16.5 Future Occurrence

Based on historical events, Somerset County can expect to experience several terrorist threats or suspicious activities each year; however, few will result in an actual terrorist incident. Previous events in Somerset County have not resulted in significant terrorist attacks; however, the severity of a future incident cannot be predicted with a sufficient level of certainty. Based on the recent incident events, the future occurrence of terrorism in Somerset County can be considered *unlikely* as defined by the Risk Factor Methodology probability criteria (discussed in Section 4.4).

Although previous events have not resulted in what are considered significant terrorist attacks, the severity of a future incident cannot be predicted with a sufficient level of certainty. Prediction of terrorist attacks is almost impossible because terrorism is a result of human factors. As long as fringe groups maintain radically different ideas than that of the government or general population, terrorism is a possibility (PEMA 2023).

Effects of Climate Change

Climate change is not expected to impact terrorist activity as a whole. However, it may intensify the impacts felt by agroterrorism which can impact entire regions and economies which rely on agriculture for food, goods, and services.

4.3.16.6 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the area identified. The following sections discuss the potential impact of the terrorism hazard on Somerset County, including:

- Impact on (1) life, health and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time

Life, Health, and Safety; General Building Stock and Critical Facilities, and the Economy

The probability of Somerset County becoming a terrorist target should remain relatively low; however, because of its proximity to other more vulnerable areas, its vulnerability and potential for secondary impacts is increased. Somerset County may experience some serious issues caused by an influx of people from the larger metropolitan areas to the east in situations of terrorism and/or nuclear threats to these areas. This influx of population in these critical situations would stress the facilities of Somerset County, its municipalities, and first responders. First responders' safety may be at risk during on-scene operations, and there would be a higher than normal call volume/demand. First Responders may have to perform additional duties such as traffic control and responding to traffic incidents.

Because the probability of terrorism occurring cannot be quantified in the same way as that of many natural hazards, it is not possible to assess vulnerability in terms of likelihood of occurrence. Instead, vulnerability is assessed in terms of specific assets. By identifying potentially at-risk terrorist targets in a community, planning efforts can be put in place to reduce the risk of attack. All communities in Somerset County are vulnerable on some level, directly or indirectly, to a terrorist attack. However, communities where the previously mentioned potential targets are located should be considered more vulnerable. Site-specific assessments should be based on the relative importance of a particular site to the surrounding community or population (PEMA 2023).

Assessment questions to consider when assessing inherent and tactical vulnerabilities to specific Somerset County assets are listed below:

- Inherent vulnerability:
  - Visibility – How aware is the public of the existence of the facility?
  - Utility – How valuable might the place be in meeting the objectives of a potential terrorist?
  - Accessibility – How accessible is the place to the public?
  - Asset mobility – Is the asset's location fixed or mobile?
  - Presence of hazardous materials – Are flammable, explosive, biological, chemical, and/or radiological materials present on-site? If so, are they well secured?
  - Potential for collateral damage – What are the potential consequences for the surrounding area if the asset is attacked or damaged?
  - Occupancy – What is the potential for mass casualties based on the maximum number of individuals on-site at a given time?
- Tactical vulnerability:

  Site Perimeter
  - Site planning and Landscape Design – Is the facility designed with security in mind–both site-specific and with regard to adjacent land uses?
  - Parking Security – Are vehicle access and parking managed in a way that separates vehicles and structures?

  Building Envelope
  - Structural Engineering – Is the building's envelope designed to be blast-resistant? Does it provide collective protection against chemical, biological, and radiological contaminants?

  Facility Interior
  - Architectural and Interior Space Planning – Does security screening cover all public and private areas?
  - Mechanical Engineering – Are utilities and heating, ventilation, and air conditioning (HVAC) systems protected and/or backed up with redundant systems?
  - Electrical Engineering – Are emergency power and telecommunications available? Are alarm systems operational? Is lighting sufficient?
  - Fire Protection Engineering – Are the building's water supply and fire suppression systems adequate, code-compliant, and protected? Are on-site personnel trained appropriately? Are local first responders aware of the nature of the operations at the facility?
  - Electronic and Organized Security – Are systems and personnel in place to monitor and protect the facility?

Environment

The impacts of terrorism can vary in severity from nominal to catastrophic and are contingent upon the method of the attack, the volume of force applied, and the population density of the attack site. A terrorist event may cause significant loss of life for humans and animals as well as economic losses. Additionally, the impact of the attack itself may be exacerbated by the fact that human services agencies like community support programs, health and medical services, public assistance programs, and social services organizations can experience physical damage to facilities, supplies, and equipment as well as disruption of emergency communications. Ancillary effects of terrorism may also occur, such as urban fires or, in the case of a radiological device, radioactive fallout that can multiply the impact of a terrorist event (PEMA 2023).

Future Changes That May Impact Vulnerability

Future Growth and Development

Areas targeted for potential future growth and development in the next 5 to 10 years have been identified across Somerset County (further discussed in Section 2.4). Any areas of growth could be potentially impacted by the terrorism hazard because Somerset County is exposed and potentially vulnerable.

Effects of Climate Change on Vulnerability

Because terrorism is a human-caused hazard, climate change is not anticipated to affect vulnerability associated with terrorism.

4.3.16.7 Additional Data and Next Steps

Any additional information regarding localized concerns and past impacts will be collected and analyzed for the HMP update. These data will be developed to support future revisions to the plan.

4.3.17 Transportation Accident

4.3.17.1 Hazard Description

Transportation hazards include hazardous materials (HazMat) in transit, vehicular accidents, aviation accidents, at-grade railroad crossings, and roadways vulnerable to floods. In 2023, the National Transportation Safety Board (NTSB) reported 213 transportation-related fatalities across the United States for the year. Of those 213 fatalities, 8 were highway incidents, 0 were rail incidents, 203 were aviation incidents, 1 was a pipeline incident, and 1 was a marine incident (NTSB 2023). For the purpose of this plan update, transportation accidents are defined as incidents involving highway, air, and rail travel, resulting in death, serious injury, extensive property loss or damage or situations that cause delay or closure.

A transportation hazard may be defined as a condition created by movement of anything by common carrier. Transportation hazards can be divided into two categories: hazards created by the material being transported, and hazards created by the transportation medium. Transportation systems available in Somerset County include roadways, rail lines, maritime, and airports. Major road accidents in the County are probable, and major rail and aviation accidents are possible. All County systems and supporting transportation resources provide services locally, regionally, and nationally. Vehicular, aviation, maritime, and railway, accidents are defined below:

- **Vehicular Accidents—**A vehicular accident is a road traffic incident that usually involves one vehicle colliding with another vehicle or other road user, such as an animal or a stationary roadside object. A vehicular accident may result in injury, property damage, or possible fatalities. Many factors contribute to vehicular accidents, including equipment failure, poor road conditions, weather, traffic volume, and driver behavior.
    - **Hazardous Materials in Transit—**A hazardous material is defined as a substance or material determined capable of posing an unreasonable risk to health, safety, or property when transported. “Unreasonable risk” covers a broad range of health, fire, and environmental considerations. Hazardous materials come in various forms, some of which can cause death; serious injury; long-lasting health effects; and damage to buildings, homes, and other property. Hazardous materials include explosives, flammable solids, substances that become dangerous when wet, oxidizing substances, and toxic liquids. An accident involving a vehicle carrying hazardous materials becomes a hazmat incident if the hazardous material leaks; is involved in a fire; or if the potential for release, fire, or other hazard exists. Hazards can occur during production, storage, transportation, use, or disposal of hazardous materials (FEMA 2019).
- **Aviation Accidents—**According to the International Civil Aviation Organization, an aviation accident occurs during operation of an aircraft between the time a person boards the aircraft with intent to fly to a destination, to the time the person has disembarked the aircraft. Three different situations qualify as an aviation accident: (1) a person is fatally or seriously injured; (2) the aircraft sustains damage or structural failure; or (3) the aircraft is missing or inaccessible. An aviation incident is an occurrence, other than an accident, associated with operation of an aircraft that affects or could affect the safety of operation (ICAO, 2019).
- **Railway Accidents—**Railway accidents involve one or more trains. They can involve a train derailment or one train impacting another train, vehicle, or pedestrian.

This section provides a profile and vulnerability assessment of the transportation accident hazard for Somerset County.

4.3.17.2 Location and Extent

Vehicular Accidents

The County has 2,228 total linear miles of transportation roadway. Of the 2,228 miles, 889 linear miles are managed by PENNDOT, 40 miles are managed by other agencies, 30 miles are turnpikes, and 1,270 miles are local municipal roadways (PENNDOT 2021). Accidents can occur at any point along the roadways in Somerset County. Figure 4.3.17-1**.** shows the location of the major roadways in the County.

Structurally deficient bridges also pose a risk for transportation accidents. Pennsylvania has the third largest number of bridges in the United States, with more than 25,400 state-owned highway bridges (PENNDOT, Bridges 2023). In response to the collapse of the I-35W Bridge in Minneapolis in August 2007, PennDOT assessed the structural integrity of all bridges in the Commonwealth. Table 4.3.17-1 lists the total number of bridges in Somerset County, as well as the number of those that are in poor condition, or structurally deficient (in parentheses) (PENNDOT, Bridges 2023).

Table 4.3.17-1 Bridges in Somerset County

On State Roads	On Local Roads
490 (50)	95 (38)

Source: PennDOT 2023

There is no warning time for vehicular accidents. Factors contributing to these accidents are typically associated with the driver, vehicle, and environment. Factors associated with the driver include error, speeding, experience, and blood-alcohol level. Factors associated with the vehicle include type, condition, and center of gravity. Environmental factors include quality of the infrastructure, weather, and obstacles. The majority of vehicular accidents are attributed to the driver. Vehicular accidents can severely affect those directly involved, as well as others not directly involved. Other effects of vehicular accidents may include severe traffic delays, lost sales to businesses, delayed commodity shipments, and increased insurance costs.

Aviation Accidents

Somerset County Airport (2G9) is another airport which serves the area. Somerset County Airport contains over 5 thousand ft of asphalt runway and almost 3 thousand ft in turf area. According to the Pennsylvania Department of Transportation, Somerset County Airport has a $2.4 million economic impact for the state (PENNDOT, Somerset County Airport (2G9) 2023).

In addition, the public airports listed above are several privately owned airports and heliports include the following:

- Juergensen Airpark And Maritime Facility Airport - PS27
- Indian Lake Airport - 5G2
- Keystone Airport - 9PA7
- Hartman Airport - PS49
- Lohrs Landing Airport - PN47
- Alberter Farms Airport - PS52
- Somerset Hospital Heliport - 6PA2
- Quemahening Flightpark Ultralight - 2PN4

Railway Accidents

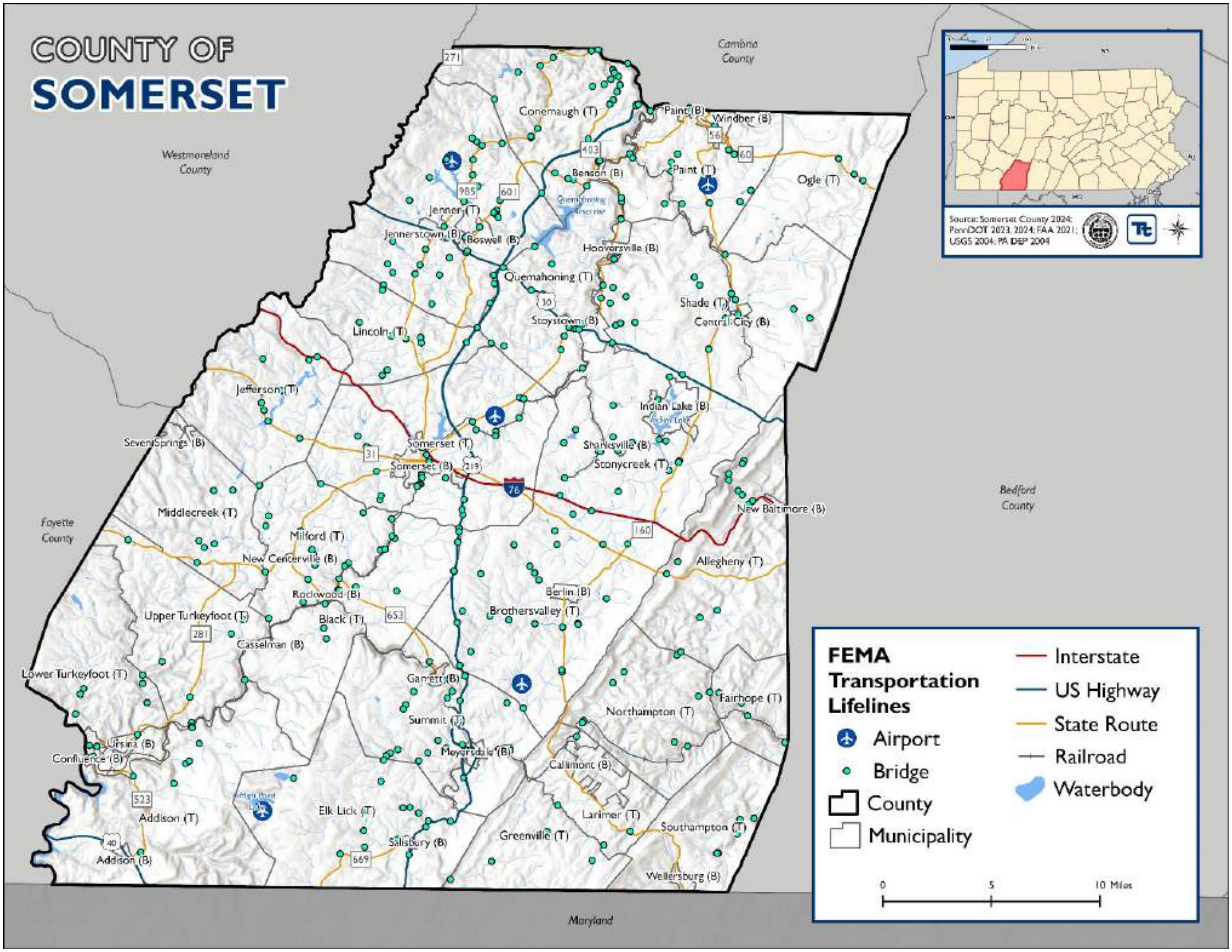
Rail freight traffic enters Somerset County from Pittsburgh through Ohiopyle State Park in the southwestern part of the county, traveling across the state line into Maryland. The rail line passes through the municipalities of Confluence, Fort Hill, Markleton, Rockwood, Garrett, Salisbury Junction, Keystone, Glencoe, Fairhope, and exits the county near Hyndman. Local feeder lines traverse Somerset County in a north-south direction originating from Johnstown and terminate in Rockwood where the lines join with the “core main line”. Pipelines are continuously being upgraded or newly constructed within Somerset County. Most of the pipelines are located underground but there are locations located above ground.

Somerset County’s rail line includes SEPTA regional rails, AMTRAK passenger lines, and multiple freight lines. There are four main railroad lines used to transport inbound and outbound commodities through Somerset

County: CSX's Philadelphia Subdivision line, Conrail's Chester Secondary line, Amtrak's Northeast Corridor line, and Amtrak's Keystone/Main line. The two Amtrak lines are used primarily for passenger service, but Norfolk Southern and Conrail freight trains occasionally use them. The CSX and Conrail lines in Somerset County are used solely for freight (PENNDOT, Rail Freight and Ports 2023).

The County's freight rail network is ample and includes 51 miles of freight tracks and six yards and intermodal terminals. Three major freight rail companies dominate the Somerset County landscape: Conrail (Consolidated Rail Corporation), CSX, and Norfolk Southern. Conrail is owned by CSX and Norfolk Southern; the company provides local rail service. Its service areas are shared assets of the two parent companies, which operate long distance freight trains on the freight railroad tracks in Somerset County (Somerset County Planning Department 2017).

Figure 4.3.17-1 Transportation Routes in Somerset County



4.3.17.3 Range of Magnitude

Significant passenger vehicle, air, and rail transportation accidents can result in a wide range of outcomes from damage solely to property to serious injury or death. Most air incidents are nonfatal and cause minor injuries or property damage. The majority of motor vehicle crashes are non-fatal in Pennsylvania, but PennDOT estimates that every hour ten people are injured in a car crash, and every seven hours someone dies as a result of a car crash. Most fatal crashes occur in the summer months of July, and August, and September (PEMA 2020).

Roadway accidents in Somerset County range from minor crashes to more serious incidents that involve injuries or fatalities, or result in a release of hazardous materials. Information for this plan regarding fatalities associated with automobile crashes (Table 4.3.17-2) and fatalities of pedestrians involved in transportation incidents (Table 4.3.17-3) was drawn from the Pennsylvania Department of Transportation 2022 Crash Facts and Statistics Annual Report (PENNDOT, 2022 Pennsylvania Crash Facts and Statistics Annual Report 2022).

Table 4.3.17-2. Fatalities from Automobile Crashes

Year	Pennsylvania	Somerset County
2018	1,190	14
2019	1,059	17
2020	1,129	9
2021	1,230	12
2022	1,179	10
Total	**5,787**	**62**

Source: PENNDOT 2022

Table 4.3.17-3. Fatalities of Pedestrians

Year	Pennsylvania	Somerset County
2018	201	2
2019	154	0
2020	146	1
2021	182	1
2022	184	1
Total	**867**	**5**

Source: PENNDOT 2022

Rail accidents can vary widely in terms of injuries, fatalities, property damage, and interruption of service, depending on the nature and severity of the accident. Local residents may also be involved in rail accidents while traveling outside the County.

Aircraft accidents can vary from a single-engine aircraft having a "hard landing" causing damage to the aircraft, to a crash of a small turboprop or jet aircraft, to a crash of a large jet (such as a Boeing 727). Other aircraft accidents could include helicopter or experimental aircraft crashes. Aviation accidents can also involve radio-controlled or drone aircraft devices, many of which are experimental and not subject to defined regulatory oversight, potentially complicating issues that could arise if one of these devices crash.

4.3.17.4 Past Occurrence

Major roadway accidents (such as multi-vehicle accidents, those that close roads or bridges, or those involving school buses) are reported by Somerset County to PennDOT. Table 4.3.17-4 summarizes these accidents from 2015 to 2022. While this table lists accidents reported to the counties and Commonwealth, significantly more minor accidents are not reported.

Table 4.3.17-4. Summary of Major Roadway Accidents in Somerset County, 2018 to 2022

Year	Vehicle Accidents (fatalities)	Railroad Accidents	Aircraft Accidents
2018	822 (14)	1	1
2019	688 (17)	0	0
2020	650 (9)	0	0
2021	643 (12)	1	0
2022	733 (10)	0	0
Total	**3,536 (62)**	**3**	**1**

Source: PENNDOT 2022; Federal Railroad Association 2024; NTSB 2024

4.3.17.5 Future Occurrence

Considering the current transportation network within the County and the steady increase in traffic volume, it is safe to assume that the number of vehicle accidents will continue to increase. Incidents involving air or rail should remain low. The County's population has increased over the last decade, meaning it is likely that traffic volumes have also risen. New residents have limited knowledge of detour routes and alternate routes around accidents which contributes to the accident-related congestion experienced recently in the County. The trucking industry is expected to continue, maintaining and possibly increasing the number of tractor-trailers on the County's Road system. Transportation accidents may increase slightly over the next five years without proper mitigation strategies in place.

For the 2025 plan update, the most up-to-date data was collected to calculate the probability of future occurrence of transportation accident events for Somerset County. Information from PennDOT, NTSB, and FRA were used to identify the number of transportation accident events that occurred between 2015 and 2023. Using these sources ensures the most accurate probability estimates possible. The table below shows these statistics, as well as the annual average number of events and the estimate percent chance of an incident occurring in a given year. Based on these statistics, there is an estimated 100-percent chance of a transportation accident (any type) event occurring in any given year in Somerset County.

Table 4.3.17-5. Probability of Future Transportation Accident Events

Hazard Type	Number of Occurrences Between 2003 and 2022	Percent Chance of Occurrence in any Given Year
Vehicular	16,069	100%
Railway	16	55%
Aviation	7	29.5%
TOTAL	**16,092**	**100%**

Sources: PennDOT 2023, National Board and Safety 2024, Federal Railroad Administration 2024
Notes: The data displayed above is based on police reports received and processed by PennDOT.

Based on the Risk Factor Methodology Probability Criteria, the probability of a transportation accident is considered to be *highly likely* (see Table 4.4-1). However, the low number of rail and air traffic accidents in the County indicates that the bulk of future transportation accidents will be roadway accidents.

Effects of Climate Change

Transportation incidents are human-caused hazards; however, these events can be caused by natural hazard events. Climate change may increase the frequency and magnitude of flood, winter weather, and severe weather events, which may lead to an increased number of transportation incidents due to hazardous conditions. Impacts from climate change affect major highways and railways as well as community roads and neighborhoods, elevating the probability for transportation incidents near and around residential areas.

4.3.17.6 Vulnerability Assessment

A qualitative assessment was performed to evaluate local assets' vulnerability to and potential impacts from the transportation accident hazard.

Life, Health, and Safety

General Population

Transportation hazards could lead to potential losses in categories of human health and life, property, and natural resources. Vehicular accidents, flooded roadways, and other roadway impairments may result in injury or death to drivers and passengers on the road, the public in the immediate vicinity, and emergency services personnel. The number of people exposed to a hazard depends on population density, whether exposure occurs during day or night, and percentage of the population in the accident area located indoors and outdoors.

The county and its municipalities are prepared to manage and respond to transportation hazards. However, the risk to first responders increases when they respond to transportation accidents near trafficked areas. First responders may also have to take on the additional duty of controlling traffic.

Socially Vulnerable Populations

Repair and replacement expenses resulting from transportation accidents can disproportionately impair the vulnerability of socially disadvantaged populations, particularly those facing economic hardships. Furthermore, these socially vulnerable groups often rely on public transportation, which may become inaccessible during emergencies or if the public transit vehicle is implicated in an accident.

Impact on General Building Stock, Critical Facilities, and Economy

Because of insufficient data, a full loss estimate was not completed for the transportation hazard. Loss of roadway use, and public transportation services would affect thousands of commuters, employment, day-to-day operations within the county, and delivery of critical municipal and emergency services. Disruption of one or more of these modes of transportation can lead to congestion of another and affect both the county and the region as a whole.

Impact on the Environment

Like the range of magnitude, the environmental impacts of transportation accidents can vary greatly. In the case of a simple motor vehicle crash, train derailment, or aviation accident, the environmental impact is minimal. However, if the accident involves any type of vehicle moving chemicals or other hazardous materials, the impact will be considerably larger and may include an explosion or the release of potentially hazardous material (PEMA 2020).

Future Growth and Development

As discussed in Section 2.4 of this HMP, areas targeted for future growth and development have been identified across Somerset County. Increased development in the county and region will lead to increased road traffic, which could lead to increased transportation accidents.

Effect of Climate Change on Vulnerability

Since the transportation accident hazard is human-caused, climate change will not have an effect on future vulnerability of Somerset County to this hazard.

4.3.17.7 Additional Data and Next Steps

Based on limited data regarding the probability and potential impact of this hazard, a quantitative loss estimate was not completed for this HMP. Over time, the county can work with appropriate agencies to collect additional data to support mitigation planning, consideration of potential risks, and prioritization of mitigation measures for this hazard.

Somerset County recognizes it must compile and maintain data regarding specific concerns and past losses from this hazard. These data should include specific information regarding damage or loss of life, property, or infrastructure; and any reports pertaining to potential or actual cost and logistics of responding to an event caused by this hazard (locations of road closures, map detours, traffic counts, durations of closures and detours; and costs to respond). These data will be included in future revisions of the HMP and can be used to support future mitigation grant efforts (benefit-cost analysis).

Studying traffic and potential transportation accident patterns could provide information on vulnerability of specific road segments and nearby populations. Increased understanding of the types of HazMats transported through the county will also support mitigation efforts. Maintaining a record of frequently transported materials can facilitate development of preparatory measures to respond to a release. Predicting costs needed to respond to a release, remediate the environment, or repair damaged infrastructure would be useful in developing future mitigation options.

4.3.18 Utility Interruption

4.3.18.1 Hazard Description

Utility interruption includes power failure, potable water service outage, telecommunications infrastructure failure, natural gas infrastructure failure, or sewer infrastructure failure. These interruptions or outages occur because of geomagnetic storms, fuel or resource shortages, electromagnetic pulses, information technology failures, transmission facility or linear utility accidents, and major energy, power, or utility failure (PEMA 2023).

For the purpose of this plan, utility interruption focuses on power failure, because it is the major cause of utility failure and has had widespread impacts on Somerset County. A power failure is defined as any interruption or loss of electrical service from disruption of power transmission caused by accident, sabotage, natural hazards, or equipment failure. A significant power failure is defined as any incident of a long duration that would require the involvement of local or state emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter. Interruptions in other basic utilities (such as data/telecommunications, water, natural gas, or sewer) can have a detrimental impact on Somerset County. Utilities that employ aboveground wiring (power and data/telecommunications) are vulnerable to the effects of other hazards such as high wind, heavy snow, ice, rain, and vehicular accidents.

Table 4.3.18-1 Municipal Utility Providers in Somerset County, PA

Utility Providers in Somerset County, PA	
Electricity	
• Penelec • Somerset Rural Electric	• World Kinetic Energy Services
Water Services	
• Addison Area Water Authority • Berlin Borough Municipal Authority • Boswell Borough Municipal Authority • Cairnbrook Improvement Association • Cambira Somerset Authority • Central City Water Authority • Conemaugh Township Municipal Authority • Garrett Borough Water Systems • Gray Area Water Authority • Greater Johnstown Water Authority • Hidden Valley Farm Inc. • Highland Mutual Water Association • Hooversville Borough Municipal Authority • Indian Lake Water Authority • Jenner Township Municipal Authority	• Jennerstown Borough Municipal Authority • Lincoln Township Municipal Authority • Merersdale Municipal Authority • Milford Township Municipal Authority • Rockwood Borough Municipal Authority • Salisbury Borough Water Works Commission • Seven Springs Borough Municipal Authority • Somerset Borough Municipal Water Authority • Somerset County Water System • Somerset Township Water System • Stoystown Borough Water Authority • Wilbur Community Water Company • Windber Area Authority • 20 public sewer systems
Natural Gas	
• Amerigas • Columbia Gas of Pennsylvania • Ferrellgas	• Luther P. Miller • Suburban Propane
Telephone	
• Verizon • AT&T (residential & business)	• Comcast Xfinity • Laurell Net Services
Internet/Broadband	

Utility Providers in Somerset County, PA	
• Comcast Corporation & Others	• Other national internet service providers
Cable Television	
• Atlantic Broadband • Comcast Xfinity	• Dish • AT&T Direct TV • Somerfield Cable

Source: Somerset County DEM 2020; Somerset County Chamber of Commerce n.d.

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the utility interruption hazard for the 2025 Somerset County Hazard Mitigation Plan (HMP).

4.3.18.2 Location and Extent

Utility interruptions occur throughout Somerset County and are often a secondary impact of another hazard. Many natural hazards can produce utility outages, including dam failure, drought, earthquake, flood or flash flooding, hailstorms, landslides, levee failures, tornado/windstorms, wildfires, or winter storms. Above-ground power lines, water stations, wastewater stations, and others are all susceptible to the elements and threats posed by these natural hazards. Thus, the location of utility interruptions is the entire planning area in Somerset County.

4.3.18.3 Range of Magnitude

The most severe utility interruptions will be regional or widespread power and telecommunications outages. With the loss of power, electrically powered equipment and systems will not be operational. Regional loss of power affects lighting; heating, ventilation, and air conditioning (HVAC) and other support equipment; communications; fire and security systems; and refrigeration, which can in turn cause loss of water and sewer service, and food spoilage (PEMA 2023). At a minimum, utility interruptions can cause short term disruption in the orderly functioning of business, government, and private citizen functioning and activities like traffic signals, elevators, and retail sales.

However, loss of heating and cooling capability is more dangerous in the winter and summer months, when heat sensitive populations like the elderly count on utilities and fuel to maintain a safe temperature. A worst-case scenario for utility interruption in Somerset County would be a fuel shortage or power outage in the winter months, especially during a severe winter weather event, which may leave many homes without a source of heat.

4.3.18.4 Past Occurrence

Every year, Somerset County is susceptible to minor utility interruptions either through technological failure or as the result of inclement weather. Table 4.3.18-2 below is a compilation of NCEI Storm Events which included narratives or event descriptions that included words such as, “wire”, “outages”, “power”, “lines”, etc. While this list is not a comprehensive list of all power outages affecting Somerset County, it is the most reliable and consistent. Furthermore, “outages” in this sense most often cover electrical outages.

Table 4.3.18-2. Notable Utility Interruptions in Somerset County, PA from 1996–2024

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
April 23, 1996	Thunderstorm Wind	$0	DR-1093-PA	Jennerstown (B)	Winds blew down trees and powerlines in Somerset and Jennerstown.
May 21, 1996	Thunderstorm Wind	$0	N/A	Jefferson (T)	Trees and power lines were blown down in Bakersville.
June 14, 1996	Thunderstorm Wind	$0	N/A	Windber (B)	Strong winds brought power lines down in Windber.
June 14, 1996	Thunderstorm Wind	$0	N/A	Windber (B)	Power lines were brought down onto a house by strong winds in Windber.
August 8, 1996	Thunderstorm Wind	$0	N/A	Somerset (B)	Trees were downed onto power lines by strong winds in the Somerset area.
February 27, 1997	High Wind	$0	N/A	Somerset (B)	High winds partially tore a roof off the State Prison Building in Somerset. Numerous reports of trees and wires down.
March 14, 1997	Ice Storm	$0	N/A	Somerset Co.	1/4-inch of ice on top of 2 inches of snow and sleet brought trees and powerlines down. Thousands were without power for several hours.
June 2, 1998	Tornado	$0	DR-1219-PA	Somerset Co.	The second tornado of the evening, and the third to strike Somerset County in 3 days, this F3 was by far the longest and strongest of the trio. The storm created a path of damage 33 or more miles long, from Fayette County southeast across southern Somerset County into Maryland. The tornado crossed into Somerset County just southwest of the Seven Springs resort, tracked 26 miles across the county to the Maryland state line, 5 miles southeast of Salisbury. From there, the tornado continued southeast for more than 5 miles to Frostburg, Maryland. It, too, would cross the path of the May 31st storm, just 3 miles east of Salisbury. In some locations, the tornado was up to one mile wide. Damage from this tornado was rated at F3 on the Fujita scale, with winds of 158 to 206 mph. Many farms were completely destroyed as this tornado moved through generally rural areas in southern Somerset County. A family in Laurel Falls near Summit Mills and St. Paul took shelter in a basement corner behind a television set. As the twister passed, they looked up to find all three stories of their house were gone, along with eight rows of foundation blocks. A battery operated clock found the next morning had stopped at 9:38 p.m. A neighbor told of losing electricity, then getting a phone call from his brother to warn him. He and his family took shelter in a hall closet because they had no basement. They told of hearing a buzzing

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
					noise like a giant bee's nest. Another neighbor found her mobile home flipped on its roof after taking shelter at her son's house. When the first tornado of the evening missed a Laurel Falls family mobile home, they proceeded to a neighbor's home. The second storm blew the trailer off its foundation. Residents of Boynton were cleaning up trees with chainsaws and front end loaders from the first tornado around 7:30pm when firefighters came by and told them to get back inside because another tornado was on its way. The second tornado broke all the windows from one house, ripped the roof off another and a barn. One person told of seeking shelter from rain in a shed when the first tornado passed, then going to the home basement when the second came through, mentioning that she was unable to pull the basement door shut behind her. The shed disappeared during the second storm. Estimated damage from the Tuesday evening tornadoes included 30 to 40 properties, including permanent and seasonal residences and farms. There were no deaths or injuries from this severe tornado. However, over 100 head of cattle were killed in one barn alone, which was completely destroyed. Many other farms lost tens of cattle and other livestock.
September 7, 1998	Thunderstorm Wind	$0	N/A	Windber (B) Jennerstown (B)	Trees and powerlines were down in Windber, Jennerstown, and Boswell.
August 1, 2002	Thunderstorm Wind	$0	N/A	Salisbury (B)	Several trees and power lines were down.
August 5, 2002	Thunderstorm Wind	$0	N/A	Berlin (B)	Trees and wires were down in Berlin.
August 26, 2003	Thunderstorm Wind	$0	N/A	Berlin (B)	Trees, power lines and power poles reported down in and near the town of Berlin.
September 18, 2003	Tropical Storm	$0	N/A		Hurricane Isabel came ashore around midday on September 18th between Cape Hatteras and Cape Lookout, North Carolina. The storm continued on a northwesterly track up through Virginia where it was downgraded to a Tropical Storm, and by early Friday morning, September 19th, it was near Latrobe, PA and heading northwest at about 30 miles per hour. The storm exited Pennsylvania by early afternoon, the 19th, with improving conditions beginning state-wide.
November 13, 2003	High Wind	$0	N/A	Somerset Co.	A strong cold front swept across central Pennsylvania during the early morning hours of November 13th, 2003. Strong winds behind the cold front intensified as low pressure deepened north of the region. Reports of trees and wires down were common across all of central Pennsylvania. Earliest damage reports began around 5 AM EST on the morning of

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
					the 13th, with the final high wind damage reports coming in around 17:00 EST. High wind speeds were mainly estimated based on reported damage. In addition to trees and wires being downed in the warned counties, additional damage reports included: A 71 mph wind gust was reported in Lancaster, Lancaster County at 5:28 AM EST, a barn blown over in Cambria County 5 miles east of Prince Gallitzin State Park at 13:15 EST, a roof blown off a home in Johnstown Pennsylvania at 12:00 EST, and three separate reports of roofs off homes in Franklin County. In addition, a roof of a state office building was damaged in Clearfield county, a vehicle repair facility in Snyder county was damaged, and a vacant building collapsed in Bedford county. Across all of Pennsylvania, more than 80,000 persons were without power from the high winds. One fatality occurred in Centre County, where a tree fell on a truck and killed the driver. Two other fatalities occurred in Perry County when a car struck a tree which had fallen across Route 233 in Madison Township.
May 21, 2004	Thunderstorm Wind	$0	N/A	Somerset Co.	Trees, wires and phone poles reported down in the town of Tire Hill on Cottage Lane and Sope Hollow Road off of route 403.
August 4, 2004	Thunderstorm Wind	$0	N/A	Ogle (T)	Thunderstorm winds knocked down trees and wires in Ogletown, closing Route 56.
June 6, 2005	Thunderstorm Wind	$0	N/A	Somerset Co.	Thunderstorm winds knocked down trees and wires in Davidsville.
May 30, 2006	Thunderstorm Wind	$0	N/A	Somerset Co.	Trees and powerlines were knocked down on Whipkey Dam Road, about 4 miles southwest of Rockwood. Dime size hail was also reported.
May 30, 2006	Thunderstorm Wind	$0	N/A	Somerset (B)	Thunderstorm winds knocked down trees and powerlines in Somerset on Byers Road.
December 1, 2006	High Wind	$0	N/A	Somerset Co.	High winds behind a strong cold front knocked down trees, wires and power poles throughout the county.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
April 16, 2007	Heavy Snow	$0	N/A	Somerset (T)	Rain changed to snow across the county Monday morning. Significant accumulations of snow were confined to the higher elevations of the county, while valley locations saw much less snow. While 13.9 inches of snow was reported on Laurel Summit, only 1.0 inch of snow was reported in Meyersdale. Somerset recorded 4.6 inches of snow, and Glencoe recorded 2.2 inches.
June 8, 2007	Thunderstorm Wind	$0	N/A	Conemaugh (T)	Law Enforcement reported numerous trees and wires down in Somerset, Central City, Berlin and Conemaugh Townships.
June 8, 2007	Thunderstorm Wind	$0	N/A	Windber (B)	Law enforcement reported sporadic tree damage over northern Somerset county.
June 21, 2007	Thunderstorm Wind	$0	N/A	Jennerstown (B)	CO-OP observer reported trees and wires down along Route 30 in Jennerstown.
December 13, 2007	Winter Storm	$0	N/A	Somerset Co.	A significant ice build-up was reported by the COOP observer at Laurel Summit, with nearly one-inch of ice accretion on trees and wires. The heavy coating of ice brought limbs down and uprooted a few small trees. Trained spotters in Somerset County also indicated moderate to heavy ice. There was some sleet at the onset, but the ice build-up was primarily due to a prolonged period of freezing rain.
December 15, 2007	Winter Storm	$0	N/A	Somerset Co.	A mixture of snow, sleet and freezing rain fell across Somerset County. Light accumulations of snow and sleet were observed along with significant ice build-up from freezing rain, especially across the highest elevations. The ice accretion brought down a few trees and wires.
December 23, 2007	High Wind	$0	N/A	Somerset Co.	Somerset County 911 center reported trees and wires down across the northern part of the County.
January 30, 2008	High Wind	$0	N/A	Somerset Co.	Somerset County 911 reported several trees and wires down across the southern part of the county.
May 11, 2008	High Wind	$0	N/A	Somerset Co.	The Somerset County 911 center received several reports of trees and wires down during the mid afternoon.
July 21, 2008	Thunderstorm Wind	$0	N/A	Addison (T)	Somerset Rural Electric reported trees and wires down in Addison and Listonburg. Only a few customers were affected.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
July 21, 2008	Thunderstorm Wind	$0	N/A	Somerset Co.	Somerset Rural Electric reported trees and wires down near the Somerset and Fayette County border.
July 21, 2008	Thunderstorm Wind	$0	N/A	Ursina (B)	Somerset Rural Electric reported numerous trees and wires down in Ursina and Markleton. This resulted in a significant power outage to approximately 800 customers.
January 6, 2009	Ice Storm	$0	N/A	Somerset Co.	Ice accumulation of one quarter to one half inch was reported across Somerset County.
January 27, 2009	Winter Storm	$0	N/A	Somerset Co.	Two to four inches of snow and sleet along with a significant ice accretion was reported across Somerset County.
February 11, 2009	Thunderstorm Wind	$0	N/A	Somerset (B)	An estimated thunderstorm wind gust near 60 mph was reported near Somerset.
February 11, 2009	Thunderstorm Wind	$0	N/A	Somerset Co.	Thunderstorm winds of 50 to 60 mph toppled numerous trees near New Centerville.
February 11, 2009	Thunderstorm Wind	$20,000	N/A	Stoystown (B)	Thunderstorm winds of 50 to 60 mph tore a roof off a house in Stoystown. Several trees and wires were also reported down.
February 12, 2009	High Wind	$300,000	N/A	Somerset Co.	Non-thunderstorm wind gusts between 55 and 65 mph toppled approximately 100 trees, 40 power lines and 14 utility poles. The high winds caused four buildings to collapse. Several trees fell onto houses and roofs resulting in significant structural damage. Nearly ten-thousand customers were without power at some point during the wind event.
April 16, 2010	Thunderstorm Wind	$5,000	N/A	Somerset Co.	Thunderstorm winds estimated near 60 mph toppled several trees in Davidsville. The downed trees caused several power outages.
April 16, 2010	Thunderstorm Wind	$5,000	N/A	Windber (B)	Thunderstorm winds estimated near 60 mph toppled several trees in Windber. The downed trees resulted in power outages.
August 4, 2010	Thunderstorm Wind	$5,000	N/A	Addison (T)	Thunderstorm winds estimated near 60 mph knocked down trees and wires in Addison.
August 4, 2010	Thunderstorm Wind	$5,000	N/A	Meyersdale (B)	Thunderstorm winds estimated near 60 mph knocked down trees and wires in Meyersdale.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
September 22, 2010	Thunderstorm Wind	$5,000	N/A	Conemaugh (T)	Thunderstorm winds estimated near 60 mph knocked down several trees and utility wires across northwest Somerset County.
March 23, 2011	Thunderstorm Wind	$7,500	N/A	Somerset (B)	Thunderstorm winds estimated near 60 mph knocked down several large trees along SR 281 in Geiger. The damaging winds also brought down utility wires and produced minor roof damage to a manure plant and several single family homes in Somerset Borough.
October 29, 2011	Heavy Snow	$0	N/A	Somerset Co.	Snow accumulations ranged from 8 to 12 inches across the Laurel Highlands.
April 22, 2012	Heavy Snow	$0	N/A	Somerset Co.	Heavy snow amounts between 6 and 10 inches were generally observed across the county. The Laurel Summit COOP and Seven Springs Ski Resort received 18 to 24 inches.
May 27, 2012	Thunderstorm Wind	$5,000	N/A	Conemaugh (T)	Thunderstorm winds estimated near 60 mph knocked down trees and wires in Conemaugh Township near Jerome.
May 27, 2012	Thunderstorm Wind	$5,000	N/A	Stoystown (B)	Thunderstorm winds estimated near 60 mph knocked down trees and utility wires in Stoystown.
June 1, 2012	Thunderstorm Wind	$5,000	N/A	Jefferson (T)	Thunderstorm winds estimated near 60 mph knocked down trees and utility wires near Seven Springs.
July 18, 2012	Thunderstorm Wind	$5,000	N/A	Boswell (B)	Thunderstorm winds estimated near 60 mph knocked down trees and wires near Boswell.
July 24, 2012	Thunderstorm Wind	$5,000	N/A	Shanksville (B)	Thunderstorm winds estimated near 60 mph produced a damage swath of downed trees and utility wires from Friedens and Listie eastward through Shanksville.
July 26, 2012	Thunderstorm Wind	$5,000	N/A	Confluence (B)	Thunderstorm winds estimated near 60 mph knocked down trees and utility wires in Confluence.
July 26, 2012	Thunderstorm Wind	$5,000	N/A	Somerset Co.	Thunderstorm winds estimated near 60 mph knocked down trees and utility wires along SR 271 (Menoher Hwy) in extreme northwest Somerset County. The downed wires closed the road.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
August 14, 2012	Lightning	$0	N/A	Shanksville (B)	An 18-year-old western Pennsylvania man survived a lightning strike while standing next to his kitchen stove. Cody Sines, of Shanksville, was making dinner after work when a big blue ball of flame came at him as he grabbed the handle of his electric stove. Sines later learned that lightning hit a tree his back yard before traveling through the ground and into his house. He was knocked unconscious but survived the lightning encounter.
October 29, 2012	High Wind	$0	EM-3356-PA DR-4099-PA	Somerset Co.	High winds knocked down numerous trees and utility wires, causing widespread power outages county-wide.
October 30, 2012	Heavy Snow	$0	EM-3356-PA DR-4099-PA	Somerset Co.	Strong upslope flow and cooling aloft changed rain to snow over the Laurel Highlands, mainly above 2200 feet in elevation. Heavy snow accumulations between 6 and 12 inches were reported, with locally higher amounts on the ridge tops above 2800 ft. COOP stations at Laurel Summit and Mount Davis each recorded over a foot of snow.||An 81-year-old woman was killed when the car she was a passenger in slid off the snow-covered Kingwood Road in Upper Turkeyfoot Township and rolled over into a farm pond on the east side of Route 281. Both the driver and passenger were trapped. The driver, a 51-year-old Confluence woman, wasn't injured and tried to get the passenger out of the vehicle, but was unable. **The passenger was pronounced dead at Somerset Hospital.**
July 7, 2013	Thunderstorm Wind	$5,000	N/A	Meyersdale (B)	Thunderstorm winds estimated near 60 mph knocked down trees and utility wires in Meyersdale.
November 1, 2013	Thunderstorm Wind	$0	N/A	Somerset Co.	A line of heavy showers with estimated winds near 60 mph knocked down trees and wires in Somerset and several other parts of the county.
November 26, 2013	Winter Storm	$0	N/A	Somerset Co.	A mix of snow and freezing rain resulted in significant winter weather impacts during the pre-Thanksgiving holiday travel. These included multiple vehicle accidents, road closures, downed trees/wires and power outages. Snow accumulations by mid-day on the 26th averaged between 1 and 3 inches, followed by a prolonged period of moderate to heavy freezing rain with ice accretion between 0.25 and 0.50 inch by nightfall.
December 22, 2013	Thunderstorm Wind	$0	N/A	Stoystown (B)	A narrow line of heavy showers with estimated winds near 60 mph brought down utility wires and caused power outages in Stoystown.
February 4, 2014	Winter Storm	$0	N/A	Somerset Co.	Snow accumulations ranged from 2 to 4 inches. Ice accumulations from sleet and heavy freezing rain were between 0.25-0.30 inch.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
July 8, 2014	Thunderstorm Wind	$1,000	N/A	Meyersdale (B)	Thunderstorm winds estimated near 60 mph knocked down trees near Meyersdale.
April 3, 2016	High Wind	$2,000	N/A	Conemaugh (T)	Non-thunderstorm wind gusts estimated around 60 mph knocked down trees and wires in Conemaugh and Lincoln Townships.
August 16, 2016	Thunderstorm Wind	$4,000	N/A	Addison (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Addison.
February 12, 2017	Thunderstorm Wind	$3,000	N/A	Berlin (B)	A severe thunderstorm produced 60 mph winds and knocked down trees around Berlin in Somerset County.
August 4, 2017	Thunderstorm Wind	$4,000	N/A	Ogle (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Ogletown.
March 2, 2018	High Wind	$0	N/A	Somerset Co.	Non-thunderstorm wind gusts estimated near 60 mph knocked down trees and wires across Somerset County.
April 4, 2018	High Wind	$0	N/A	Somerset Co.	Non-thunderstorm wind gusts estimated near 60 mph knocked down trees and wires across Somerset County.
May 12, 2018	Thunderstorm Wind	$3,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires west of Hillsboro.
May 12, 2018	Thunderstorm Wind	$4,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Thomas Mill.
May 13, 2018	Thunderstorm Wind	$2,000	N/A	Jefferson (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down a large tree onto wires near the Seven Springs Golf Course, partially blocking the roadway.
May 13, 2018	Thunderstorm Wind	$6,000	N/A	Indian Lake (B)	A severe thunderstorm producing winds estimated near 70 mph knocked down several power lines in a field near the entrance to Indian Lake on Huckleberry Highway.
July 2, 2018	Thunderstorm Wind	$8,000	N/A	Addison (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires and a tree onto a house on Mount Davis Road.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
July 2, 2018	Thunderstorm Wind	$4,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires near Springs.
August 12, 2018	Thunderstorm Wind	$4,000	N/A	Rockwood (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires northeast of Rockwood.
August 21, 2018	Thunderstorm Wind	$4,000	N/A	Meyersdale (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires along Cumberland Highway northeast of Meyersdale.
February 24, 2019	High Wind	$0	N/A	Somerset Co.	Non-thunderstorm wind gusts near 60 mph were observed across Somerset County from February 24-25, 2019.
April 8, 2020	Thunderstorm Wind	$5,000	N/A	Somerset (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down multiple trees and wires on Center Avenue in Somerset.
April 13, 2020	Thunderstorm Wind	$3,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Friedens.
April 13, 2020	Thunderstorm Wind	$3,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Zimmerman.
April 13, 2020	Thunderstorm Wind	$6,000	N/A	Stoystown (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down numerous trees and wires around Stoystown.
July 5, 2020	Thunderstorm Wind	$3,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down a tree onto wires on Coleman Station Road between Mostoller Road and Oak Hill Drive to the east of Friedens.
August 25, 2020	Thunderstorm Wind	$2,000	N/A	Boswell (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down wires near Boswell.
August 25, 2020	Thunderstorm Wind	$3,000	N/A	Jennerstown (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down a tree onto wires near the intersection of View Avenue and Forest Lane in Jennerstown.
August 27, 2020	Thunderstorm Wind	$10,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down multiple trees and wires in northwestern Somerset County.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
August 27, 2020	Thunderstorm Wind	$7,000	N/A	Somerset (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down multiple trees and wires onto Stoystown Road near Somerset.
November 15, 2020	Thunderstorm Wind	$8,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires in several locations near Somerset, including on the 900 block of New Centerville Road.
November 15, 2020	Thunderstorm Wind	$8,000	N/A	Conemaugh (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down several trees an wires in and around Hollsopple in Conemaugh Township.
June 13, 2021	Thunderstorm Wind	$3,000	N/A	Hooversville (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto powerlines near Myers Street in Hooversville.
July 7, 2021	Thunderstorm Wind	$2,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires on Glades Pike.
July 7, 2021	Thunderstorm Wind	$2,000	N/A	Shanksville (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees on wires east of Shanksville.
July 7, 2021	Thunderstorm Wind	$3,000	N/A	Jennerstown (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires along the Laurel Highlands Trail northwest of Jennerstown.
July 7, 2021	Thunderstorm Wind	$3,000	N/A	Jerome	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Jerome.
July 11, 2021	Thunderstorm Wind	$5,000	N/A	Jennerstown (B)	A severe thunderstorm with winds estimated near 60 mph brought down numerous trees and wires across northern Somerset County in the vicinity of Jennerstown, Boswell and Jerome.
March 7, 2022	Thunderstorm Wind	$3,000	N/A	Somerset (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires along Trolls Lake Road west of Somerset.
May 20, 2022	Thunderstorm Wind	$4,000	N/A	Acosta	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires near Acosta.
June 8, 2022	Thunderstorm Wind	$4,000	N/A	Middlecreek (T)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees and wires along Covered Bridge Road in Middlecreek Township.

Date(s) of Event	Event Type	Property Damage	FEMA Disaster Declaration Number	Location	Description
June 22, 2022	Thunderstorm Wind	$3,000	N/A	Ursina (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down trees onto wires near Ursina.
March 4, 2023	High Wind	$60,000	N/A	Black (T)	Northwesterly winds occasionally gusting to near 60 mph occurred for several hours in Somerset County, resulting in numerous reports of trees and wires down across the county. Route 653 in Black Township and Route 423 in Coolbaugh Township were both closed due to downed trees and wires. Additionally, there was a tree downed onto a porch in Somerset Borough.
March 25, 2023	Strong Wind	$5,000	N/A	Black (T)	Strong post-frontal winds estimated near 50 mph knocked down a tree onto a house at 2303 Markleton School Road in Black Township. There was one individual trapped in the house, along with several pets, that required rescue. No injuries were reported.
March 25, 2023	Strong Wind	$10,000	N/A	Somerset (T)	Strong post-frontal winds estimated near 50 mph knocked down a tree onto a mobile home at 128 Double D Drive in Somerset Township, causing structural damage.
July 1, 2023	Thunderstorm Wind	$7,000	N/A	Somerset Co.	A severe thunderstorm producing winds estimated near 60 mph blew off a section of metal roof and knocked down power lines. Debris was blown across Route 281 near Friedens.
August 25, 2023	Thunderstorm Wind	$8,000	N/A	Middlecreek (T)	A severe thunderstorm producing winds estimated near 60 mph knocked multiple trees and wires down across County Line Road near Laurel Hill State Park in Middlecreek Township.
August 25, 2023	Thunderstorm Wind	$5,000	N/A	Rockwood (B)	A severe thunderstorm producing winds estimated near 60 mph knocked down tree and wires across Broadway Street in Rockwood.
November 22, 2024	Heavy Snow	$10,000	N/A	Countywide	A winter storm produced heavy snow across Somerset County from the early morning of November 22, 2024 through the late evening. Snowfall totals ranged from 6 to 12 inches with higher elevations seeing 14 to 18 inches of snow. A jackknifed trailer caused US-219 north to be closed for a period of time. PA-403 was also closed near Conemaugh Township due to downed trees and wires.

Source: NOAA/NCEI 2024
Note: the most recent and updated NCEI data was used in the table above, and statistics are valid up through November 30, 2024

4.3.18.5 Future Occurrence

Minor power failure (in other words, short outage events) may occur several times a year for any given area in the County, while major events (long, widespread outage events) take place once every few years. Power failures often occur during severe weather; therefore, they should be expected during those events.

For the 2025 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of utility interruption events for Somerset County. Information from the NOAA NCEI Storm Events Database, and input from Somerset County were used to identify the number of utility interruption events that occurred between 1996 and 2024. Using these sources ensures the most accurate probability estimates possible. Table 4.3.18-2 shows these statistics, as well as the annual average number of events and the estimate percent chance of an incident occurring in a given year. Based on these statistics, there is an estimated 100-percent chance of a utility interruption event occurring in any given year in Somerset County.

Effects of Climate Change

Climate change can significantly impact utility infrastructure, leading to increased risks of utility failures in Somerset County. More frequent and severe storms can damage power lines, transformers, and other utility infrastructure, resulting in more frequent power outages. Increased precipitation and flooding can damage underground utility lines and equipment, disrupt water supply systems, and overwhelm sewage and drainage systems. Higher temperatures and more frequent heat waves can strain the electrical grid due to increased demand for cooling, leading to power outages and reduced efficiency of power generation and transmission. Additionally, more frequent freeze-thaw cycles can damage infrastructure such as water pipes and roads, causing utility disruptions.

Table 4.3.18-3. Probability of Future Utility Interruption Events

Hazard Type	Number of Occurrences Between 1996 and 2024	Percent chance of occurrence in any given year
Utility Interruption	105	100%

Sources: NOAA/NCEI 2024
Note: Information on events from 1996 to 2024 was limited and based on NOAA NCEI Storm Events. Therefore, it can be assumed that the number of events listed for that time period is conservative.

Based on available historical data, the future occurrence of utility interruption events can be considered *highly likely* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4) with minor events happening more frequently than major or long-term interruptions in the future.

4.3.18.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable in the identified hazard area. This section discusses the potential impact of the utility interruption hazard on Somerset County in the following subsections:

- Impact on (1) life, health, and safety; (2) general building stock and critical facilities; (3) the economy; (4) the environment; and (5) future growth and development.
- Effect of climate change on vulnerability.
- Further data collections that will assist understanding of this hazard over time.

Impact on Life, Health, and Safety

Utility interruptions most severely affect individuals with access and functional needs (such as children, the elderly, and individuals with special medical needs). Special medical equipment will not function without power. Likewise, a loss of air conditioning during periods of extreme heat or the loss of heating during extreme cold can be especially detrimental to those with medical needs, children, and the elderly. Table 4.3.18-4 shows the demographic change in the county for children and the elderly from 2010 through 2020. Additionally, first responders' safety may be at risk during on-scene operations, and they may not be able to respond in a timely manner due to electrical outages or water shortages. First responders may need to take on additional duties due to a higher-than-normal call volume and demand, traffic control, and responding to transportation incidents.

Table 4.3.18-4. Demographic Trends for Vulnerable Populations

Vulnerable Population	2010 Census	2020 Census	2010 to 2020 Change	2022 ACS 5-Year Estimates (2022)
Under 5 years	3,696	3,430	↓ 266	3,406
18 years and over	62,579	60,695	↓ 1,884	60,424
65 years and over	14,581	17,414	↑ 2,833	17,034
Non-English Speaking				223
Population with Disability				11,748
Population Below Poverty Level				7,513

Source: U.S. Census Bureau 2010, U.S Census Bureau 2020, and 2010-2022 American Community Survey 5-Year Estimates

Impact on General Building Stock and Critical Facilities

All facility infrastructure considered critical are vulnerable to utility interruptions, especially the loss of power. The establishment of reliable backup power at these facilities is extremely important to continue to provide for the health, safety, and well-being of Somerset County's population.

Impact on the Economy

During a utility interruption event, the County may experience losses because of an interruption of critical services. Further, increased costs such as providing shelters, and costs related to cooling and heating centers may be incurred. Extended power outages will require officials to shelter victims who require heat and power for activities of daily living.

Power interruptions can cause economic impacts stemming from lost income, spoiled food and other goods, costs to the owners/operators of the utility facilities, and costs to government and community service groups. FEMA's benefit-cost analysis methodology measures the loss of electrical service on a per-person-per-day-of-lost-service basis for the service area affected.

Interruption of utility gas or potable water distribution could also cause significant economic impacts such as: additional costs for bringing in water tenders to maintain fire suppression capabilities; opening additional warming centers should electric and utility gas utility be interrupted to residential areas; and distribution of potable water for public consumption. There could be significant costs associated with reimbursing fire departments from other counties to travel, staff, and maintain water tenders within Somerset County during the duration of a water outage event.

Potential modeling of economic impacts from utility interruption would be calculating interruption of service costs which is derived from a standard value per person per day multiplied out by the number of customers served. This would help to provide an estimate of the impact of the interrupted utility service but may not be representative of the complete economic impact of a prolonged utility interruption.

The FEMA Benefit-Cost Analysis (BCA) Toolkit v.5.3.0 has standard values based on the daily cost per rate-paying connection (FEMA 2019). The daily cost-per-connection value is shown in Table 4.3.18-5.

Table 4.3.18-5. FEMA BCA Toolkit v5.3.0 Daily Standard Values of Utility Services

Utility	Daily Value (per person/per day)
Electric	$126.00
Potable Water	$93.00
Wastewater	$41.00

Source: FEMA 2019

Impact on the Environment

The most significant impact associated with utility interruptions is when the interruption involves a release of hazardous materials. This hazardous material may be released in a pipeline accident or when a material is in transit. Section 4.3.5 and 6, Environmental Hazards, includes a complete discussion on the impacts of hazardous materials release. Pipelines carrying flammable materials also have the possibility of exploding or starting a fire (PEMA 2023).

A number of secondary impacts are associated with utility interruptions. First, interruptions could affect the ability of the government to function, especially if backup power generators or supply is inadequate or unavailable. Utility interruptions also can reduce the efficient and effective communication that is essential to first responders. Heating loss and severe cold can also impact the health and safety of at-risk populations like young children, the elderly, and individuals with disabilities (PEMA 2023).

Future Changes That May Impact Vulnerability

Future Growth and Development

Areas targeted for potential future growth and development in the next 5 to 10 years have been identified across Somerset County (further discussed in Section 2.4 of this HMP). Any areas of growth could be potentially impacted by the utility interruption hazard because the entire county is exposed and potentially vulnerable. An increase in development and population will increase demand for power supply and has the ability to increase the likelihood of utility interruption incidents.

Effect of Climate Change on Vulnerability

According to the Fourth National Climate Assessment, two climate-change scenarios were modeled, and temperature change in the northeastern United States is estimated to increase between 3.98 - 5.09°F by 2036-2065, and between 5.27 - 9.11°F by 2071-2100. The annual mean temperature change in Pennsylvania is projected to increase between 5.9 - 6.3°F by 2041 - 2070. Some areas of the world may experience greater temperature changes than others. It is important to note that frequency estimates may not be an accurate representation of future conditions due to the unknown impacts of climate change (PEMA 2023).

Increased average temperatures as a result of climate change make the occurrence of extreme heat more likely. While increased average temperatures would make the occurrence of extreme cold less likely, some climatologists have suggested that warming in the Arctic could impact the position of the jet stream, allowing for more extreme cold weather events to occur (Lindsey 2021). While some research supports this concept, others do not and the impact of climate change on cold weather events is not fully understood. Extreme heat and cold result in greater strain on utilities, increasing the likelihood of utility interruption.

Climatologists expect an increase in the number and intensity of severe weather events. This will include wind events such as hurricanes, tornadoes, and wind associated with thunderstorms, among other phenomena. More storms with higher winds will increase the chance that the utility infrastructure will be impacted by these storms. Additionally, climatologists expect an increase in precipitation, which could come in the form of heavy downpours or winter weather thus causing additional utility interruptions. Increased risk of drought may also threaten water utilities.

4.3.18.7 Additional Data and Next Steps

For future plan updates, Somerset County can track data on power outage events and obtain additional information on past and future events, particularly in terms of any injuries, deaths, shelter needs, pipe-freeze incidents, and other impacts. These data will help to identify any concerns or trends for which mitigation measures should be developed or refined. In time, quantitative modeling of estimated power outage events may be feasible as data are gathered and improved.

4.3.19 Wildfire

4.3.19.1 Hazard Description

Wildfires occur throughout wooded and open vegetation areas of Pennsylvania. Open fields, grass, dense brush, and forest-covered areas are typical sites for wildfire events. Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands. Any small fire, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness or negligence (PEMA 2023). A wildland fire is a wildfire in an area where development is essentially nonexistent, except for roads, railroads, power lines, and similar facilities. A wildland-urban interface (WUI) fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

4.3.19.2 Location and Extent

Wildfires take place in less developed or completely undeveloped areas, spreading rapidly through vegetative fuels. They can occur any time of the year, but mostly occur during long, dry, hot spells. Any small fire, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness, negligence, and ignorance. However, some are precipitated by lightning strikes, and in rare instances, spontaneous combustion. Wildfires in Pennsylvania can occur in open fields, grass, dense brush, and forests.

Wildfires can occur at any time of the year but are most likely in Somerset County during a drought, and can occur in fields, grass, and brush as well as in the forest itself. Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands.

Table 4.3.19-1 illustrates the land cover across Somerset County. As the figure shows, a small percentage of Somerset County is forested. Table 4.3.19-2 shows the locations of wildfires throughout Pennsylvania that the Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Bureau of Forestry (BOF) responded to from 1992 to 2015. Wildfires are known to be an underreported event. Many wildfires occur every year and are suppressed by volunteer fire departments without any response or assistance from BOF. Also, some smaller fires may not be identified or responded to at all. Therefore, these locally controlled blazes may not be represented in BOF records.

Figure 4.3.19-1 Land Cover in Somerset County

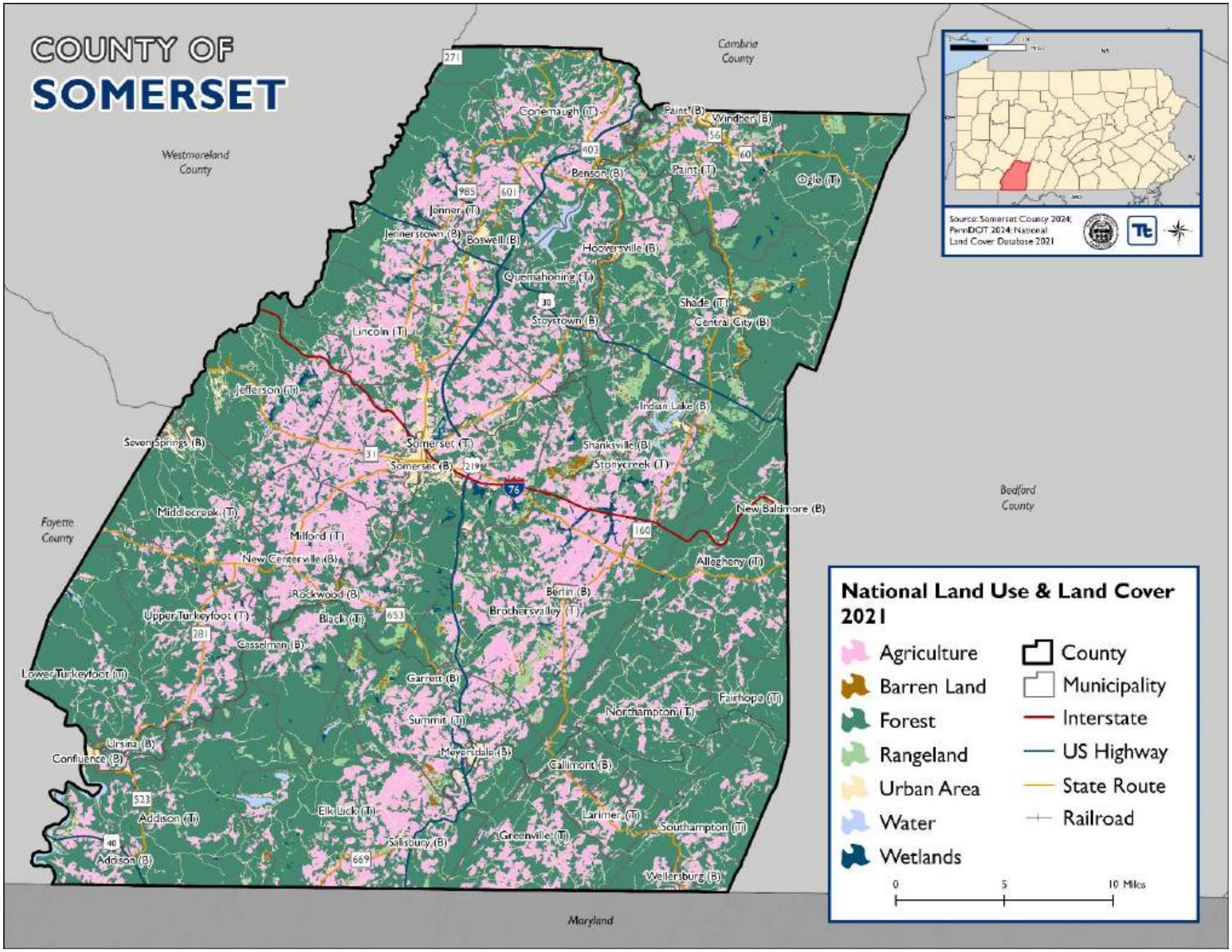
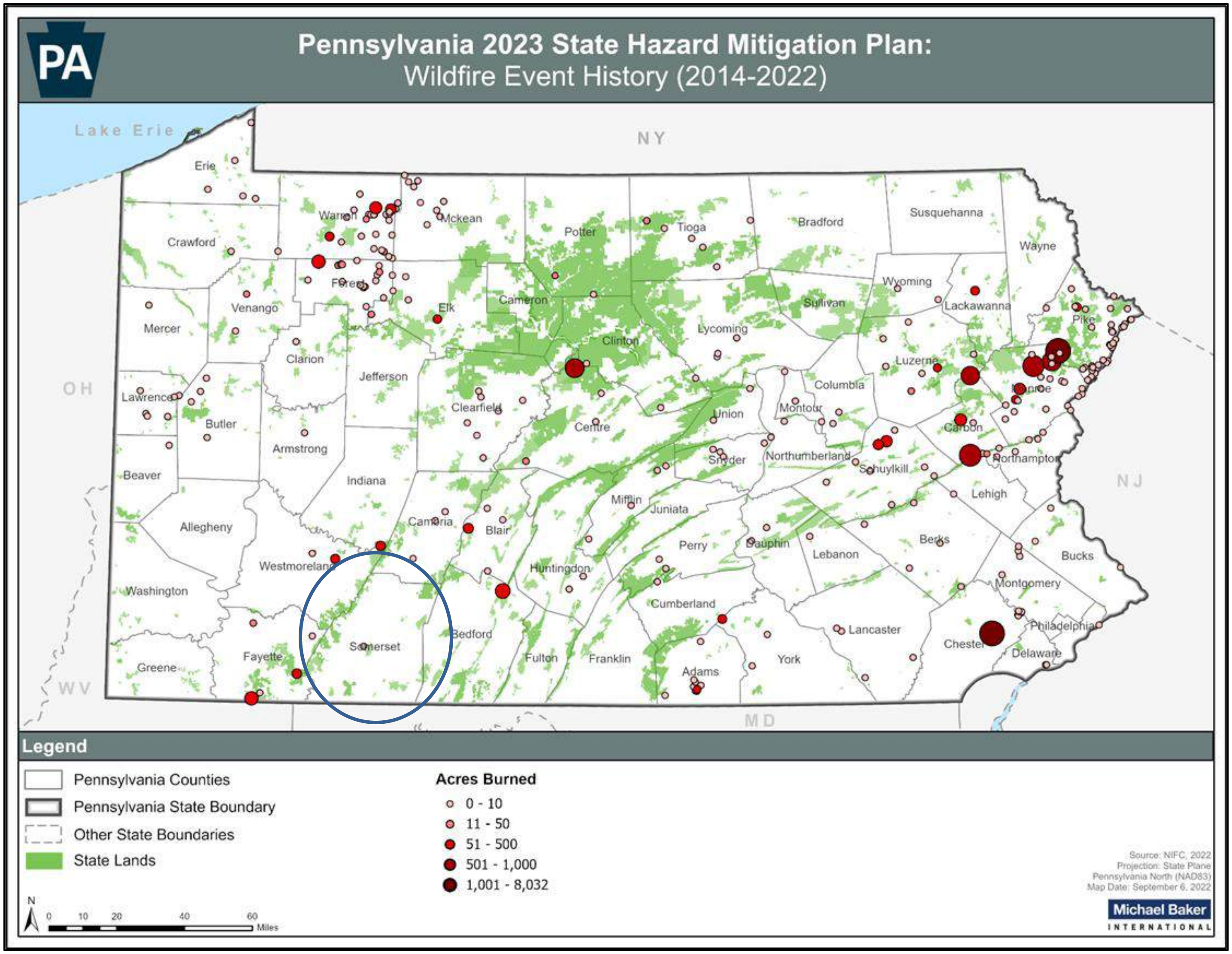


Figure 4.3.19-2 Location of Wildfire Events Responded to Between 2014–2022



Source: PEMA 2023

Note: Blue oval was added to highlight Somerset County's location within Pennsylvania.

According to the Pennsylvania 2023 State All-Hazard Mitigation Plan Update, areas of the Commonwealth that have large home developments built in volatile fuel types are at risk for catastrophic wildfires. Many areas of the state are at risk for large wildfires, but northeastern Pennsylvania is the most at risk for loss of life and/or property due to the number of homes at risk for wildfire (PEMA 2023).

Several tools are available to estimate fire potential location and extent, including but not limited to the Wildland/Urban Interface (WUI), Wildland Fire Assessment System, and Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Priority Landscape Analysis. These tools are discussed in further detail below.

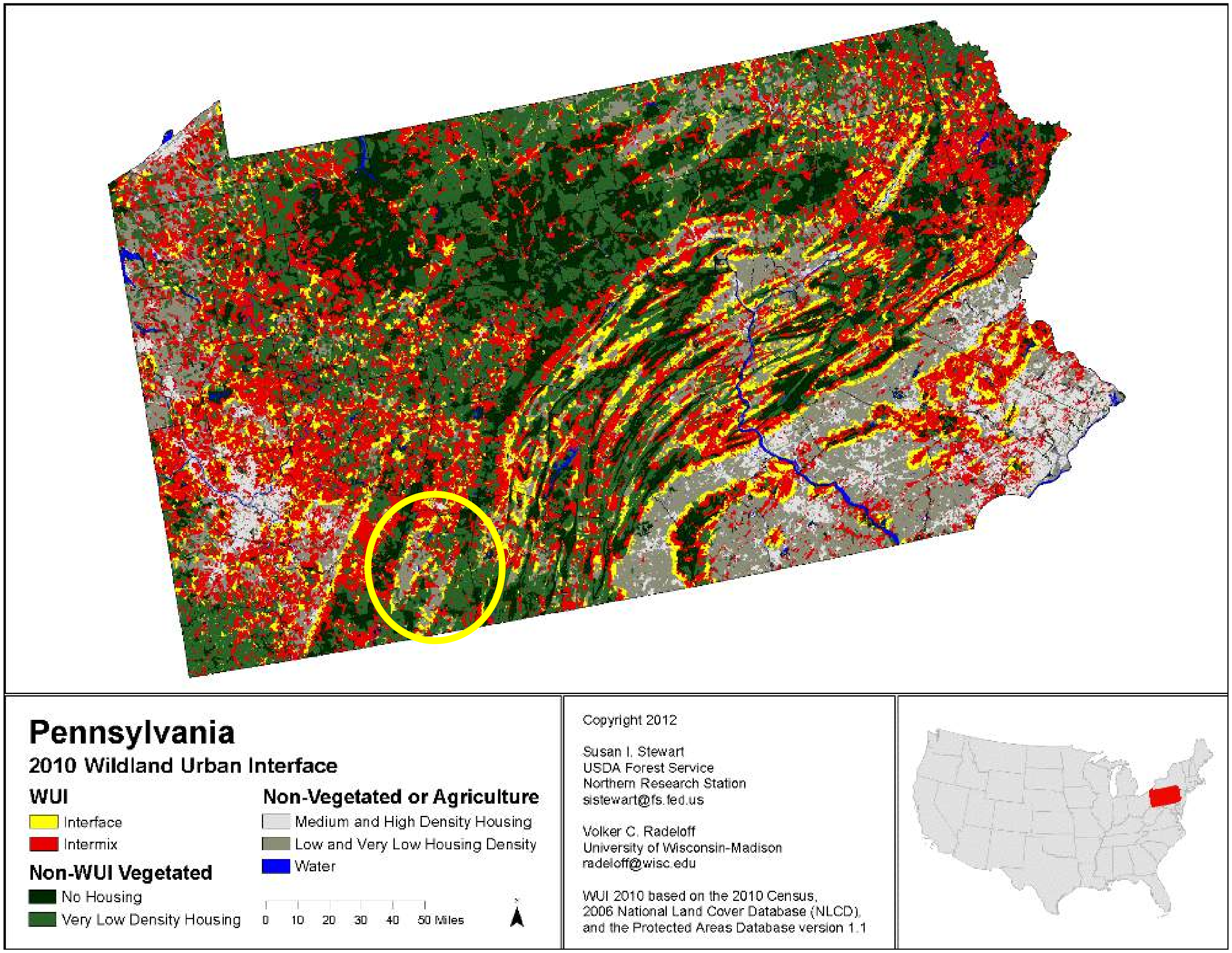
Wildland/Urban Interface (WUI)

The WUI is considered the area where houses and wildland vegetation coincide. The WUI is divided into two categories: intermix and interface. Intermix WUI are areas where housing and vegetation "intermingle." Intermix areas have more than one house per 40 acres and have more than 50 percent vegetation. Interface WUI are areas with housing in the vicinity of contiguous wildland vegetation. Interface areas have more than one house per 40 acres, have less than 50 percent vegetation, and are within 1.5 miles of an area larger than 1,235 acres that is more than 75 percent vegetated (Stewart 2015).

The California Fire Alliance determined that areas within 1.5 miles of wildland vegetation are the approximate distance that firebrands can be carried from a wildland fire to the roof of a house. Therefore, even structures not located within the forest are at risk from wildfire. This buffer distance, along with housing density and vegetation type, were used to define the WUI (Stewart 2015).

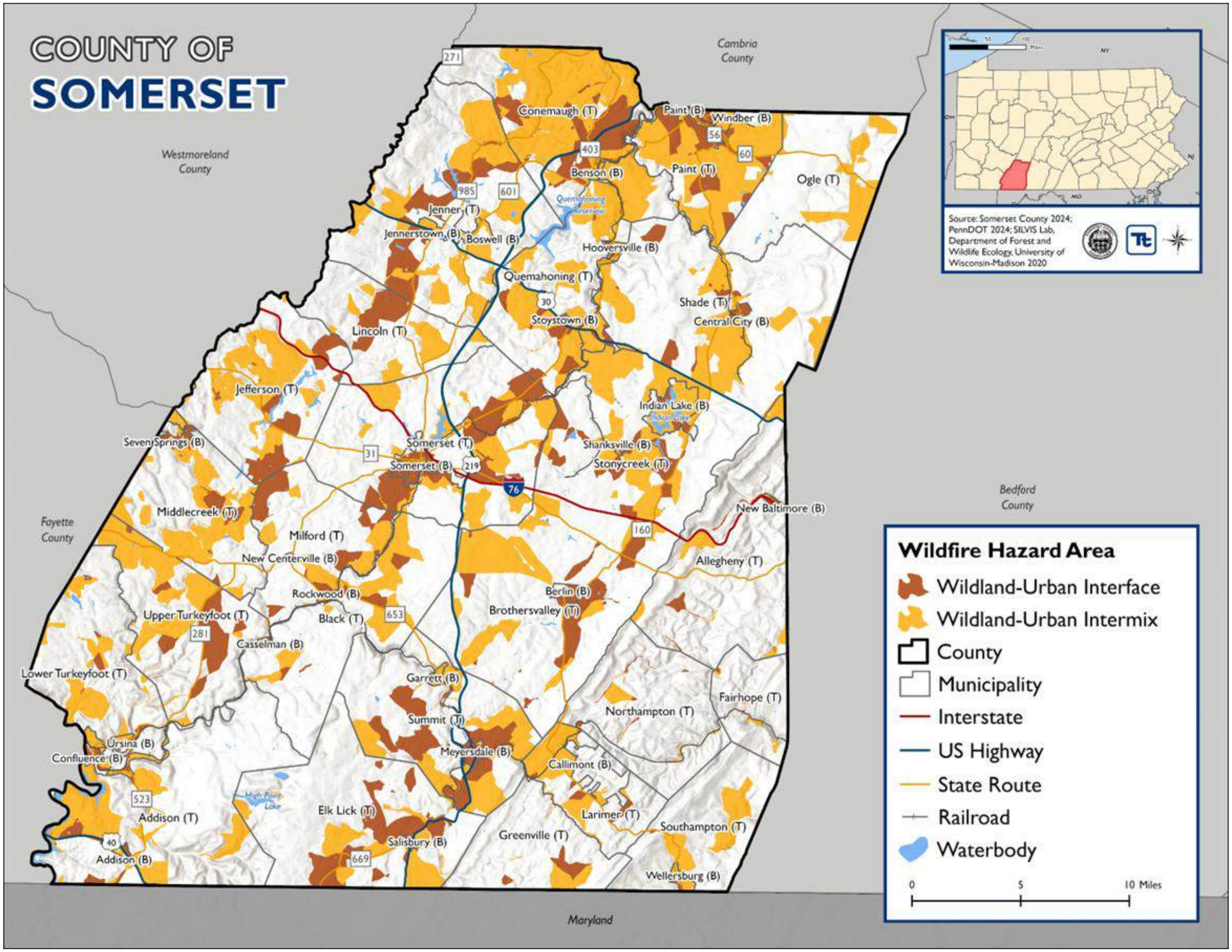
Concentrations of WUI can be seen along the east coast of the United States, including the area around Pittsburgh, Pennsylvania, and the eastern half of Pennsylvania. Somerset County is identified as having many areas of low-density housing or very low-density housing because of the large amount of agricultural area. Areas where recreation and tourism dominate are also places where WUI is common (Stewart 2015). Figure 4.3.19-3 depicts the WUI for Pennsylvania in 2010, and Table 4.3.19-3 illustrates the WUI for Somerset County. Concentrations of WUI areas greater than 50 percent are classified as WUI (intermix or interface) in the county.

Figure 4.3.19-3. 2010 WUI for Pennsylvania



*Source: **Stewart** 2015, Note: Yellow oval highlights Somerset County's location within Pennsylvania.*

Figure 4.3.19-4. Wildfire Urban Intermix/Interface for Somerset County



Wildland Fire Assessment System

The Wildland Fire Assessment System (WFAS) is an internet-based information system maintained at the National Interagency Fire Center (NIFC) in Boise, Idaho, that provides a national view of weather and fire potential, including national fire danger, weather maps and satellite-derived "Greenness" maps (NWCG 2021). Each day during the fire season, the WFAS produces national maps of selected fire weather and fire danger components of the National Fire Danger Rating System (NFDRS) (USFS n.d.). The Fire Danger Rating level, described in Table 4.3.19-1, considers current and historical weather, fuel types, and both live and dead fuel moisture. Local station managers provide this information to USFS (USFS n.d.).

Table 4.3.19-1. Fire Danger Rating and Color Code

Fire Danger Rating and Color Code	Description
Low (L) (Dark Green)	Fuels do not ignite readily from small firebrands, although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering and burning in irregular fingers. There is little danger of spotting.
Moderate (M) (Light Green or Blue)	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur but is not persistent. Fires are not likely to become serious and control is relatively easy.
High (H) (Yellow)	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly, and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while they are small.
Very High (VH) (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme (E) (Red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash (trunks, branches, and treetops) or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Source: USFS n.d.

Priority Landscape Analysis

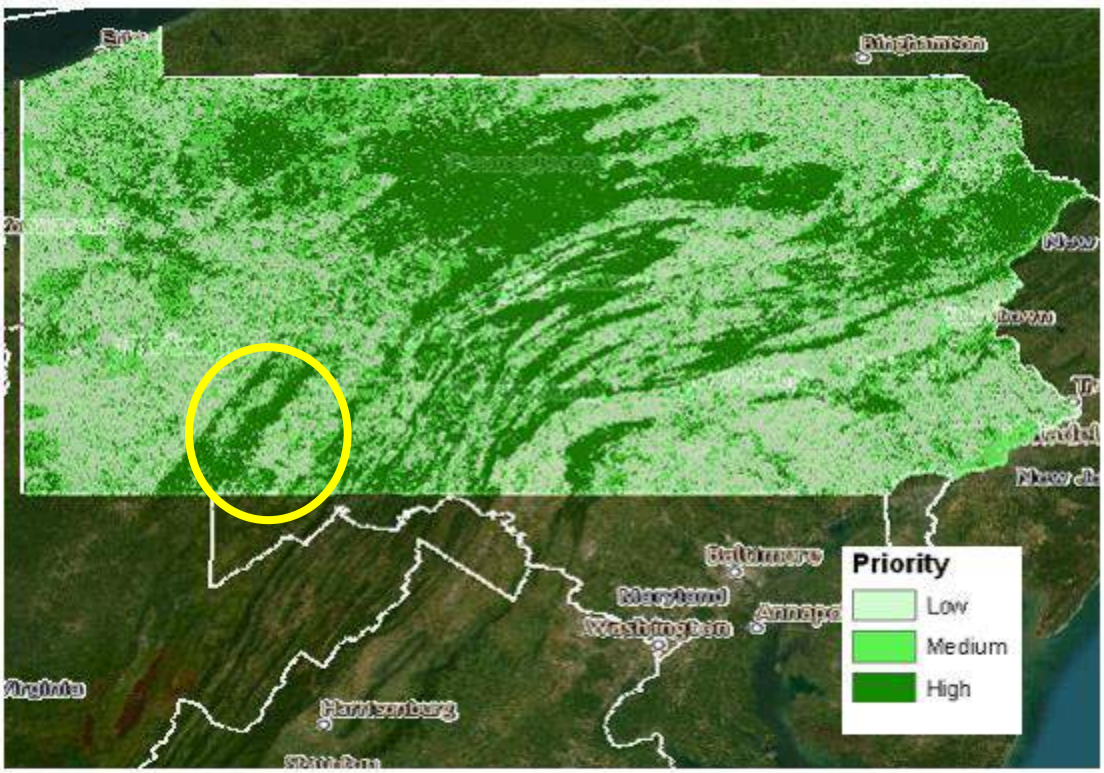
The Pennsylvania Department of Conservation and Natural Resources (PA DCNR) conducted a wildfire priority landscape analysis identifying areas where wildland fires are predicted to occur and become problematic. The areas are classified into high, medium, and low categories. The high classification is defined as an area prone to extreme fire behavior, with the potential to cause extensive property damage, or that could threaten the safety of the Commonwealth's citizens. The following datasets were used for this analysis (PA DCNR 2024):

- **2002 WUI**—Areas where homes and other human development meet or intermingle with undeveloped land
- **2006 LANDFIRE**—Characterizes the land's vegetation into fuel models that predict various fire behavior intensities

- **2002 – 2008 Pennsylvania Wildfire Point Origin Occurrences**—Records of wildland fire origins that have been reported
- **Percent Slope**—Aids in predicting fire behavior from the terrain
- **2009 Local Assessment of Values, Risks, Hazards**—A municipality-based rating system; this assessment has been made by local wildland fire managers

Table 4.3.19-5 illustrates the output for the wildfire priority landscapes model for Somerset County.

Figure 4.3.19-5. Wildfire Priority Landscapes in Somerset County



Source: PA DCNR 2024
Notes: Low Priority = 0–0.21 (light green); Medium Priority = 0.21–0.35 (medium green); High Priority = 0.35–1 (dark green); Somerset County location within yellow oval

4.3.19.3 Range of Magnitude

Wildfire events in Somerset County can range from small fires that can be managed by local firefighters to large fires burning many acres of land. Large events may require evacuation from one or more communities and necessitate regional or national firefighting support. The impact of a severe wildfire can be devastating. A wildfire has the potential to kill people, livestock, fish, and wildlife. They often destroy property, valuable timber, forage, and recreational and scenic resources.

In addition to the risk wildfires pose to the public and property owners, the safety of firefighters is also a concern. Although loss of life among firefighters does not occur often, it is always a risk. More common firefighting injuries include falls, sprains, abrasions, or heat-related injuries such as dehydration. Response to wildfires also exposes emergency responders to the risk of motor vehicle accidents and can place them in remote areas away from the communities that they are chartered to protect (PEMA 2023).

4.3.19.4 Past Occurrence

Many sources provided wildfire information regarding previous occurrences and losses associated with wildfire throughout Pennsylvania and Somerset County. With so many sources reviewed for the purpose of this HMP Update, loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP update.

Between 1954 and 2022, Pennsylvania was not included in any FEMA fire management assistance (FMA) declarations. Generally, these disasters cover a wide range of the State; therefore, the disaster may have impacted many counties (FEMA 2022).

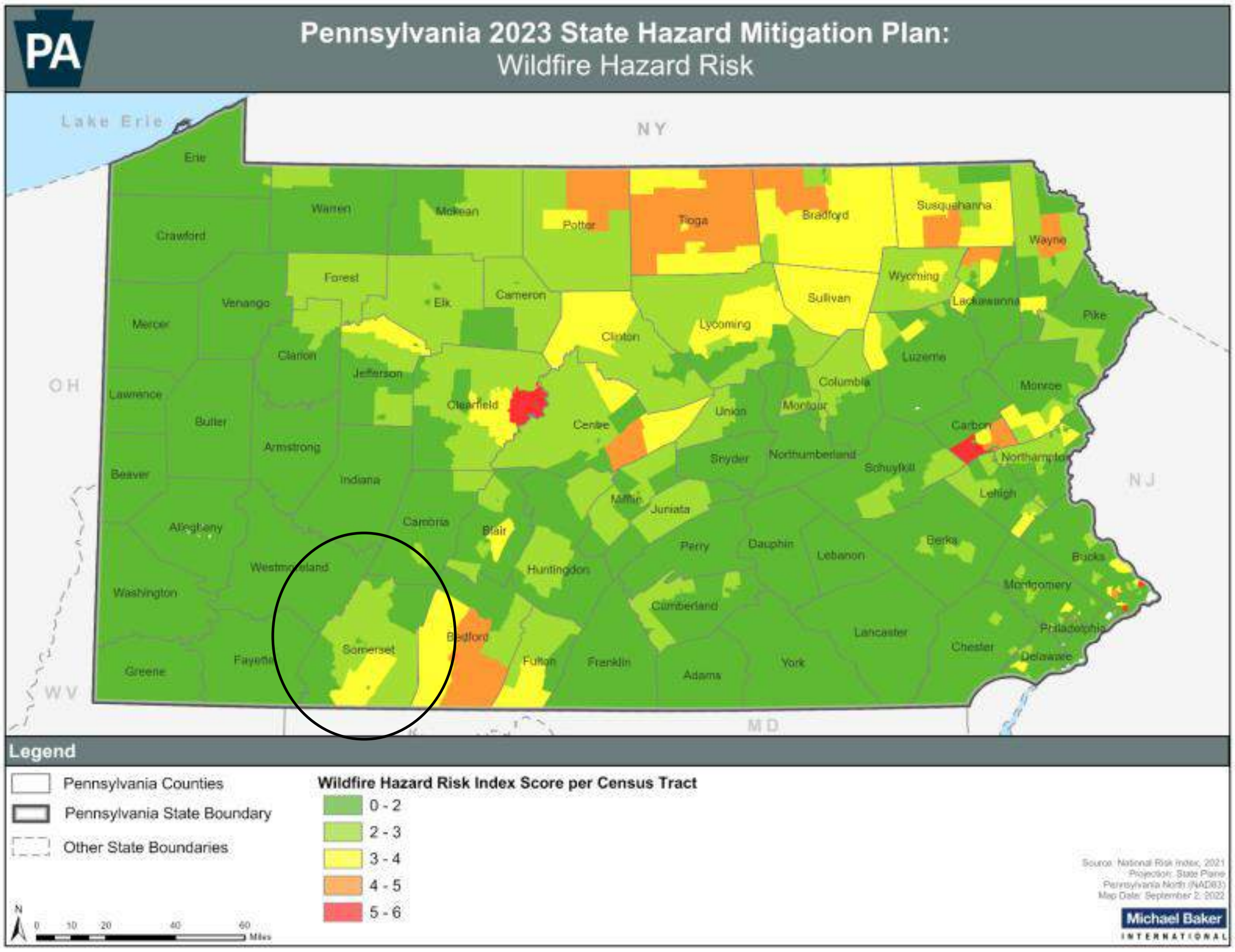
From 1992 to 2015, 98 wildfires burned 1,066.4 acres in Somerset County; however, this number does not include wildfires that were not reported to DCNR or U.S. Forest Service, or events that were controlled solely by the volunteer fire departments in Somerset County (PEMA 2023).

4.3.19.5 Future Occurrence

In Pennsylvania, wildfire events will continue to occur each year. However, the likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response.

One guide to the future occurrence of wildfires is the U.S. Forest Service Wildfire Hazard Potential (WHP) map. The latest available WHP map is based on 2014 landscape conditions and evaluates wildfire hazard based on the types of fuels present. Areas with fuels having a higher probability of experiencing torching, crowning, or other forms of extreme fire behavior under conducive weather conditions are assigned higher hazard values (PEMA 2023). Table 4.3.19-6 summarizes WHP values at the census tract scale by showing the percent of each census tract with moderate or high wildfire hazard potential. The percentage values were taken from FEMA's National Risk Index (PEMA 2023). Somerset County has a risk index score ranging from zero to four.

Figure 4.3.19-6. Wildfire Hazard Potential for Pennsylvania



Source: PEMA 2023
Note: Somerset County indicated by black oval.

For the 2025 Plan update, best available data was used to collect hazard event details. These details were used to calculate the probability of future occurrence of hazard events in the County. Information from 2023 Commonwealth of Pennsylvania Hazard Mitigation Plan Update was used to identify the number of events that occurred between 1995 and 2022, the most recently available period with aggregated data. Table 4.3.19-2 shows these statistics, as well as the annual average number of events and the estimate percent chance of an incident occurring each year. Based on these statistics, there is an estimated 100 percent chance of a wildfire event occurring in any given year in Somerset County.

Table 4.3.19-2. Probability of Future Wildfire Events

Hazard Type	Number of Occurrences Between 1995 and 2015	Percent chance of occurrence in any given year
Wildfire	98	100%

Source: PEMA 2023

Effects of Climate Change

The likelihood of a wildfire occurring depends on local temperatures, nearby vegetation and fuels, soil moisture, and precipitation trends, among other elements that make up the region's climate. Understanding the interactions of climate, fire, and vegetation is essential for addressing issues associated with climate change that include the following effects (USFS 2012):

- Effects on regional circulation and other atmospheric patterns that affect fire weather
- Effects of changing fire regimes on the carbon cycle, forest structure, and species composition
- Complications from land-use change, invasive species, and an increasing WUI

It is projected that higher summer temperatures will likely increase the fire risk by 10 to 30-percent. Fire occurrence and areas burned could increase across the United States as a result of the increase of lightning activity; the frequency of surface pressure and associated circulation patterns conducive to surface drying; and fire weather conditions, in general, which are conducive to severe wildfires. Warmer temperatures will also increase the effects of drought and increase the number of days each year with flammable fuels, extending fire seasons and areas burned (USFS 2011).

The 2021 Pennsylvania Climate Impact Assessment's main findings indicate Pennsylvania may be at increased risk for wildfires; however, the findings could not determine how large the increase in risk would be.

4.3.19.6 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the wildfire hazard on the county, including:

- Impact on (1) life, health and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time.

Impact on Life, Health, and Safety

Overall Population

Wildfires have the potential to impact human health and life of residents and responders, structures, infrastructure, and natural resources. The most vulnerable populations include emergency responders and those within a short distance of the interface between the built environment and the wildland environment. First responders are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke.

Table 4.3.19-3 summarizes the estimated population exposed to the wildfire hazard by municipality. Based on this analysis, 44.1 percent residents in Somerset County live in the WUI interface and 29.5 percent in the WUI intermix.

Table 4.3.19-3. Estimated Population Located Within the Wildland-Urban Interface/Intermix (WUI) Wildfire Fuel Hazard Areas in Somerset County

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Estimated Population Located Within the Wildland-Urban Interface/Intermix (WUI) Wildfire Hazard Areas			
		Number of People in the WUI Interface Wildfire Hazard Area	Percent of Total	Number of People in the WUI Intermix Wildfire Hazard Area	Percent of Total
Addison (B)	272	166	61.0%	105	38.6%
Addison (T)	945	157	16.6%	437	46.2%
Allegheny (T)	669	61	9.1%	170	25.4%
Benson (B)	139	63	45.3%	72	51.8%
Berlin (B)	2,297	1,113	48.5%	0	0.0%
Black (T)	868	82	9.4%	475	54.7%
Boswell (B)	1,411	0	0.0%	364	25.8%
Brothersvalley (T)	2,002	463	23.1%	681	34.0%
Callimont (B)	52	0	0.0%	45	86.5%
Casselman (B)	64	36	56.3%	27	42.2%
Central City (B)	1,045	1,038	99.3%	4	0.4%
Conemaugh (T)	6,759	2,325	34.4%	3,626	53.6%
Confluence (B)	596	515	86.4%	73	12.2%
Elk Lick (T)	2,423	1,097	45.3%	509	21.0%
Fairhope (T)	85	12	14.1%	23	27.1%
Garrett (B)	409	313	76.5%	95	23.2%
Greenville (T)	865	153	17.7%	200	23.1%
Hooversville (B)	722	563	78.0%	152	21.1%
Indian Lake (B)	314	67	21.3%	243	77.4%
Jefferson (T)	1,313	326	24.8%	844	64.3%
Jenner (T)	3,713	790	21.3%	1,339	36.1%
Jennerstown (B)	1,182	210	17.8%	271	22.9%
Larimer (T)	536	103	19.2%	309	57.6%
Lincoln (T)	1,305	212	16.2%	379	29.0%
Lower Turkeyfoot (T)	425	67	15.8%	208	48.9%

Jurisdiction	Total Population (2022 ACS 5-Year Estimates)	Estimated Population Located Within the Wildland-Urban Interface/Intermix (WUI) Wildfire Hazard Areas			
		Number of People in the WUI Interface Wildfire Hazard Area	Percent of Total	Number of People in the WUI Intermix Wildfire Hazard Area	Percent of Total
Meyersdale (B)	2,118	2,033	96.0%	67	3.2%
Middlecreek (T)	644	227	35.2%	350	54.3%
Milford (T)	1,428	350	24.5%	386	27.0%
New Baltimore (B)	147	128	87.1%	18	12.2%
New Centerville (B)	118	0	0.0%	0	0.0%
Northampton (T)	282	22	7.8%	47	16.7%
Ogle (T)	493	17	3.4%	438	88.8%
Paint (B)	1,122	889	79.2%	216	19.3%
Paint (T)	3,038	1,034	34.0%	1,907	62.8%
Quemahoning (T)	1,661	399	24.0%	878	52.9%
Rockwood (B)	816	750	91.9%	65	8.0%
Salisbury (B)	619	612	98.9%	4	0.6%
Seven Springs (B)	7	0	0.0%	0	0.0%
Shade (T)	2,342	721	30.8%	1,081	46.2%
Shanksville (B)	166	131	78.9%	34	20.5%
Somerset (B)	6,030	5,569	92.4%	23	0.4%
Somerset (T)	11,775	3,946	33.5%	2,451	20.8%
Southampton (T)	628	12	1.9%	282	44.9%
Stonycreek (T)	2,271	656	28.9%	948	41.7%
Stoystown (B)	410	359	87.6%	46	11.2%
Summit (T)	1,911	973	50.9%	591	30.9%
Upper Turkeyfoot (T)	1,073	205	19.1%	549	51.2%
Ursina (B)	214	132	61.7%	75	35.0%
Wellersburg (B)	148	22	14.9%	125	84.5%
Windber (B)	3,930	3,405	86.6%	524	13.3%
Somerset County (Total)	**73,802**	**32,524**	**44.1%**	**21,756**	**29.5%**

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison 2020
Note: % = Percent

Socially Vulnerable Population

Some populations are more susceptible to the adverse effects of wildfire. For example, individuals over 65 or under 5 may be more sensitive to wildfire smoke, triggering other health impacts, like asthma. If an evacuation is ordered, individuals who do not speak English may be unaware of the potential hazard or oncoming danger. Those with disabilities may encounter mobility issues during an evacuation or getting to a safe location. Individuals experiencing poverty may be unable to afford out-of-pocket expenses resulting from a wildfire, such as if their home or vehicle is damaged and needs repairs. Table 4.3.19-4 summarizes socially vulnerable populations living in wildfire hazard areas countywide.

Table 4.3.19-4. Socially Vulnerable Populations in Wildfire Hazard Areas

Category	Estimated Population in Wildland Urban Intermix Area		Estimated Population in Wildland Urban Interface Area	
	Number	% of Total in Category	Number	% of Total in Category
Population Over 65	5,141	30.2%	7,546	44.3%
Population Under 5	917	26.9%	1,620	47.6%
Non-English Speaking Population	57	25.5%	80	35.8%
People with a Disability	3,331	28.4%	5,337	45.4%
Population Living in Poverty	1,821	24.4%	3,757	50.0%

Source: U.S. Census Bureau 2022; Somerset County 2024; USACE 2022; SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison 2020
Note: % = Percent

Impact on General Building Stock

The most vulnerable structures to wildfire events are those within the wildfire urban interface/intermix hazard area. Buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. To estimate the buildings exposed to the wildfire hazard, the WUI was overlaid upon the updated building inventory. The replacement cost value of the structures with their center in the WUI were totaled (refer to Table 4.3.19-5).

Out of the general building stock (85,193 buildings), 33.8 percent (28,832 buildings) sit in the wildfire interface area and 33.3 percent (28,394 buildings) sit in the wildfire intermix area. The Borough of Somerset has the greatest number of buildings within in the wildfire interface area (3,133 buildings). The Township of Conemaugh has the greatest number of buildings in the wildfire intermix area (3,513 buildings).

Table 4.3.19-5. Estimated Building Stock Located Within the Wildland-Urban Interface/Intermix (WUI) Wildfire Fuel Hazard Areas in Somerset County

Jurisdiction	Jurisdiction Total Buildings		Buildings in Wildfire Interface Hazard Area				Buildings in Wildfire Intermix Hazard Area			
			Number of Buildings		Replacement Cost Value		Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Addison (B)	255	$148,461,465	150	58.8%	$85,802,548	57.8%	99	38.8%	$58,300,603	39.3%
Addison (T)	2,429	$1,136,703,437	353	14.5%	$155,923,634	13.7%	951	39.2%	$462,006,111	40.6%
Allegheny (T)	1,509	$781,809,472	120	8.0%	$53,936,532	6.9%	239	15.8%	$98,616,253	12.6%
Benson (B)	173	$89,274,721	78	45.1%	$38,396,099	43.0%	92	53.2%	$48,939,520	54.8%
Berlin (B)	1,392	$895,269,284	636	45.7%	$450,111,698	50.3%	0	0.0%	$0	0.0%
Black (T)	1,515	$834,474,737	122	8.1%	$66,679,869	8.0%	744	49.1%	$439,548,635	52.7%
Boswell (B)	826	$474,400,294	0	0.0%	$0	0.0%	257	31.1%	$136,063,232	28.7%
Brothersvalley (T)	3,330	$2,064,465,986	625	18.8%	$370,125,855	17.9%	913	27.4%	$463,059,658	22.4%
Callimont (B)	55	$30,930,873	0	0.0%	$0	0.0%	48	87.3%	$28,368,057	91.7%
Casselman (B)	119	$41,086,890	67	56.3%	$22,485,254	54.7%	50	42.0%	$17,579,162	42.8%
Central City (B)	912	$442,954,504	902	98.9%	$429,723,925	97.0%	8	0.9%	$12,939,032	2.9%
Conemaugh (T)	6,338	$3,880,986,714	2,038	32.2%	$1,477,798,082	38.1%	3,513	55.4%	$1,945,916,020	50.1%
Confluence (B)	753	$379,399,641	584	77.6%	$299,266,354	78.9%	149	19.8%	$63,403,053	16.7%
Elk Lick (T)	3,334	$1,853,364,019	1,238	37.1%	$720,949,819	38.9%	563	16.9%	$287,048,543	15.5%
Fairhope (T)	304	$114,953,744	35	11.5%	$17,129,322	14.9%	68	22.4%	$24,216,647	21.1%
Garrett (B)	377	$163,199,308	267	70.8%	$116,251,355	71.2%	110	29.2%	$46,947,952	28.8%
Greenville (T)	1,145	$619,817,620	148	12.9%	$95,505,102	15.4%	202	17.6%	$93,655,116	15.1%
Hooversville (B)	581	$284,259,840	421	72.5%	$204,728,078	72.0%	149	25.6%	$66,172,120	23.3%
Indian Lake (B)	1,148	$775,063,497	232	20.2%	$140,671,352	18.1%	898	78.2%	$627,027,120	80.9%
Jefferson (T)	3,395	$1,763,883,579	784	23.1%	$398,457,055	22.6%	1,771	52.2%	$924,958,251	52.4%
Jenner (T)	5,016	$2,687,221,806	1,086	21.7%	$576,787,138	21.5%	1,624	32.4%	$807,759,787	30.1%
Jennerstown (B)	641	$404,635,410	119	18.6%	$62,977,847	15.6%	147	22.9%	$78,312,481	19.4%
Larimer (T)	839	$411,045,802	103	12.3%	$43,327,830	10.5%	468	55.8%	$228,325,879	55.5%

Jurisdiction	Jurisdiction Total Buildings		Buildings in Wildfire Interface Hazard Area				Buildings in Wildfire Intermix Hazard Area			
			Number of Buildings		Replacement Cost Value		Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Lincoln (T)	1,981	$1,209,799,393	331	16.7%	$175,706,116	14.5%	481	24.3%	$226,535,021	18.7%
Lower Turkeyfoot (T)	1,168	$528,650,209	196	16.8%	$120,154,052	22.7%	537	46.0%	$207,643,948	39.3%
Meyersdale (B)	1,529	$888,796,373	1,451	94.9%	$836,802,607	94.2%	54	3.5%	$23,922,289	2.7%
Middlecreek (T)	2,860	$1,361,478,007	708	24.8%	$289,471,985	21.3%	1,510	52.8%	$684,083,668	50.2%
Milford (T)	2,434	$1,414,705,761	531	21.8%	$284,042,675	20.1%	559	23.0%	$297,388,585	21.0%
New Baltimore (B)	174	$77,842,527	155	89.1%	$69,169,842	88.9%	19	10.9%	$8,672,686	11.1%
New Centerville (B)	171	$104,468,378	0	0.0%	$0	0.0%	0	0.0%	$0	0.0%
Northampton (T)	763	$355,524,703	61	8.0%	$27,058,921	7.6%	89	11.7%	$35,831,653	10.1%
Ogle (T)	687	$335,973,192	18	2.6%	$8,285,826	2.5%	566	82.4%	$275,803,381	82.1%
Paint (B)	553	$294,837,290	459	83.0%	$252,945,988	85.8%	89	16.1%	$38,105,467	12.9%
Paint (T)	3,474	$2,072,241,492	1,002	28.8%	$658,013,123	31.8%	2,270	65.3%	$1,295,435,659	62.5%
Quemahoning (T)	2,464	$1,472,027,871	485	19.7%	$235,959,340	16.0%	1,306	53.0%	$626,613,436	42.6%
Rockwood (B)	619	$349,683,802	566	91.4%	$326,777,265	93.4%	52	8.4%	$22,769,358	6.5%
Salisbury (B)	639	$345,399,685	622	97.3%	$336,678,102	97.5%	9	1.4%	$3,990,427	1.2%
Seven Springs (B)	82	$139,517,399	41	50.0%	$106,923,926	76.6%	3	3.7%	$1,086,954	0.8%
Shade (T)	3,461	$1,759,474,604	744	21.5%	$333,126,635	18.9%	1,625	47.0%	$814,114,893	46.3%
Shanksville (B)	178	$97,994,103	136	76.4%	$70,936,697	72.4%	41	23.0%	$24,011,657	24.5%
Somerset (B)	3,433	$3,277,246,043	3,133	91.3%	$2,290,615,442	69.9%	11	0.3%	$10,615,018	0.3%
Somerset (T)	8,899	$6,489,508,286	2,715	30.5%	$1,816,296,506	28.0%	1,893	21.3%	$945,707,260	14.6%
Southampton (T)	1,001	$469,896,734	19	1.9%	$6,694,515	1.4%	350	35.0%	$161,964,385	34.5%
Stonycreek (T)	3,547	$1,868,134,699	865	24.4%	$455,738,243	24.4%	1,443	40.7%	$754,824,347	40.4%
Stoystown (B)	266	$142,664,600	231	86.8%	$127,030,011	89.0%	31	11.7%	$12,430,276	8.7%
Summit (T)	3,085	$1,765,406,355	1,344	43.6%	$697,060,660	39.5%	853	27.6%	$383,897,580	21.7%
Upper Turkeyfoot (T)	2,126	$1,035,009,396	427	20.1%	$231,674,541	22.4%	839	39.5%	$369,286,232	35.7%
Ursina (B)	279	$118,221,649	165	59.1%	$69,999,447	59.2%	106	38.0%	$45,792,626	38.7%
Wellersburg (B)	261	$117,923,548	44	16.9%	$22,395,711	19.0%	217	83.1%	$95,527,837	81.0%

Jurisdiction	Jurisdiction Total Buildings		Buildings in Wildfire Interface Hazard Area				Buildings in Wildfire Intermix Hazard Area			
			Number of Buildings		Replacement Cost Value		Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Windber (B)	2,673	$1,756,688,270	2,275	85.1%	$1,475,436,887	84.0%	378	14.1%	$216,129,298	12.3%
Somerset County (Total)	**85,193**	**$50,126,777,010**	**28,832**	**33.8%**	**$17,152,029,810**	**34.2%**	**28,394**	**33.3%**	**$14,541,347,172**	**29.0%**

Source: Somerset County 2024; USACE 2022; SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison 2020; RS Means 2024
Note: % = Percent

Impact on Critical Facilities

It is recognized that a number of critical facilities are located in the wildfire hazard area. Facilities at risk of impact from a wildfire include locations for vulnerable populations (i.e., schools and senior facilities) and emergency response agencies (i.e., fire and police). Table 4.3.19-6 summarizes the distribution of the 175 lifeline facilities located within the wildfire intermix hazard area and the 213 lifeline facilities located within the wildfire interface hazard area by jurisdiction.

Table 4.3.19-6. Number Lifelines Exposed to the Wildfire Urban Interface/Intermix Hazard Area

		Number of Facilities in Wildfire Intermix Hazard Area, by Lifeline Category		Number Lifeline Facilities Located in the Wildland-Urban Interface Wildfire Hazard Area	
Jurisdiction	Total Lifelines Located in Jurisdiction	Lifeline Facilities	Percent of Total Critical Facilities	Lifeline Facilities	Percent of Total Lifelines
Addison (B)	2	1	50.0%	1	50.0%
Addison (T)	14	6	42.9%	0	0.0%
Allegheny (T)	15	3	20.0%	2	13.3%
Benson (B)	2	0	0.0%	2	100.0%
Berlin (B)	10	0	0.0%	2	20.0%
Black (T)	20	6	30.0%	0	0.0%
Boswell (B)	8	3	37.5%	0	0.0%
Brothersvalley (T)	33	6	18.2%	6	18.2%
Callimont (B)	1	1	100.0%	0	0.0%
Casselman (B)	1	0	0.0%	1	100.0%
Central City (B)	7	3	42.9%	4	57.1%
Conemaugh (T)	50	25	50.0%	16	32.0%
Confluence (B)	9	1	11.1%	4	44.4%
Elk Lick (T)	26	7	26.9%	8	30.8%
Fairhope (T)	4	1	25.0%	0	0.0%
Garrett (B)	5	0	0.0%	5	100.0%
Greenville (T)	7	1	14.3%	1	14.3%
Hooversville (B)	7	3	42.9%	4	57.1%
Indian Lake (B)	1	0	0.0%	1	100.0%
Jefferson (T)	20	7	35.0%	4	20.0%

Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities in Wildfire Intermix Hazard Area, by Lifeline Category		Number Lifeline Facilities Located in the Wildland-Urban Interface Wildfire Hazard Area	
		Lifeline Facilities	Percent of Total Critical Facilities	Lifeline Facilities	Percent of Total Lifelines
Jenner (T)	39	15	38.5%	8	20.5%
Jennerstown (B)	9	2	22.2%	2	22.2%
Larimer (T)	4	0	0.0%	2	50.0%
Lincoln (T)	20	8	40.0%	1	5.0%
Lower Turkeyfoot (T)	10	4	40.0%	3	30.0%
Meyersdale (B)	12	0	0.0%	9	75.0%
Middlecreek (T)	9	3	33.3%	0	0.0%
Milford (T)	21	4	19.0%	4	19.0%
New Baltimore (B)	2	0	0.0%	2	100.0%
New Centerville (B)	1	0	0.0%	0	0.0%
Northampton (T)	12	1	8.3%	2	16.7%
Ogle (T)	5	1	20.0%	1	20.0%
Paint (B)	5	2	40.0%	3	60.0%
Paint (T)	22	10	45.5%	5	22.7%
Quemahoning (T)	23	7	30.4%	5	21.7%
Rockwood (B)	10	1	10.0%	9	90.0%
Salisbury (B)	4	0	0.0%	4	100.0%
Seven Springs (B)	5	0	0.0%	5	100.0%
Shade (T)	33	13	39.4%	3	9.1%
Shanksville (B)	3	1	33.3%	2	66.7%
Somerset (B)	33	0	0.0%	25	75.8%
Somerset (T)	71	7	9.9%	24	33.8%
Southampton (T)	8	1	12.5%	1	12.5%
Stonycreek (T)	42	7	16.7%	7	16.7%
Stoystown (B)	3	0	0.0%	2	66.7%
Summit (T)	35	5	14.3%	9	25.7%

Jurisdiction	Total Lifelines Located in Jurisdiction	Number of Facilities in Wildfire Intermix Hazard Area, by Lifeline Category		Number Lifeline Facilities Located in the Wildland-Urban Interface Wildfire Hazard Area	
		Lifeline Facilities	Percent of Total Critical Facilities	Lifeline Facilities	Percent of Total Lifelines
Upper Turkeyfoot (T)	10	5	50.0%	0	0.0%
Ursina (B)	4	1	25.0%	3	75.0%
Wellersburg (B)	2	2	100.0%	0	0.0%
Windber (B)	14	1	7.1%	11	78.6%
Somerset County (Total)	**713**	**175**	**24.5%**	**213**	**29.9%**

Source: Somerset County 2022; HIFLD 2020-2024; Pennsylvania Department of Environmental Protection 2024; Pennsylvania Department of Transportation 2023-2024; FAA 2021; SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison 2020
Note: % = Percent

Impact on the Economy

Wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed business. These events may cost thousands of taxpayer dollars to suppress and control and may involve hundreds of operating hours on fire apparatus and thousands of volunteer man hours from the volunteer firefighters. There are also many direct and indirect costs to local businesses that excuse volunteers from working to fight these fires.

Impact on the Environment

Wildfires threaten air quality, water quality, soil properties, nutrient cycling, vegetation, and wildlife habitat. Wildfires can trigger other hazards, such as flooding or mudflow. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water, creating conditions perfect for flash flooding and mudflows. Flood risk in these impacted areas remains significantly higher until vegetation is restored, which can take up to five years after a wildfire (FEMA 2013). Additionally, post-fire runoff polluted with debris and contaminants can be harmful to ecosystem and aquatic life (Tecle and Neary 2015).

However, wildfires can have a positive environmental impact in that they burn dead trees, leaves, and grasses to allow more open spaces for new and different types of vegetation to grow and receive sunlight. Another positive effect of a wildfire is that it stimulates the growth of new shoots on trees and shrubs, and its heat can open pinecones and other seed pods (PEMA 2023).

Future Changes That May Impact Vulnerability

Future Growth and Development

It is anticipated that any new development and new residents in the Wildfire Urban Intermix/Interface will be exposed to the wildfire hazard. Areas targeted for potential future growth and development in the next 5 years have been identified across the County at the municipal level. Somerset County has experienced population increase since 2000. According to the U.S. Census Bureau, the County's population has increased 4.71 percent between 2000 and 2020 (U.S. Census Bureau 2020). If this growth requires extensions of utilities or infrastructure, such as roads, these assets will be vulnerable to wildfires as well.

Additionally, it is important to note that majority of wildfires in Pennsylvania are caused by people, regardless of intent. As undeveloped areas in or near the WUI become inhabited, the likelihood of future occurrences may increase due to more regular and concentrated human activity.

Effect of Climate Change on Vulnerability

According to USFS, climate change will likely alter the atmospheric patterns that affect fire weather. Changes in fire patterns will, in turn, affect carbon cycling, forest structure, and species composition. Climate change associated with elevated greenhouse gas concentrations may create an atmospheric and fuel environment that is more conducive to large, severe fires (USFS 2011).

Fire interacts with climate and vegetation (fuel) in predictable ways. Understanding the interactions of climate, fire, and vegetation is essential for addressing issues associated with climate change that include (USFS 2011):

- Effects on regional circulation and other atmospheric patterns that affect fire weather
- Effects of changing fire regimes on the carbon cycle, forest structure, and species composition, and
- Complications from land use change, invasive species, and an increasing WUI.

It is projected that higher summer temperatures will likely increase the fire risk by 10 to 30-percent. Fire occurrence and areas burned could increase across the United States as a result of the increase of lightning activity; the frequency of surface pressure and associated circulation patterns conducive to surface drying; and fire weather conditions, in general, which are conducive to severe wildfires. Warmer temperatures will also increase the effects of drought and increase the number of days each year with flammable fuels, extending fire seasons and areas burned (USFS 2011).

The 2021 Pennsylvania Climate Impact Assessment's main findings indicate Pennsylvania may be at increased risk for wildfires; however, the findings could not determine how large the increase in risk would be.

Future changes in fire frequency and severity are difficult to predict. Global and regional climate changes associated with elevated greenhouse gas concentrations could alter large weather patterns, thereby affecting fire weather conditions that are conducive to extreme fire behavior (USFS 2011).

4.3.19.7 Additional Data and Next Steps

As the data and resources become available, a custom building inventory can be generated to capture the construction of structures (such as roofing material, fire detection equipment, and structure age) to further refine the vulnerability analysis. As stated earlier, buildings constructed of wood or vinyl siding are generally more likely to be damaged by the fire hazard than buildings constructed of brick or concrete. The proximity of these building types to the WUI should be identified for further evaluation. Development and availability of these data would permit a more detailed estimate of potential vulnerabilities, including loss of life and potential structural damages.

In locations where homes are at risk for wildfires, the BOF's WUI Guidance Document is available to assist homeowners, community associations, local government, and developers to assess and mitigate the potential dangers of a wildfire. The guidance also provides information for developing an action plan in coordination with local emergency managers. Communities at risk for wildfires can adopt by local ordinance the "International Wildland-Urban Interface Code" of the Uniform Construction Code.

4.3.20 Winter Storm

4.3.20.1 Hazard Description

This section provides a profile and vulnerability assessment of the winter storm hazard for the Somerset County Hazard Mitigation Plan (HMP). Winter storms consist of cold temperatures, snow, and ice. They occur, on average, approximately 35 times each year in Pennsylvania. From November through March, Pennsylvania is exposed to winter storms that move up the Atlantic coast or sweep in from the west. Every county in the Commonwealth is vulnerable to severe winter storms; however, the northern tier, western counties, and mountainous regions tend to experience winter weather more frequently and with greater severity.

Winter storms can produce more damage than any other severe weather event, including tornadoes. Complications caused by winter storms can lead to road closures (especially secondary and farm roads); business losses to commercial centers built in outlying areas because of supply interruption and loss of customers; property losses and roof damages from snow and ice loading and fallen trees; utility interruptions; and loss of water supplies. Flooding can result from winter storm events as well.

Most severe winter storm hazards include blizzards, ice storms (freezing rain and/or sleet), and snow squalls (PEMA 2023). Other types of winter storms that can impact the planning area are those associated with mid-Atlantic cyclones, known locally as Northeasters or Nor'easters. Because most Nor'easters generally occur during winter weather months, these hazards have also been grouped as a type of winter storm. This hazard type is generally a combination of heavy snow, blowing snow, and/or dangerous wind chill temperatures and is often times life-threatening. many times, winter storms can be life-threatening.

- **Blizzard:** Blizzards are characterized by low temperatures, wind gusts of 35 miles per hour (mph) or more and falling and/or blowing snow that reduces visibility to 0.25 mile or less for an extended period, usually 3 or more hours (NOAA/NSSL 2023).

- **Ice storms**: a storm that results in the accumulation of at least 0.25" of ice on exposed surfaces (NOAA/NSSL 2023). Ice can come in the form of either sleet or freezing rain. Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen, partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Freezing rain is rain that falls as a liquid but freezes into a glaze upon contact with the ground. Both types of precipitation, even in small accumulations, can cause significant hazards to a community (NWS 2009).

- **Snow Squall**: An intense but limited-duration period of moderate to heavy snowfall, also known as a snowstorm, accompanied by strong, gusty surface winds and possibly lightning (generally moderate to heavy snow showers) (NOAA/NSSL 2023).

Precipitation associated with winter storms are snow, sleet, and/or freezing rain.

- **Snow**: collections of ice crystals that cling to each other as they fall toward the ground (NOAA/NSSL 2023).

- **Sleet:** occurs when snowflakes only partially melt when they fall through a shallow layer of warm air. These slushy drops refreeze as they next fall through a deep layer of freezing air above the surface, and eventually reach the ground as frozen rain drops that bounce on impact (NOAA/NSSL 2023).

- **Freezing Rain:** Freezing rain occurs when snowflakes descend into a warmer layer of air and melt completely. When these liquid water drops fall through another thin layer of freezing air just above the surface, they don't have enough time to refreeze before reaching the ground. Because they are "supercooled," they instantly refreeze upon contact with anything that that is at or below 0 degrees C, creating a glaze of ice on the ground, trees, power lines, or other objects. A significant accumulation of freezing rain lasting several hours or more is called an ice storm (NOAA/NSSL 2023).

Due to their regular occurrence, these storms are considered hazards only when they result in damage to communications networks, impact vegetation, cause structural collapse, and/or cause very serious transportation problems and utility interruptions. Winter storms have also been known to contribute to severe flooding. A winter storm can adversely affect roadways, utilities, and business activities and can cause frostbite or loss of life. These storms may include one or more of the following weather events: heavy snowstorm, sleet storm, ice storm, or severe blizzard.

Any of the above events can result in the closing of major or secondary roads, particularly in rural locations, stranded motorists, transportation accidents, loss of utility services, and depletion of heating supplies. Environmental impacts often include damage to shrubbery and trees due to heavy snow loading, ice build-up and/or high winds which can break limbs or even bring down large trees. Gradual melting of snow and ice provides excellent groundwater recharge. However, high temperatures following a heavy snowfall can cause rapid surface water runoff and severe flooding.

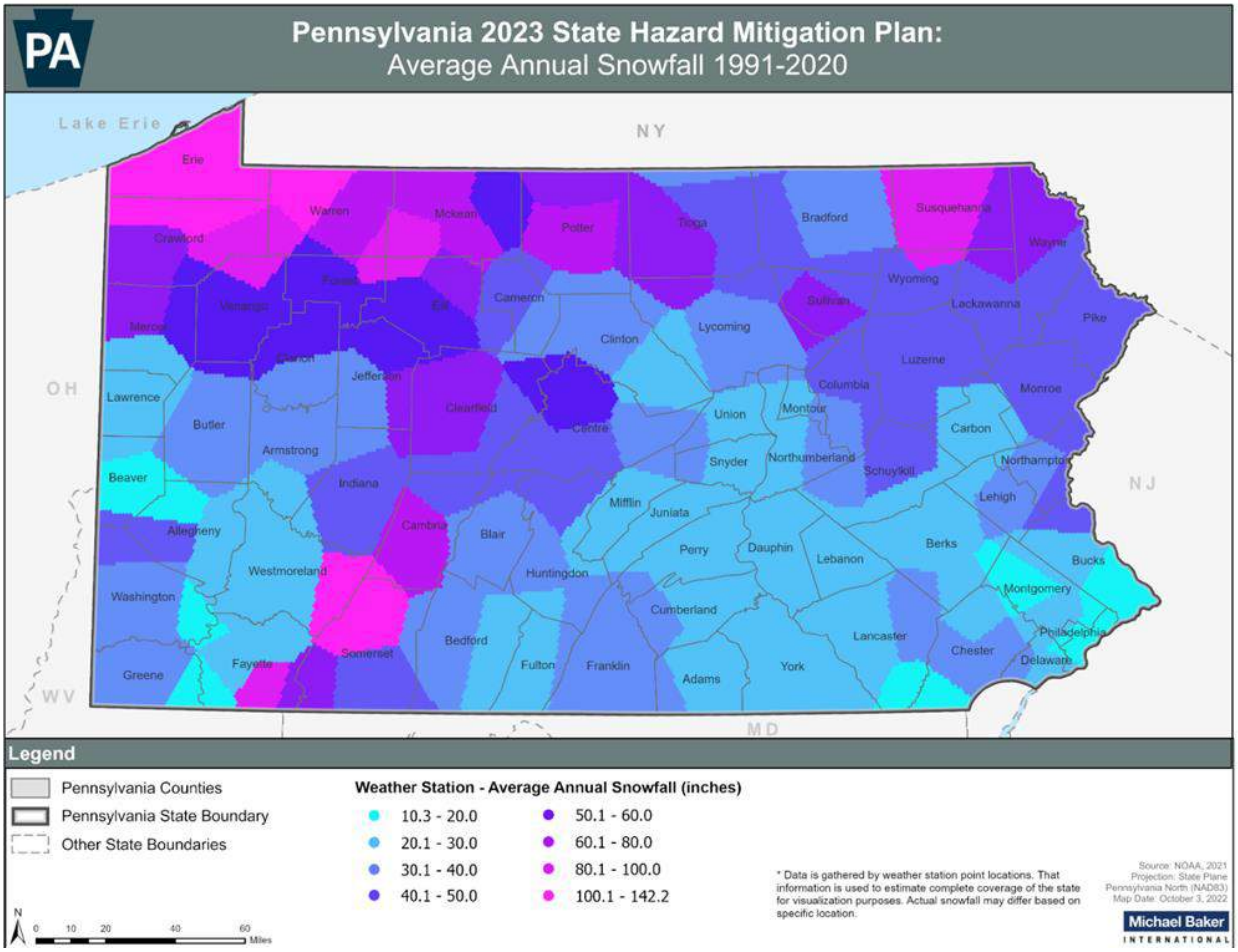
4.3.20.2 Location

Winter storms begin as low-pressure systems that move following the jet stream. Major winter storms occur in Pennsylvania several times annually and are regional events. Every county in the Commonwealth, including Somerset County, is subject to severe winter storms. According to Figure 4.3.20-1, between 1991 and 2020, Somerset County experienced an annual average of 30 and 100+ inches of snow (PEMA 2023).

4.3.20.3 Range of Magnitude

Determining the extent of winter storms is measured in several different ways. Annual snowfall totals (as shown below) are one, while others, like the Regional Snowfall Index (RSI) or Winter Storm Severity Index (WSSI), categorize a range of winter storm magnitudes in several ways.

Figure 4.3.20-1 Average Annual Snowfall (1991-2020) for Pennsylvania



Source: PEMA 2023

The magnitude or severity of a severe winter storm depends on several factors including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, time of occurrence during the day (e.g., weekday versus weekend), and time of season.

Regional Snowfall Index (RSI): The extent of a severe winter storm can be classified by meteorological measurements and by evaluating its societal impacts. National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) produces the Regional Snowfall Index (RSI) for significant snowstorms that affect the eastern two-thirds of the United States.

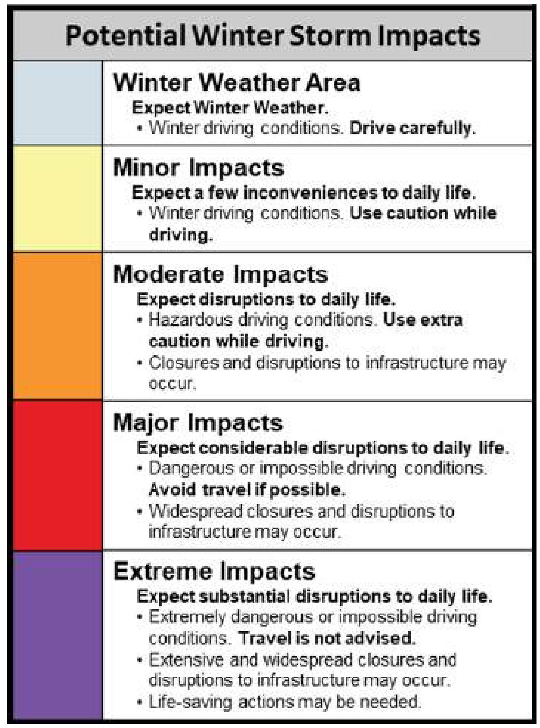
The RSI ranks snowstorm impacts on a scale from 1 to 5. It is based on the spatial extent of the storm, the amount of snowfall, and the interaction of the extent and snowfall totals with population based on the 2010 Census. The NCEI has analyzed and assigned RSI values to over 500 storms since 1900 (NCEI 2022), and Somerset County can expect a range of RSI values ranging from 1 to 5.

Table 4.3.20-1. RSI Ranking Categories

Category	Description	RSI Value
1	Notable	1-3
2	Significant	3-6
3	Major	6-10
4	Crippling	10-18
5	Extreme	18+

Source: NCEI 2022

Figure 4.3.20-2 WSSI Impact Definitions



<u>Winter Storm Severity Index (WSSI):</u> Created through the use of Geographic Information Systems (GIS), this NWS tool screens official NWS forecasts for winter weather elements and combines those data with non-meteorological information datasets (e.g., climatology, land-use, urban areas). It provides a classification of the overall expected severity of winter weather using the following terminology: "Minor", "Moderate", "Major", and "Extreme". Components of the WSSI produce a 0 to 5 output scale value that equates to the potential severity based on the winter weather hazards (0=no winter weather, 1=winter weather area, 2=minor, 3=moderate, 4=major, and 5=extreme) (NOAA/WPC 2023). Somerset County, PA can expect a range of WSSI values between 1 and 5.

4.3.20.4 Past Occurrence

Many sources provided historical information regarding previous occurrences and losses associated with winter storm events throughout the Commonwealth of Pennsylvania and Somerset County. With so many sources reviewed for the purpose of this plan, loss and impact information for many events varied depending on the source. Therefore, the accuracy of the monetary figures discussed is based only on available information identified during research for this plan. Monetary figures may also have been calculated for the region, based on entire storm damage, and include damage from other counties.

Between 1954 and 2024, Somerset County was included in seven disaster declarations by the Federal Emergency Management Agency (FEMA), including presidentially declared disasters (DR) as well as Emergency declarations (EM), and each of these is detailed in Table 4.3.20-2 below.

Table 4.3.20-2. FEMA DR and EM Declarations for Winter Storm Events in Somerset County

FEMA Declaration Number	Date(s) of Event	Incident Type	Title
EM-3026-PA	January 29, 1977	Snowstorm	Snowstorms
EM-3105-PA	March 13-17, 1993	Snowstorm	Severe Snowfall & Winter Storm
DR-1015-PA	January 4, 1994 – February 25, 1994	Severe Storm	Severe Winter Storms
DR-1085-PA	January 6-12, 1996	Snowstorm	Blizzard of 96
EM-3180-PA	February 14-19, 2003	Severe Storm	Snow
DR-1898-PA	February 5-11, 2010	Snowstorm	Severe Winter Storms and Snowstorms
DR-4267-PA	January 22-23, 2016	Snowstorm	Severe Winter Storm and Snowstorm

Source: FEMA 2024

For this 2025 HMP update, known severe winter weather events that have impacted Somerset County between 2020 and 2025 are identified in Table 4.3.20-3. This includes events presented in the 2020 Somerset County HMP and events listed in the NOAA-NCEI storm events database. Only events that resulted in a disaster declaration or caused injuries, fatalities, or over $10,000 in damage are included in the table. With winter weather documentation being so extensive for Pennsylvania and Somerset County, not all sources have been identified or researched. Therefore, the table below may not include all events that have occurred in the County.

According to the NOAA-NCEI Storm Events Database, there have been 148 different winter-weather events in Somerset County between January 1, 1971 and June 23, 2024. Winter storm-related events include: Blizzard, Cold/Wind Chill, Extreme Cold/Wind Chill, Freezing Fog, Frost/Freeze, Heavy Snow, Ice Storm, Lake-Effect Snow, Sleet, Winter Storm, and Winter Weather (NOAA/NCEI 2024). Table 4.3.20-3 summarizes some of the more notable events in Somerset County, PA.

Table 4.3.20-3 Notable Winter Storm Events in Somerset County, PA (1971-2024)

Event Date(s)	Event Type	Description
January 7, 1996	Blizzard	On January 7th, more than 2 feet of snow fell across much of the lower Susquehanna Valley with 12 to 18 inches falling across the central mountains from Johnstown and State College east to Wilkes-Barre. The storm was appropriately termed the Blizzard of '96. Snow began falling during the morning of January 7th and continued into the early morning of the 8th. Transportation and commerce came to a halt as cities of south-central Pennsylvania were buried under the heavy snow. New snow of 38 inches was reported in southern York County at Glenville. Two feet or more were reported near Harrisburg, Lancaster, Lebanon, and York. The storm had a major impact on commerce across south central PA and was to set the stage for the Great Flood on the 19th. Details of the economic impact are included with the summary of the flood. **(DR-1085)**
November 28, 1996	Heavy Snow	Light snow fell Thanksgiving Day, one of the busiest travel days of the year. Although only 1 to 2 inches fell across the region, there were hundreds of traffic accidents and many injuries. Interstate 78 in Lebanon County was closed for hours.
December 5, 1996	Heavy Snow	6-10 inches of snow fell across Somerset, Cambria, and western Blair Counties closing Rt. 350 between Phillipsburg and the Bald Eagle intersection. 6.8 inches of snow fell on northern Schuylkill and 5.8 inches fell on Harrisburg, breaking the snowfall record for the date.
December 8, 1996	Heavy Snow	7.1 inches of snow fell on Mt. Davis. Away from the mountain, snowfall decreased rapidly with just 4 inches falling on Confluence and 2 inches on Somerset.
March 14, 1997	Ice Storm	1/4-inch of ice on top of 2 inches of snow and sleet brought trees and powerlines down. Thousands were without power for several hours.
December 7, 1997	Heavy Snow	Heavy snow fell across the higher elevations of Cambria and Somerset counties from late afternoon of the 6th until before sunrise on the 7th. Up to 7 inches fell in the Ebensburg area by late evening with 5 to 7 inches falling near Somerset by sunrise.
January 28, 1998	Heavy Snow	Low pressure moved up the east coast from the Gulf of Mexico and dumped 6 to 9 inches of snow on Bedford and Somerset counties. Higher elevations of Franklin County also experienced 6 to 7 inches of snow.
March 9, 1999	Heavy Snow	Low pressure moved east across West Virginia producing snow across Pennsylvania late in the day Tuesday, March 9th. Across most of the state, accumulations were from 1 to 3 inches, with 3 to 5 inches across the central mountains of west central PA. Up to 8 inches were reported at Confluence and on Mt. Davis.
March 21, 2000	Heavy Snow	Significant precipitation fell across much of central Pennsylvania as low pressure tracked east across the region. Most of the moisture fell as rain, but it was cold enough in Somerset County for the precipitation to fall as snow. Up to 7 inches of snow was reported in and around Somerset, with 5 to 6 inches in Meyersdale.
March 4, 2001	Heavy Snow	$4,000 in property damage noted in Somerset County
March 21, 2001	Heavy Snow	Deep low pressure moved up the Middle Atlantic coast on March 16th. This system spread snow across most of central Pennsylvania. Heavier snow amounts were reported in the far northeastern counties of Tioga (6 to 12 inches) and Sullivan (4 to 6 inches). Orographically enhanced snow also accumulated in Somerset County where 6 inches was reported.
February 16, 2003	Heavy Snow	A low pressure system over the lower Mississippi Valley early Sunday morning moved slowly east northeast toward the central Appalachians by Sunday night, February 16th. This low then redeveloped along the North Carolina coast by early Monday morning, February 17th, and then moved slowly northeast as it intensified. This storm system spread light to moderate snow across south central Pennsylvania early Sunday morning, and into much of central and northern Pennsylvania by Sunday evening. The snowfall increased in intensity from late Sunday afternoon into midday Monday, and combined with gusty northeast winds of 15 to 25 mph to create near blizzard conditions at times across south central Pennsylvania. By the time the snow tapered off late Monday night, total snowfall accumulations ranged from 4 to 10 inches across portions of north central Pennsylvania, 12 to 22 inches across the central mountains, and

Event Date(s)	Event Type	Description
		22 to locally 30 inches across south central Pennsylvania, including much of the lower Susquehanna Valley. This heavy snowfall paralyzed much of central and southern Pennsylvania, closing many schools, businesses, roadways, and airports for at least 1 to 2 days. **(EM-3180-PA)**
April 7, 2003	Ice Storm	There were 2 injuries attributed to the storm, both in the Pine Grove Furnace State Park in Cumberland County. Both were youths, and were part of a larger group that were rescued from the park while camping. One youth suffered minor frostbite, and the other suffered minor hypothermia. The other youths and counselors were unharmed.
January 26, 2007	Extreme Cold/Wind Chill	Northwest winds of 10 to 15 mph, combined with temperatures near zero, produced wind chills of up to 15 degrees below zero.
February 3, 2007	Extreme Cold/Wind Chill	Temperatures within a few degrees of zero, combined with west winds of 10 to 20 mph, produced persistent wind chills of 15 to 20 degrees below zero, and occasionally dropping to between 25 and 30 degrees below zero during the overnight and early morning hours of the 5th.
February 7, 2007	Extreme Cold/Wind Chill	Temperatures in the single digits, combined with west winds of 10 to 20 mph, produced wind chills of 10 to 15 degrees below zero.
February 13, 2007	Winter Storm	A major winter storm, the first of the season, struck central Pennsylvania from the early morning hours of the 13th through the afternoon hours of the 14th. In Somerset County, a mix of sleet and freezing rain fell in addition to 6 to 12 inches of snow. Over the highest elevations of the county, 16 inches of snow was recorded at Mount Davis.
February 16, 2007	Extreme Cold/Wind Chill	West winds of 10 to 20 mph, combined with low temperatures in the single digits, produced wind chill readings around 15 degrees below zero.
March 6, 2007	Extreme Cold/Wind Chill	Northwest winds of 20 to 25 mph, with gusts up to 40 mph, combined with cold temperatures to produce wind chills of 15 to 20 degrees below zero.
March 7, 2007	Heavy Snow	A fast moving storm system brought a brief period of snow to the Somerset County. While water equivalent values were low, the cold nature of the atmosphere resulted in very fluffy and rapid accumulating snow. In general, 6 to 9 inches of snow accumulated across the county.
March 16, 2007	Heavy Snow	A late season winter storm brought 6 to 8 inches of heavy snow to Somerset county.
April 16, 2007	Heavy Snow	Rain changed to snow across the county Monday morning. Significant accumulations of snow were confined to the higher elevations of the county, while valley locations saw much less snow. While 13.9 inches of snow was reported on Laurel Summit, only 1.0 inch of snow was reported in Meyersdale. Somerset recorded 4.6 inches of snow, and Glencoe recorded 2.2 inches.
December 13, 2007	Winter Storm	A significant ice build-up was reported by the COOP observer at Laurel Summit, with nearly one-inch of ice accretion on trees and wires. The heavy coating of ice brought limbs down and uprooted a few small trees. Trained spotters in Somerset County also indicated moderate to heavy ice. There was some sleet at the onset, but the ice build-up was primarily due to a prolonged period of freezing rain.
December 15, 2007	Winter Storm	A mixture of snow, sleet and freezing rain fell across Somerset County. Light accumulations of snow and sleet were observed along with significant ice build-up from freezing rain, especially across the highest elevations. The ice accretion brought down a few trees and wires.

Event Date(s)	Event Type	Description
January 19, 2008	Extreme Cold/Wind Chill	Temperatures in the single digits above and below zero combined with brisk westerly winds produced bitterly cold wind chill values of -15 to -20 degrees below zero.
February 1, 2008	Winter Storm	The COOP observers Somerset and Meyersdale measured over a quarter inch of ice accretion from freezing rain and sleet.
February 10, 2008	Extreme Cold/Wind Chill	Bitterly cold temperatures combined with brisk west-northwest winds produced wind chills of ten to twenty degrees below zero.
February 29, 2008	Heavy Snow	COOP reports from Laurel Summit and Somerset along with spotter reports from Boswell indicated that six inches of snow had fallen by the early evening. Snow continued into the late evening with storm totals of five to ten inches at these locations.
October 28, 2008	Heavy Snow	Cooperative observers in Laurel Summit and Mount Davis reported over six inches of snow accumulation.
December 21, 2008	Extreme Cold/Wind Chill	Arctic air and brisk westerly winds produced bitterly cold wind chill values of -15 to -20 degrees below zero.
January 6, 2009	Ice Storm	Ice accumulation of one quarter to one half inch was reported across Somerset County.
January 10, 2009	Winter Storm	Periods of freezing rain resulted in ice accumulation of one quarter inch across Somerset County.
January 14, 2009	Heavy Snow	Five to ten inches of snow was reported along and west of Route 219 in Somerset County. The heaviest snow (in excess of eight inches) fell over the highest elevations with lesser amounts ranging between three to five inches common over the eastern part of the county.
January 15, 2009	Extreme Cold/Wind Chill	Sub-freezing temperatures and brisk winds produced dangerous wind chills of twenty to thirty degrees below zero.
January 27, 2009	Winter Storm	Two to four inches of snow and sleet along with a significant ice accretion was reported across Somerset County.
February 4, 2009	Extreme Cold/Wind Chill	Wind chill readings of 15 to 25 degrees below zero were reported across Somerset County.
March 2, 2009	Extreme Cold/Wind Chill	Wind chill readings of 15 to 25 degrees below zero were reported across Somerset County.
December 8, 2009	Winter Storm	A fast moving winter storm produced four to six inches of snow followed by a quarter inch of ice.
December 18, 2009	Winter Storm	Storm total snow accumulations ranged from eight to twelve inches.
February 5, 2010	Winter Storm	Storm total snow accumulation ranged from 25 to 33 inches. **(DR-1898-PA)**
February 9, 2010	Winter Storm	Storm total snow accumulation ranged from 8 to 15 inches. **(DR-1898-PA)**
February 25, 2010	Winter Storm	Storm total snow accumulation ranged between 10 and 15 inches. Snowfall amounts exceeded 20 inches over the highest elevations.

Event Date(s)	Event Type	Description
December 5, 2010	Heavy Snow	A prolonged period of orographically (terrain) enhanced snow produced significant accumulations over the Laurel Highlands from the 5th through the 7th. Snowfall amounts in excess of 6 inches were observed by the morning of the 6th especially on the ridge tops. Storm total snow accumulations over the 24 to 48 hour period ranged between 10 and 20 inches. Strong northwest winds gusting over 40 mph at times also produced near-blizzard conditions with areas of blowing snow and wind chills in the single digits above and below zero.
December 13, 2010	Heavy Snow	Localized upslope snowfall amounts ranged between 3 and 6 inches, with up to 8 inches on the ridgetops. Blustery wind gusts over 30 mph combined with very cold temperatures in the single digits to low teens to produce dangerous near-blizzard conditions with 1/4 mile or less visibility and sub-zero wind chills.
January 12, 2011	Heavy Snow	Snowfall totals ranged from 6 to 12 inches, mainly over the highest west-facing ridge-top areas across the western half of the county. The Laurel Summit COOP site received 9 inches by 700 EDT on the 13th, with 2-day storm totals well over one foot. Blustery winds produced below zero wind chills and considerable blowing and drifting of the snow.
January 26, 2011	Heavy Snow	Snowfall totals ranged between 6 and 8 inches, most of which fell during the evening hours.
February 1, 2011	Winter Storm	A large winter storm produced periods of snow, sleet and freezing rain over the area. Snow and sleet accumulation was around 1 inch on the 1st, with 0.25 to 0.50 inches of ice on the 2nd.
February 21, 2011	Heavy Snow	Heavy snow accumulations between 6 and 10 inches were observed.
October 29, 2011	Heavy Snow	Snow accumulations ranged from 8 to 12 inches across the Laurel Highlands.
December 7, 2011	Heavy Snow	Rain changed to snow across the higher elevations of Somerset County around 1200 EST on 12/7. The snow continued heavy at times through the late evening before ending around 2200 EST. Storm total snow accumulations ranged between 4 and 8 inches, mainly on the ridges west of Route 219.
January 20, 2012	Winter Storm	Widespread snow and sleet accumulation between 3 and 6 inches and ice accumulation of less than one-tenth of an inch were observed across the county.
April 22, 2012	Heavy Snow	Heavy snow amounts between 6 and 10 inches were generally observed across the county. The Laurel Summit COOP and Seven Springs Ski Resort received 18 to 24 inches.
October 30, 2012	Heavy Snow	Strong upslope flow and cooling aloft changed rain to snow over the Laurel Highlands, mainly above 2200 feet in elevation. Heavy snow accumulations between 6 and 12 inches were reported, with locally higher amounts on the ridge tops above 2800 ft. COOP stations at Laurel Summit and Mount Davis each recorded over a foot of snow.||An 81-year-old woman was killed when the car she was a passenger in slid off the snow-covered Kingwood Road in Upper Turkeyfoot Township and rolled over into a farm pond on the east side of Route 281. Both the driver and passenger were trapped. The driver, a 51-year-old Confluence woman, wasn't injured and tried to get the passenger out of the vehicle, but was unable. The passenger was pronounced dead at Somerset Hospital.
December 21, 2012	Winter Storm	Storm total snow accumulations ranged from 6 to 8 inches.
December 26, 2012	Winter Storm	Widespread snow accumulations between 6 and 10 inches were observed across the county. The snow mixed with sleet and freezing rain at times during the afternoon before ending as a period of light freezing drizzle.
February 26, 2013	Winter Storm	Ice accumulations of 0.10-0.25 inch were measured on the western ridges in Somerset County.
March 6, 2013	Heavy Snow	Snow accumulations of 6 to 9 inches were observed from midnight through the morning hours.
March 17, 2013	Winter Storm	Storm total snow accumulations between 6 and 10 inches were observed mainly over the northern half of the county.

Event Date(s)	Event Type	Description
March 25, 2013	Heavy Snow	Storm total snowfall amounts ranged between 6 and 10 inches.
November 26, 2013	Winter Storm	A mix of snow and freezing rain resulted in significant winter weather impacts during the pre-Thanksgiving holiday travel. These included multiple vehicle accidents, road closures, downed trees/wires and power outages. Snow accumulations by mid-day on the 26th averaged between 1 and 3 inches, followed by a prolonged period of moderate to heavy freezing rain with ice accretion between 0.25 and 0.50 inch by nightfall.
December 14, 2013	Winter Storm	Light snow started in the morning and became heavy at times through the afternoon and evening. Snow changed to sleet and then freezing rain/drizzle with a glaze of ice topping storm total snow accumulations between 4 and 8 inches.
January 6, 2014	Extreme Cold/Wind Chill	Temperatures generally varied between -10ï¿½ï¿½ and -20ï¿½ï¿½F with wind chills around -40ï¿½ï¿½F.
January 20, 2014	Heavy Snow	Snow accumulations of 6 to 8 inches were common across the southern half of the county.
January 28, 2014	Extreme Cold/Wind Chill	Temperatures generally varied between -0ï¿½ï¿½ and -20ï¿½ï¿½F with wind chills around -30ï¿½ï¿½F.
February 3, 2014	Heavy Snow	Heavy snow accumulations ranged from 4 to 8 inches.
February 4, 2014	Winter Storm	Snow accumulations ranged from 2 to 4 inches. Ice accumulations from sleet and heavy freezing rain were between 0.25-0.30 inch.
February 13, 2014	Heavy Snow	Storm total snow accumulations ranged from 8 to 12 inches with locally higher amounts.
November 25, 2014	Heavy Snow	A high impact snowfall of 3 to 6 inches affected the area basically from dawn to dusk.
February 14, 2015	Extreme Cold/Wind Chill	Extreme cold combined with gusty winds resulted in wind chill or apparent temperature values in the -25˚F to -35˚F range.
February 19, 2015	Extreme Cold/Wind Chill	Extreme cold combined with gusty winds resulted in wind chill or apparent temperature values in the -25˚F to -35˚F range.
January 22, 2016	Winter Storm	Heavy snowfall amounts of 20 to 36 inches were observed across the county. **(DR-4267-PA)**
February 15, 2016	Winter Storm	Light snow developed the afternoon of February 15th before quickly changing over to freezing rain. A quarter of an inch or more of ice accumulation was observed across the county.
December 5, 2016	Ice Storm	Freezing rain accumulated to a quarter of an inch near Ogletown in Somerset County.
December 16, 2016	Winter Storm	A wintry mix of precipitation produced 0.30-0.40 inches of ice accumulation across Somerset County.
February 8, 2017	Winter Storm	A winter storm produced 6 to 9 inches of snow across Somerset County.
February 7, 2018	Winter Storm	A winter storm produced snow, sleet and 0.25 to 0.40 inches of freezing rain across Somerset County.

Event Date(s)	Event Type	Description
February 17, 2018	Winter Storm	A winter storm produced 6 to 7 inches of snow in a 12 hour period across Somerset County.
March 20, 2018	Winter Storm	A winter storm produced 10-20 inches of snow in a 24-hour period across Somerset County.
November 15, 2018	Winter Storm	A winter storm produced 6 to 14 inches of snow and sleet across Somerset County
January 19, 2019	Winter Storm	A winter storm produced 1 to 6 inches of snow and sleet, followed by 0.25 of ice accumulation across Somerset County from January 19-20, 2019.
January 20, 2019	Extreme Cold/Wind Chill	Minimum wind chills of -25˚F to -30˚F were observed.
January 30, 2019	Extreme Cold/Wind Chill	Minimum wind chills of -25˚F to -35˚F were observed.
February 11, 2019	Winter Storm	A Winter Storm produced 3 to 6 inches of snow and sleet, and greater than 0.25 of freezing rain across Somerset County from February 11-12, 2019.
February 20, 2019	Winter Storm	A Winter Storm produced 6 to 8 inches of snow and sleet followed by greater than 0.25 of freezing rain across Somerset County on February 20-21, 2019.
December 1, 2019	Ice Storm	Periods of moderate freezing rain during the morning resulted in significant ice accretion between 0.25 and 0.50 inches across the higher terrain.
December 1, 2020	Winter Weather	Upslope snows produced 12 to 14 inches of snow on Laurel Ridge in westernmost Somerset County from December 1 into early December 2, 2020. Elsewhere in the county, snowfall was significantly less.
December 16, 2020	Winter Storm	A winter storm produced 8 to 14 inches of snow across Somerset County from December 16-17, 2020.
January 1, 2021	Ice Storm	An ice storm produced a half an inch (0.50) of ice accumulation at Seven Springs Ski Resort and a quarter of an inch (0.25) in Somerset Borough.
January 31, 2021	Winter Storm	A winter storm produced 8 to 17 inches of snow across Somerset County from January 31 to February 2, 2021.
February 1, 2021	Winter Storm	A winter storm produced 8 to 17 inches of snow across Somerset County from January 31 to February 2, 2021.
February 15, 2021	Ice Storm	An ice storm produced between 0.25 and 0.50 inches of ice accumulation across Somerset County from February 15-16, 2021.
November 28, 2021	Winter Weather	A secondary cold front generated snow showers that produced 2 to 3 inches of snow on the ridges of western Somerset County. Resultant slick roads caused a tractor trailer to jackknife on Route 30 near the Somerset/Westmoreland County line and close the road between the base of the mountain in each county for a little under two hours during the evening of November 28, 2021.
January 16, 2022	Winter Storm	A winter storm produced 10 to 14 inches of snow across Somerset County from the afternoon of January 16 through the early evening of January 17, 2022.
February 13, 2022	Winter Weather	Light snow (generally less than 1 inch) produced slick roads in Somerset County. This resulted in the closure of Route 40 in both directions in Addison Township due to multiple vehicles getting stuck. The road was reopened after being closed for a little more than one hour, once PennDOT treated the road.

Event Date(s)	Event Type	Description
February 24, 2022	Ice Storm	An ice storm produced over a quarter of an inch (0.25) of ice accretion across Somerset County from the evening of February 24 to the morning of February 25, 2022.
March 27, 2022	Winter Weather	Snow showers impacting Somerset County resulted in a jackknifed tractor trailer on Route 56 in Ogle Township that closed the road for a little over one and a half hours.
March 28, 2022	Winter Weather	SNOW SQUALL. Snow squalls impacted Somerset County with 1/4 mile or less visibility and wind gusts to 30 mph.
April 19, 2022	Winter Weather	SNOW SQUALL. A snow squall impacted the Pennsylvania Turnpike in Somerset County and far western Bedford County during the early evening hours. Visibilities dropped to a quarter of a mile or less, and air temperatures were at or just below freezing when the squall affected the Turnpike.
November 15, 2022	Winter Weather	A period of moderate snow led to slick roads and more than 60 vehicle becoming stuck on Route 30 on the mountain in Jenner Township.
December 15, 2022	Ice Storm	An ice storm produced over an inch of sleet and up to 0.25 of freezing rain accumulation across Somerset County on December 15, 2022. As a result, there was an accident involving a tractor trailer on the eastbound lanes of the Turnpike in Stony Creek Township that closed both eastbound lanes for over an hour.
December 23, 2022	Extreme Cold/Wind Chill	Wind chills of -25 to -40 degrees were observed across Somerset County for a 24 hour period from midday on December 23, 2022 to midday on December 24, 2022.
January 27, 2023	Winter Weather	Lake-effect snow showers put down 2 to 3 inches of snow and slickened roads across Somerset County, resulting in two accidents and closing the eastbound lanes of the Pennsylvania Turnpike for 3 hours. The first accident involved a tractor trailer hitting the median barrier, and the second involved a plow truck being struck after it stopped to check on the first accident. The driver of the snow plow was injured.
December 18, 2023	Heavy Snow	A winter storm produced 6 to 8 inches of snow across the higher elevations of Somerset County from the afternoon of December 18 through the morning hours of December 19, 2023.
January 6, 2024	Heavy Snow	A winter storm produced 6 to 7 inches of snowfall across higher elevations of Somerset County as snow began in the morning hours of January 6, 2024 and continued through the early evening hours.
January 9, 2024	Heavy Snow	A winter storm produced 7 to 9 inches of snowfall across Somerset County, with localized amounts on the higher terrain ranging from 10 to 12 inches, as snow began in the morning hours of January 9, 2024 and continued into the afternoon.
January 19, 2024	Heavy Snow	A winter storm produced 6 to 10 inches of snowfall across all but far southeastern and far southwestern Somerset County from January 19 to January 20, 2024.
February 16, 2024	Heavy Snow	A winter storm produced 6 to 8 inches, with localized pockets up to 9 inches, of snowfall in Somerset County as snow began on the evening of February 16 and continued into the morning hours of February 17, 2024.
November 22, 2024	Heavy Snow	A winter storm produced heavy snow across Somerset County from the early morning of November 22, 2024 through the late evening. Snowfall totals ranged from 6 to 12 inches with higher elevations seeing 14 to 18 inches of snow. A jackknifed trailer caused US-219 north to be closed for a period of time. PA-403 was also closed near Conemaugh Township due to downed trees and wires.

Source: *NOAA/NCEI 2024*
Notes*: Bolded dates are events which coincided with FEMA disaster declarations; NCEI data is valid up through November 30, 2024*

4.3.20.5 Probability of Future Occurrence

Given the history of winter storm events that have impacted Somerset County, future winter storm events of varying degrees will occur every year, and thus many people and properties are at risk from the winter storm hazard in the future.

For the 2025 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of winter storm events for Somerset County. Information from the NOAA-NCEI storm events database was used to identify the number of winter storm events that occurred between 1996 and 2022. The table below shows these statistics, as well as the annual average number of events and the estimated percent chance of an incident occurring in a given year. Based on these statistics, there is an estimated 100-percent chance of a winter storm event occurring in any given year in Somerset County.

Table 4.3.20-4 Probability of Future Winter Storm Events

Hazard Type	Number of Occurrences Between 1950 and 2024	Percent Chance of Occurrence in Any Given Year
Blizzard	1	1%
Cold/Wind Chill	1	1%
Extreme Cold/Wind Chill	18	24%
Heavy Snow	64	85%
Ice Storm	13	17%
Sleet	0	Near 0%
Winter Storm	44	59%
Winter Weather	8	11%
TOTAL:	**148**	**100%**

Sources: NOAA/NCEI 2024
Note: Disaster occurrences include federally declared disasters since the 1950 Federal Disaster Relief Act, and selected storm events since 1996 due to limitations in available data between 1950 and 1996. are accounted for in the tally of occurrences.

Based on available historical data, future occurrences of winter storm events are considered *highly likely*, according to Risk Factor Methodology probability criteria further discussed in Section 4.4.

Effects of Climate Change

The best available scientific data and modeling suggest that climate change has affected and will continue to impact natural hazards in the state. While the impacts may vary by region throughout the state, the potential consequences of climate change will be significant for all citizens of the state (USGS n.d.).

Since the beginning of the 20th century, temperatures in Pennsylvania have risen more than 1.5 °F, and temperatures in the 2000s and 2010s were warmer than in any other historical period. While exact annual precipitation projections are uncertain for the State, winter and spring precipitation totals are projected to increase (NOAA NCEI 2022b).

Climate change is causing winter to be the fastest-warming season in much of the continental U.S., and seasonal snowfall is declining in many cities. Cold snaps are becoming shorter and less severe due to Arctic warming at three to four times the rate of the rest of the world. Seasonal snowfall is declining. However, heavy snowstorms can still happen when temperatures are cold enough (State Climate Office of Ohio 2023).

4.3.20.6 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable within the identified hazard area. Regarding winter storm events, all of Somerset County has been identified as the hazard area. Therefore, all assets (population, structures, critical facilities, and lifelines), as described in the Section 4.4, Hazard Vulnerability Summary, are potentially vulnerable. The following text evaluates and estimates the potential impact of the winter storm hazard on the county, including:

- Impact on (1) life, health and safety; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time.

Impact on Life, Health, and Safety

According to the NOAA National Severe Storms Laboratory (NSSL), winter weather indirectly and deceptively kills hundreds of people in the United States every year, primarily from automobile accidents, overexertion, and exposure. Winter storms are often accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, drifting snow, extreme cold temperatures, and dangerous wind chill. Winter storms are considered deceptive killers because most deaths and other impacts or losses are indirectly related to the storm. People can die in traffic accidents on icy roads, of heart attacks while shoveling snow, or of hypothermia from prolonged exposure to cold.

Heavy snow can immobilize a region and paralyze a city, shutting down air and rail transportation, stopping flow of supplies, and disrupting medical and emergency services. First responders will have to take on additional responsibilities during winter storm events, such as controlling traffic, debris removal from roads, answering to a higher-than-normal call volume and demand, and responding to weather-related traffic accidents. First responders' safety may be at risk during on-scene operations, and limited access to roads due to damaged infrastructure and debris may hinder their ability to respond to accidents in a timely manner. Accumulations of snow can collapse buildings and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. In the mountains, heavy snow can lead to avalanches.

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

For the purposes of this HMP, the entire population of Somerset County is considered exposed to winter storm events. The elderly are considered most susceptible to this hazard because of their increased risk of injuries and death from falls and overexertion, and/or hypothermia from exposure while attempting to clear snow and ice. In addition, winter storm events can reduce ability of these populations to access emergency services. Residents with low incomes may not have access to housing, or their housing may be less able to withstand cold temperatures (e.g., homes with poor insulation and heating supply). Section 2, County Profile, of this HMP provides population statistics regarding each participating municipality and a summary of the more vulnerable populations (over the age of 65 and individuals living below the U.S. Census poverty threshold).

Impact on General Building Stock

The entire general building stock inventory in Somerset County is exposed and vulnerable to the winter storm hazard. In general, structural impacts include damage to roofs and building frames rather than building content. Current modeling tools are not available to estimate specific losses from this hazard.

An area especially vulnerable to the winter storm hazard is the floodplain. At-risk building stock and infrastructure in floodplains are presented in the flood hazard profile in Section 4.3.6. Generally, losses from flooding associated with winter storms should be less than those associated with a 1-percent or 0.2-percent flood. Snow and ice melt can cause both riverine and urban flooding. Estimated losses caused by riverine flooding in the county are discussed in Section 4.3.6.

Impact on Critical Facilities

Full functionality of critical facilities such as police, fire and medical facilities is essential for response during and after a severe winter storm event. These critical facility structures are largely constructed of concrete and masonry; therefore, they should only suffer minimal structural damage from severe winter storm events. Because power interruption can occur, backup power is recommended. Infrastructure at risk for this hazard includes roadways that could be damaged due to the application of salt and intermittent freezing and warming conditions that can damage roads over time. Severe snowfall requires the clearing roadways and alerting citizens to dangerous conditions; following the winter season, resources for road maintenance and repair are required (NSSL 2022).

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces (NSSL 2022).

Impact on the Economy

Infrastructure at risk from the winter storm hazard includes roadways that could be damaged by application of salt and intermittent freezing and warming conditions that can damage roads over time. Costs of snow and ice removals, as well as repairs of roads undergoing freeze/thaw cycles, can drain local financial resources. Potential secondary impacts from winter storms also impact the local economy, including loss of utilities, interruption of transportation corridors, and loss of business function.

Impact on the Environment

Environmental impacts often include damage to trees and shrubs caused by heavy snow loading, ice build-up, and/or high winds, which can break limbs and down large trees. Indirect effects of winter storms include possible damage to surfaces and contamination of groundwater adjacent to roadway surfaces treated with salt, chemicals, and other de-icing materials (PEMA 2019).

Winter storms have a positive environmental impact; gradual melting of snow and ice recharges groundwater. However, abrupt high temperatures following a heavy snowfall can accelerate snowmelt, leading to rapid surface water runoff and severe flooding (PEMA 2019).

Future Changes that May Impact Vulnerability

Future Growth and Development

Areas targeted for potential future growth and development within the next 5 to 10 years have been identified across the county at the municipal level and are further discussed in Section 4.4 of this HMP. Because Somerset County in its entirety has been identified as the hazard area vulnerable to the winter storm hazard, any new development will be exposed to associated risks. However, because of increased standards and codes, new development may be less vulnerable to the severe winter weather hazard compared with the aging building stock in the county.

As discussed in Section 2, County Profile, the Somerset County population has been increasing and is projected to continue to increase in coming decades. In addition, the population is aging. As the aging population grows, so too will the number of persons vulnerable to severe winter weather and extreme cold temperatures.

Effect of Climate Change on Vulnerability

The climate of Pennsylvania has changed in several ways. Over the past 100 years, annual average temperatures have been rising across the Commonwealth. Warmer winters have led to a decrease in snow cover and earlier arrival of spring. Recent analyses based on the Intergovernmental Panel on Climate Change models suggest a decrease in frequency and an increase in intensity of extra-tropical winter cyclones. However, based on the methodology applied, some models show no significant change in the storm track whereas others indicate a northward displacement of the storm track in the North Atlantic. For the mid-Atlantic region, there is little indication of a change in storm activity or track over Pennsylvania. An overall increase in winter precipitation is anticipated, with a decrease in snow and an increase in rain during the winter months. Projections regarding future occurrences of extra-tropical cyclones in Pennsylvania are substantially uncertain. Based on available information and projections, winter storms are anticipated to continue to affect Pennsylvania in the future. Future improvements in modeling smaller-scale climatic processes can be expected and will lead to improved understanding of ways in which changing climate will alter temperature, precipitation, and storm events in Pennsylvania (Shortle and others 2009).

4.3.20.7 Additional Data and Next Steps

The assessment above identifies vulnerable populations and economic losses associated with the winter storm hazard of concern. Historical data on structural losses to general building stock are not adequate to predict specific losses to this inventory; therefore, the percent of damage assumption methodology was applied. This methodology is based on FEMA How-to Series (FEMA 386-2), Understanding Your Risks, Identifying and Estimating Losses (FEMA 2001), and FEMA's Using HAZUS-MH for Risk Assessment (FEMA 433) (FEMA 2015a). Acquisition of additional and actual valuation data regarding general building stock and critical infrastructure losses would further support future estimates of potential exposure of and damage to the general building stock inventory.

4.4 HAZARD VULNERABILITY SUMMARY

This section describes the methodology and tools used to support the risk assessment process.

4.4.1 Methodology

Risk assessment is the process of estimating potential deaths, injuries, economic losses, and property damage resulting from hazard events. By identifying potential hazards and vulnerable assets, it allows planning personnel to identify ways to reduce hazard impacts and emergency management personnel to establish early response priorities. Results of the risk assessment are used in determining and prioritizing mitigation actions that reduce risk from a specified hazard. Past, present, and future conditions must be evaluated to assess risk most accurately. The process focuses on the following elements:

- Identify Hazards—Use all available information to determine what types of hazards might affect a jurisdiction
- Profile Each Hazard—Understand each hazard in terms of:
  - Location (the geographic area most affected by the hazard)
  - Extent (the severity of each hazard)
  - Previous occurrences and losses
  - Probability of future hazard events
- Assess Risk:
  - Vulnerability identification—Estimate the total number and value of assets in the jurisdiction that are likely to experience a hazard event by overlaying hazard maps with inventories of community assets.
  - Impact identification and loss estimation—Assess the impact of hazard events on the people, property, environment, and economy, including estimates of the cost of potential damage or costs that could be avoided by mitigation.

Limitations of these analyses are recognized, and the results are used only to provide a general estimate for planning and comparative purposes.

4.4.1.1 Asset Inventories

Somerset County assets were identified to assess potential exposure and loss associated with the hazards of concern. For the HMP update, Somerset County assessed exposure and vulnerability of the following types of assets: population, buildings, critical facilities, lifelines, infrastructure, and the environment. Some assets may be more vulnerable because of their physical characteristics or socio-economic uses. To protect individual privacy and the security of critical facilities, information on properties assessed is presented in aggregate, without details about specific individual personal or public properties. Each asset type is described below.

Population

Total population statistics from the 2022 American Community Survey (ACS) 5-year estimate were used to estimate the exposure and potential impacts to the county's population in place of the 2020 U.S. Census block estimates. Limitations of these analyses are recognized, and thus the results are used only to provide a general estimate for planning purposes.

FEMA's Hazus program was used to model estimated potential losses to earthquake, flood and wind hazards; as discussed further later in this section. Hazus contains 2020 U.S. Census block data and was used to estimate sheltering and injuries as part of the hazard analysis.

As discussed in Section 2, County Profile, research has shown that some populations are at greater risk from hazard events because of decreased resources or physical abilities. Vulnerable populations in Somerset County included in the risk assessment are children, elderly, population below the poverty level, non-English speaking individuals, and persons institutionalized with a disability.

Buildings

A custom general building stock was created countywide. The general building stock was updated countywide with a custom-building inventory using building footprint spatial layer and 2024 parcel tax assessor information provided by Somerset County. Additionally, the National Structure Inventory dataset from the U.S. Army Corps of Engineers (2022) was used to integrate residential structures where tax parcels indicated a residency. The building inventory attributes were updated using parcel tax assessor information provided by Somerset County GIS. Attributes provided in the associated files were used to further define each structure, such as year built, number of stories, occupancy class, and square footage. The centroid of each building footprint was used to estimate the building location. Structural and content replacement cost values (RCV) were calculated for each building using the available assessor data, the building footprint, and RSMeans 2024 values.

A regional location factor for Somerset County was applied based on the individual building stock's zip code location:

RCV Regional Location Factor		
Zip Code	**Residential**	**Non-Residential**
154xx	0.90	0.97
155xx	0.86	0.93
156xx	0.90	0.96
159xx	0.91	0.97

RCV is the current cost of returning an asset to its pre-damaged condition using present-day cost of labor and materials. Total RCV consists of both the structural cost to replace a building and the estimate value of contents of a building. The occupancy classes available in Hazus were condensed into the categories of residential, commercial, industrial, agricultural, religious, governmental, and educational to facilitate analysis and presentation of results. Residential loss estimates addressed both multi-family and single-family dwellings.

Critical Facilities

The individual datasets used to create the critical facility inventory, which includes essential facilities, utilities, transportation features and user-defined facilities, were provided by Somerset County (2024), HIFLD (2020-2024), Pennsylvania Department of Environmental Protection (2024), Pennsylvania Department of Transportation (2023-2024) and the FAA (2021). The development aligned with HAZUS attribute standards and included determining whether the critical facility is considered a lifeline in accordance with FEMA's definition (refer to Appendix F, Critical Facilities). To protect individual privacy and the security of assets, information is presented in aggregate, without details about specific individual properties or facilities.

Environment and Land Use Area

The National Land Use and Land Cover data was derived from the Multi-Resolution Land Characteristics (MRLC) Consortium. The MRLC, a consortium of federal agencies who coordinates and generates consistent and relevant land cover information at the national scale for a wide variety of environmental, land management, and modeling applications.

This 2021 dataset was converted from a raster to a vector polygon, which informed spatial areas of built and natural land use areas. The built land use areas were defined as urban areas and include developed open space, low, medium, and high intensity locations. Non-urban areas were extracted into agricultural, barren land, forest, rangeland, water, and wetlands land use categories.

New Development

The county has identified Growth Areas, as described in Section 4.4.4, below. The 2023 US Census Bureau estimates that Armstrong County has 69 new building permits. Building permits represent the number of new privately-owned housing units authorized by building permits in the county (US Census Bureau, 2023).

4.4.1.2 Tools and Methodology

Hazus

In 1997, FEMA developed a standardized model for estimating losses caused by earthquakes, known as Hazus. HAZUS was developed in response to the need for more effective national-, state-, and community-level planning and the need to identify areas that face the highest risk and potential for loss. Hazus was expanded into a multi-hazard methodology: HAZUS-MH with new models for estimating potential losses from wind (hurricanes) and flood (riverine and coastal) hazards. HAZUS-MH is a GIS-based software tool that applies engineering and scientific risk calculations, which have been developed by hazard and information technology experts, to provide defensible damage and loss estimates. These methodologies are accepted by FEMA and provide a consistent framework for assessing risk across a variety of hazards. The GIS framework also supports the evaluation of hazards and assessment of inventory and loss estimates for these hazards.

HAZUS-MH uses GIS technology to produce detailed maps and analytical reports that estimate a community's direct physical damage to building stock, critical facilities, transportation systems, and utility systems. To generate this information, HAZUS-MH uses default HAZUS-MH-provided data for inventory, vulnerability, and hazards; this default data can be supplemented with local data to provide a more refined analysis. Damage reports can include induced damage (inundation, fire, threats posed by hazardous materials and debris) and direct economic and social losses (casualties, shelter requirements, and economic impact) depending on the hazard and available local data. HAZUS-MH's open data architecture can be used to manage community GIS data in a central location. The use of this software also promotes consistency of data output now and in the future and standardization of data collection and storage. More information on HAZUS-MH is available at http://www.fema.gov/hazus.

In general, probabilistic analyses were performed to develop expected/estimated distribution of losses (mean return period losses [MRP]) for the flood, wind, and seismic hazards. The probabilistic model generates estimated damages and losses for specified return periods (e.g., 100- and 500-year). For annualized losses, HAZUS-MH calculates the maximum potential annual dollar loss resulting from various return periods averaged on a "per year" basis. It is the summation of all HAZUS-supplied return periods (e.g., 10, 50, 100, 200, 500) multiplied by the return period probability (as a weighted calculation). In summary, the estimated cost of a hazard each year is calculated.

Table 4.4.1-1. Summary of HAZUS-MH Analysis Levels

Basic	A basic estimate of earthquake, flood, and hurricane wind losses is produced based on national databases and expert-based analysis parameters included in the HAZUS software.

Advanced	More accurate loss estimates are produced by including detailed information on local hazard conditions and/or by replacing the national default inventories with more accurate local inventories of buildings, essential facilities, and other infrastructure.

Source: FEMA 2019

Levels of Analysis

To address the requirements of the DMA 2000 and better understand potential vulnerability and losses associated with hazards of concern, Armstrong County used standardized tools, combined with local, state, and federal data and expertise to conduct the risk assessment. Three different levels of analysis were used depending upon the data available for each hazard as described below.

- **Historical Occurrences and Qualitative Analysis**—This analysis includes an examination of historical impacts to understand potential impacts of future events of similar size. In addition, potential impacts and losses are discussed qualitatively using best available data and professional judgment.
- **Exposure Assessment**—This analysis involves overlaying available spatial hazard layers, or hazards with defined extent and locations, with assets in GIS to determine which assets are located in the impact area of the hazard. The analysis highlights which assets might be affected by the hazard. If the center of each asset is located in the hazard area, it is deemed exposed and potentially vulnerable to the hazard.
- **Loss estimation**—The FEMA HAZUS modeling software was used to estimate potential losses for the following hazards: Flood, Earthquake, Hurricane (Wind). In addition, an examination of historical impacts and an exposure assessment was conducted for these spatially-delineated hazards.

Table 4.4.1-2 Summary of Risk Assessment Analyses

Hazard	Population	General Building Stock	Critical Facilities	Environment
Dam Failure	E	E	E	Q
Drought	Q	Q	Q	Q
Earthquake	H	H	H	H
Environmental Hazards	E	E	E	Q
Flood, Flash Flood and Ice Jams	E, H	E, H	E, H	E
Hailstorms	Q	Q	Q	Q
Hurricane, Tropical Storms, Nor'easter	H	H	H	H
Invasive Species	Q	Q	Q	Q
Landslides	E	E	E	Q
Levee Failure	E	E	E	Q
Opioid Epidemic	Q	Q	Q	Q

Hazard	Population	General Building Stock	Critical Facilities	Environment
Pandemic and Infection Disease	Q	Q	Q	Q
Subsidence, Sinkholes	E	E	E	Q
Terrorism	Q	Q	Q	Q
Tornado and Windstorms	H	H	H	Q
Transportation Accidents	Q	Q	Q	Q
Utility Interruptions	Q	Q	Q	Q
Wildfire	E	E	E	Q
Winter Storms	Q	Q	Q	Q

Notes: E - Exposure analysis; H - Hazus analysis; Q - Qualitative analysis

4.4.1.3 Dam Failure & Leveed Areas

An exposure analysis was conducted for the county's assets (population, building stock, critical facilities) using the Dam Inundation Areas provided by Somerset County. There were 5 dam inundation areas in total. To conduct analysis, a composite dam failure inundation area was developed for all available dams. Therefore, if an asset is indicated as exposed, it is a minimum located in one dam failure inundation area. The dams evaluated in this analysis were: High Point Lake, Lost Creek, Penn Scenic View, Quemahoning Reservoir, and Yough Lake.

An exposure analysis was conducted for the county's assets (population, building stock, critical facilities) using the Levee Protection Areas provided by the U.S. Army Corps of Engineers. To conduct analysis, a composite levee failure area was developed for all available levee polygons. Therefore, if an asset is indicated as exposed, it is a minimum located in one levee failure areas. The levee protection areas evaluated in this analysis were located in Confluence Borough, Elk Lick Township, Meyersdale Borough, Ogle Township, Rockwood Borough, Summit Township, and Windber Borough.

4.4.1.4 Earthquake

A probabilistic assessment was conducted for Somerset County for the 500-year and 2,500 MRPs through a Level 2 analysis in HAZUS-MH v6.1 to analyze the earthquake hazard and provide a range of loss estimates. The probabilistic method uses information from historical earthquakes and inferred faults, locations, and magnitudes and computes the probable ground shaking levels that might be experienced during a recurrence period by Census tract.

As noted in the HAZUS-MH Earthquake User Manual, "*Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the approximations and simplifications that are necessary for comprehensive analyses. Incomplete or inaccurate inventories of the built environment, demographics and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by the HAZUS Earthquake Model, possibly at best by a factor of two or more*" (FEMA 2015). However, HAZUS' potential loss estimates are acceptable for the purposes of this HMP.

Ground shaking is the primary cause of earthquake damage to man-made structures, and soft soils amplify ground shaking. One contributor to the site amplification is the velocity at which the rock or soil transmits shear waves (S-waves). The National Earthquake Hazard Reductions Program (NEHRP) has developed five soil classifications defined by their shear-wave velocity that impact the severity of an earthquake. The soil classification system ranges from A to E, where A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses.

NEHRP soil classifications were not available for Somerset County at the time of this analysis. Soils were estimated as NEHRP soil Type D across Somerset County, as a conservative approach to this risk assessment. Groundwater was set at a depth of 5 feet (default setting). Damages and losses due to liquefaction, landslide, or surface fault rupture were not included in this analysis. Although damages are estimated at the Census tract level, results were presented at the municipal level. For Census tracts encompassing multiple municipalities, the default general building stock inventory was used to calculate the percent of the total Census tract replacement cost value in each municipality. This percentage was applied to the Census tract losses to estimate the municipal level losses. For example, the Census blocks from two municipalities are located within one Census tract. The total replacement cost value of Municipality A is 60 percent of the total Census tract replacement cost value, while Municipality B is 40 percent of the total value. Therefore, 60 percent of the losses for the Census tract will be applied to Municipality A, and 40 percent will be applied to Municipality B.

4.4.1.5 Environmental Hazards

To determine potential impact on Somerset County, a 1-mile buffer was placed around the identified major roadways, 1-mile buffer on railways, 1-mile on pipelines, and the designated vulnerability radius of each of the county's 32 Superfund Amendments and Reauthorization Act (SARA) Title III planning facilities was used to define the hazard area. The primary roadways in Somerset County are listed as follows:

Pennsylvania Turnpike (I-76)	PA State Highway 160 (PA-160)	PA State Highway 403 (PA-403)	PA State Highway 601 (PA-601)
U.S. Highway 219 (US-219)	PA State Highway 271 (PA-271)	PA State Highway 523 (PA-523)	PA State Highway 653 (PA-653)
U.S. Highway 30 (US-30)	PA State Highway 281 (PA-281)	PA State Highway 56 (PA-56)	PA State Highway 669 (PA-669)
U.S. Highway 40 (US-40)	PA State Highway 31 (PA-31)	PA State Highway 60 (PA-60)	PA State Highway 985 (PA-985)

Populations and features of the built environment within these areas might be directly or indirectly affected by a potential environmental hazard. The hazard area was overlaid upon the 2022 U.S. Census, American Community Survey population data in GIS (U.S. Census 2022).

The vulnerability radius for each hazard facility is determined by the Somerset County Local Emergency Planning Committee, and each radius is shown in Appendix I.

4.4.1.6 Flood

The 1- and 0.2-percent annual chance flood events were examined to evaluate the county's risk from the flood hazard. These flood events are generally those considered by planners and evaluated under federal programs such as NFIP.

The following data were used to evaluate exposure and determine potential future losses for this plan update:

- The Somerset County FEMA Effective Digital Flood Insurance Rate Map (DFIRM) dated September 19, 2012 with the latest LOMR date of October 7, 2019.
- A depth grid was created by use of the 2012 Effective FEMA Digital Flood Insurance Rate Map (DFIRM) and the 1-meter 2021 DEM provided by USGS.

The Somerset County FEMA Effective DFIRM published in 2012 was used to evaluate exposure for both the 1- and 0.2-percent annual chance flood events; and determine potential future losses for the 1.0-percent annual chance flood event. The depth grid generated using the DFIRM and 1-meter DEM was integrated into the Hazus v6.1 riverine flood model and used to estimate potential losses for the 1-percent annual chance flood event.

To estimate exposure to the 1- and 0.2-percent annual chance flood events, the DFIRM flood boundaries were overlaid on the centroids of updated assets (population, building stock, critical facilities); as well as the DFIRM flood boundaries being overlaid on the polygons provided for anticipated new development. Centroids or polygons that intersected the flood boundaries were totaled to estimate the building RCV and population vulnerable to the flood inundation areas. A Level 2 Hazus riverine flood analysis was performed. Both the critical facility and building inventories were formatted to be compatible with Hazus and its Comprehensive Data Management System (CDMS). Once updated with the inventories, the Hazus riverine flood model was run to estimate potential losses in Somerset County for the 1-percent annual chance flood event. A user-defined analysis was also performed for the building stock. Buildings located within the floodplain were imported as user-defined facilities to estimate potential losses to the building stock at the structural level. Hazus calculated the estimated potential losses to the population (default 2020 U.S. Census data across dasymetric blocks), potential damages to the general building stock, and potential damages to critical facility inventories based on the depth grids generated and the default Hazus damage functions in the flood model.

4.4.1.7 Landslide

To assess the vulnerability of the county to landslide events and its associated impacts, a quantitative assessment was conducted using a landslide layer that was created using the 2021 DEM from USGS. The ArcGIS slope tool was used to calculate the degrees of the slopes in the DEM. According to the county, areas where slopes are greater than or equal to 30-percent are susceptible to landslide events. Therefore, areas where the slope angles were equal to or greater than 30-percent were converted to degrees (e.g., 30-percent is equal to 17 degrees). Degrees that are equal to or greater than 17 were converted to vectors, which created the final landslide hazard layer. To estimate potential exposure to landslide hazard areas, assets (population, building stock, critical facilities) with their centroid in the hazard areas were totaled to estimate the numbers and values exposed to the landslide hazard boundary.

4.4.1.8 Severe Storm

A Hazus probabilistic analysis was performed to analyze the wind hazard losses for Somerset County for the 100- and 500-year MRP events. The probabilistic Hazus hurricane model activates a database of thousands of potential storms that have tracks and intensities reflecting the full spectrum of Atlantic hurricanes observed since 1886 and identifies those with tracks associated with Somerset County. Hazus contains data on historic hurricane events and wind speeds. It also includes surface roughness and vegetation (tree coverage) maps for the area. Surface roughness and vegetation data support the modeling of wind force across various types of land surfaces. Default demographic and updated building and critical facility inventories in Hazus were used for the analysis. Although damages are estimated at the census tract level, results were presented at the municipal level. Because there are multiple census tracts that contain more than one jurisdiction, a density analysis was used to extract the percentage of building structures that fall within each tract and jurisdiction. The percentage was multiplied against the results calculated for each tract and summed for each jurisdiction.

4.4.1.9 Severe Winter Storm

The entire general building stock inventory in Somerset County is exposed and vulnerable to the severe winter storm hazard. In general, structural impacts include damage to roofs and building frames, rather than building content. Current modeling tools are not available to estimate specific losses for the severe winter storm hazard.

Historic data on structural losses to general building stock are not adequate to predict specific losses to this inventory; therefore, a percentage of the custom-building stock structural replacement cost value was used to estimate damages that could result from winter storm conditions. This methodology is based on FEMA's How-to Series (FEMA 386-2), Understanding Your Risks, Identifying and Estimating Losses (FEMA 2001) and FEMA's Using HAZUS-MH for Risk Assessment (FEMA 433) (FEMA 2004).

Given professional knowledge and the currently available information, the potential losses for this hazard are considered to be overestimated; hence, providing a conservative estimate for losses associated with winter storm events.

4.4.1.10 Subsidence, Sinkholes

To determine the assets that are exposed to the mine subsidence hazard, Abandoned Mined Land Inventory areas, Abandoned Mine Reclamation areas of the various coal seams, and a 1-mile buffer was placed around Active (Surface, Underground, Deep-Underground Mines) Mines (Pennsylvania Department of Environmental Protection 2024) were overlaid upon the asset data (population, buildings, critical facilities).

Somerset County has a very low susceptibility to sinkholes and subsidence attributable to abandoned mines; however, this does not mean such an event cannot occur. The limitations of this analysis are recognized and are only used to provide a general estimate of exposure.

4.4.1.11 Wildfire

The Wildland-Urban Interface (WUI) obtained through the SILVIS Laboratory, Department of Forest Ecology and Management, University of Wisconsin—Madison, based on the 2020 Census and 2021 National Land Cover Dataset and the Protected Areas Database, was used to delineate the wildfire hazard areas. The WUI area is divided into two categories: intermix and interface. The California Fire Alliance determined that 1.5 miles is the approximate maximum distance that firebrands can be carried from a wildland fire to the roof of a house. Therefore, even structures not within the forest are at risk from wildfire. This buffer distance, along with housing density and vegetation type, were used to define the WUI.

For this risk assessment, the high-, medium-, and low-density interface areas were combined and used as the Interface hazard area, and the high-, medium-, and low-density intermix areas were combined and used as the Intermix hazard areas.

Asset data (population, building stock, critical facilities) were used to support an evaluation of asset exposed and potential impacts and losses associated with this hazard. To determine what assets are exposed to wildfire, available and appropriate GIS data were overlaid with the hazard area. Assets with their centroid located in the hazard area were totaled to estimate the number of assets and their replacement cost value exposed to a wildfire event.

Qualitative Analyses

For many of the hazards evaluated in this risk assessment, historical data are not adequate to model future losses at this time. Where GIS data are not available, Somerset County conducted a qualitative analysis for the following hazards using the best available data and professional judgment. Multiple federal, state, and academic sources were used to evaluate these hazards:

- Drought
- Hailstorm
- Invasive Species
- Opioid Addiction Response
- Pandemic and Infectious Disease
- Terrorism
- Tornado
- Transportation Accidents
- Utility Interruption
- Winter Storm

Data Source Summary

Table 4.4.2-3 summarizes the data sources used for the risk assessment for this plan.

Table 4.4.1-3 Risk Assessment Data Documentation

Data	Source	Date	Format
Population	U.S. Census Bureau, American Community Survey	2018-2022	CSV converted to Digital (GIS) Format
Building Inventory	Somerset County; U.S. Army Corps of Engineers	2024; 2022	Digital (GIS) Format
Critical Facilities	Somerset County; HIFLD; Pennsylvania Department of Environmental Protection; Pennsylvania Department of Transportation; Federal Aviation Administration	2022; 2020 - 2024; 2024; 2023 - 2024; 2021	Digital (GIS) Format
Land Use	National Land Cover Database	2021	Digital (GIS) Format
Digitized Preliminary FIRM Data	Federal Emergency Management Agency	2019	Digital (GIS) Format
1-Meter DEM	United States Geological Survey	2021	Digital (GIS) Format
Roadways & Railways	Pennsylvania Department of Transportation	2024	Digital (GIS) Format
Pipeline	Pipeline and Hazardous Materials Safety Administration	2024	Digital (GIS) Format
Planning Facilities	Somerset County	2024	Digital (GIS) Format
Abandoned Mine Land, Mined Land, Active Mines	Pennsylvania Department of Environmental Protection	2024	Digital (GIS) Format
Dam Inundation Areas	Somerset County	2024	Digital (GIS) Format
Leveed Areas	U.S. Army Corps of Engineers	2024	Digital (GIS) Format

Wildland-Urban Interface	SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison	2020	Digital (GIS) Format
Landslide Susceptibility (Steep Slope >30%)	United State Geological Survey; Tetra Tech	2021;2024	Digital (GIS) Format

Notes:
FEMA – Federal Emergency Management Agency
HIFLD – Homeland Infrastructure Foundation-Level Data
SILVIS – Spatial Analysis for Conservation and Sustainability

Limitations

Loss estimates, exposure assessments, and hazard-specific vulnerability evaluations rely on the best-available data and methodologies. Uncertainties are inherent in any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from the following:

1) Approximations and simplifications necessary to conduct such a study
2) Incomplete or dated inventory, demographic, or economic parameter data
3) The unique nature, geographic extent, and severity of each hazard
4) Mitigation measures already employed by the participating municipalities
5) The amount of advance notice residents have to prepare for a specific hazard event
6) Uncertainty of climate change projections

These factors can result in a range of uncertainty in loss estimates, possibly by a factor of two or more. Therefore, potential exposure and loss estimates are approximate. These results do not predict precise results and should be used to understand relative risk. Over the long term, Fulton County will collect additional data and update and refine existing inventories to assist in estimating potential losses.

Potential economic loss is based on the present value of the general building stock using best-available data. The county acknowledges significant impacts may occur to critical facilities and infrastructure as a result of these hazard events causing great economic loss. However, monetized damage estimates to critical facilities and infrastructure, and economic impacts were not quantified and require more detailed loss analyses. In addition, economic impacts to industry such as tourism and the real-estate market were not analyzed.

4.4.2 Ranking Results

As discussed in Section 4.2, Hazard Identification, Somerset County selected and considered a comprehensive range of natural and non-natural hazards that pose significant risk to Somerset County. However, the communities in Somerset County have differing levels of exposure and vulnerability to each of these hazards. It is important for each community participating in this plan to recognize those hazards that pose the greatest risk to their community and direct their attention and resources accordingly to manage risk effectively and efficiently.

To this end, a relative hazard risk ranking process was conducted for the county using the Risk Factor (RF) methodology identified in Section 5 and Appendix 9 of the Pennsylvania Emergency Management Agency's (PEMA) All-Hazard Planning Standard Operating Guide (PEMA 2020). The guidance states:

The RF approach produces numerical values that allow identified hazards to be ranked against one another (the higher the RF value, the greater the hazard risk). RF values are obtained by assigning varying degrees of risk to five categories for each hazard: *probability, impact, spatial extent, warning time, and duration.*

To calculate the RF value for a given hazard, the assigned risk value for each category is multiplied by the weighting factor. The sum of all five categories equals the final RF value, as demonstrated in the example equation below:

Risk Factor Methodology Equation

RF Value = [(Probability x .30) + (Impact x .30) +
(Spatial Extent x .20) + (Warning Time x .10) + (Duration x .10)]

Hazards identified as high-risk have RFs greater than or equal to 2.5. RFs ranging from 2.0 to 2.4 are considered moderate-risk hazards. Hazards with RFs less than 2.0 are considered low-risk.

Table 4.4.2-4 identifies the five risk assessment categories, the criteria and associated risk level indices used to quantify their risk, and the suggested weighting factor (weight value) applied to each risk assessment category. Table 4.4-5 shows the values of five risk assessment categories for each of Somerset County's hazards and each hazard's RF.

Table 4.4.2-1 Summary of Risk Factor (RF) Approach

Summary of Risk Factor (RF) Methodology				
Risk Assessment Category	Degree of Risk			Weight Value
	Level	Criteria	Index	
PROBABILITY *What is the likelihood of a hazard event occurring in a given year?*	UNLIKELY	LESS THAN 1% ANNUAL PROBABILITY	1	30%
	POSSIBLE	BETWEEN 1% & 49.9% ANNUAL PROBABILITY	2	
	LIKELY	BETWEEN 50% & 90% ANNUAL PROBABILITY	3	
	HIGHLY LIKELY	GREATER THAN 90% ANNUAL PROBABILTY	4	
IMPACT *In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?*	MINOR	VERY FEW INJURIES, IF ANY. ONLY MINOR PROPERTY DAMAGE & MINIMAL DISRUPTION ON QUALITY OF LIFE. TEMPORARY SHUTDOWN OF CRITICAL FACILITIES.	1	30%
	LIMITED	MINOR INJURIES ONLY. MORE THAN 10% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR MORE THAN ONE DAY.	2	
	CRITICAL	MULTIPLE DEATHS/INJURIES POSSIBLE. MORE THAN 25% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR MORE THAN ONE WEEK.	3	
	CATASTROPHIC	HIGH NUMBER OF DEATHS/INJURIES POSSIBLE. MORE THAN 50% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR 30 DAYS OR MORE.	4	
SPATIAL EXTENT *How large of an area could be impacted by a hazard event? Are impacts localized or regional?*	NEGLIGIBLE	LESS THAN 1% OF AREA AFFECTED	1	20%
	SMALL	BETWEEN 1 & 10.9% OF AREA AFFECTED	2	
	MODERATE	BETWEEN 11 & 25% OF AREA AFFECTED	3	
	LARGE	GREATER THAN 25% OF AREA AFFECTED	4	
WARNING TIME *Is there usually some lead time associated with the hazard event? Have warning measures been implemented?*	MORE THAN 24 HRS	SELF-DEFINED *(NOTE: Levels of warning time and criteria that define them may be adjusted based on hazard addressed.)*	1	10%
	12 TO 24 HRS	SELF-DEFINED	2	
	6 TO 12 HRS	SELF-DEFINED	3	
	LESS THAN 6 HRS	SELF-DEFINED	4	
DURATION *How long does the hazard event usually last?*	LESS THAN 6 HRS	SELF-DEFINED *(NOTE: Levels of warning time and criteria that define them may be adjusted based on hazard addressed.)*	1	10%
	LESS THAN 24 HRS	SELF-DEFINED	2	
	LESS THAN 1 WEEK	SELF-DEFINED	3	
	MORE THAN 1 WEEK	SELF-DEFINED	4	

Source: PEMA 2020

Table 4.4.2-2 Risk Ranking for Somerset County

Hazard Risk	Hazards	Risk Assessment Category					Risk Factor (Rf)
		Probability	Impact	Spatial Extent	Warning Time	Duration	
HIGH	Opioid Addiction Response	4	4	4	1	4	3.7
	Flood, Flash Flood, Ice Jam	4	3	3	4	3	3.4
	Invasive Species	4	3	4	1	4	3.4
	Tornadoes and Windstorms	2	4	3	4	4	3.2
	Environmental Hazards (Hazmat Release)	3	3	3	4	3	3.1
	Dam Failure	2	4	3	2	4	3
	Levee Failure	2	4	3	2	4	3
	Utility Interruption	4	2	2	4	3	2.9
	Environmental Hazards (Oil and Natural Gas Pipelines)	3	2	3	4	3	2.8
	Pandemic and Infectious Disease	3	2	4	1	4	2.8
	Winter Storm	3	2	4	2	3	2.8
	Drought	2	2	4	1	4	2.5
	Transportation Accidents	4	1	2	4	2	2.5
	Wildfire	3	2	2	4	2	2.5
MODERATE	Environmental Hazards (Coal Mining)	3	2	1	4	3	2.4
	Subsidence and Sinkholes	2	2	2	4	4	2.4
	Hailstorm	2	2	2	4	1	2.1
LOW	Terrorism	2	2	1	4	1	1.9
	Landslide	2	1	1	4	3	1.8
	Earthquake	1	1	1	4	1	1.3

Based on these results, there are 14 high-risk hazards, three moderate-risk hazards, and three low-risk hazards in Somerset County. Mitigation actions were developed for all hazards (see Section 6.4). The threat posed to life and property for moderate-risk and high-risk hazards is considered significant enough to warrant the need for establishing hazard-specific mitigation actions.

A risk assessment result for the entire county does not mean that each municipality is at the same amount of risk to each hazard. Table 4.4.2-3 shows the different municipalities in Somerset County and indicates whether each municipality considers their risk is greater than (>), less than (<), or equal to (=) the RF assigned to the county as a whole.

Table 4.4.2-3. Jurisdictional Risk by Municipality

Municipality	Opioid Addiction Response	Flood, Flash Flood, Ice Jam	Invasive Species	Tornadoes and Windstorms	Environmental Hazards (Hazmat Release)	Dam Failure	Levee Failure	Utility Interruption	Environmental Hazards (Oil and Natural Gas Pipelines)	Pandemic and Infectious Disease	Winter Storm	Drought	Transportation Accidents	Wildfire	Environmental Hazards (Coal Mining)	Subsidence and Sinkholes	Hailstorm	Terrorism	Landslide	Earthquake
	3.7	3.4	3.4	3.2	3.1	3	3	2.9	2.8	2.8	2.8	2.5	2.5	2.5	2.4	2.4	2.1	1.9	1.8	1.3
Addison B	>	=	=	=	<	>	>	<	<	=	<	=	=	<	=	=	=	>	=	=
Addison T	>	>	=	<	=	<	<	>	>	>	>	=	=	=	=	=	<	<	=	<
Allegheny T	>	>	=	<	=	<	<	>	>	>	>	=	=	=	=	=	=	<	=	<
Benson B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Berlin B	>	<	<	<	<	<	<	>	>	>	>	>	>	<	=	>	>	<	<	<
Black T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Boswell B	=	>	<	=	<	<	<	=	=	<	=	<	=	<	=	=	<	<	<	<
Brothersvalley T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Callimont B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Casselman B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Central City B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Conemaugh T	=	=	<	=	=	=	=	>	=	>	=	=	=	=	=	>	=	=	>	=
Confluence B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Elk Lick T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Fairhope T	>	>	=	<	>	<	<	<	>	>	>	=	<	=	=	=	=	=	=	=
Garrett B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=

Municipality	Opioid Addiction Response	Flood, Flash Flood, Ice Jam	Invasive Species	Tornadoes and Windstorms	Environmental Hazards (Hazmat Release)	Dam Failure	Levee Failure	Utility Interruption	Environmental Hazards (Oil and Natural Gas Pipelines)	Pandemic and Infectious Disease	Winter Storm	Drought	Transportation Accidents	Wildfire	Environmental Hazards (Coal Mining)	Subsidence and Sinkholes	Hailstorm	Terrorism	Landslide	Earthquake
	3.7	3.4	3.4	3.2	3.1	3	3	2.9	2.8	2.8	2.8	2.5	2.5	2.5	2.4	2.4	2.1	1.9	1.8	1.3
Greenville T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Hooversville B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Indian Lake B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Jefferson T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Jenner T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Jennerstown B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Larimer T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Lincoln T	<	=	<	=	<	<	<	=	<	=	=	=	<	=	=	>	=	<	=	>
Lower Turkeyfoot T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Meyersdale B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Middlecreek T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Milford T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
New Baltimore B	=	>	=	=	=	=	=	=	>	=	=	=	=	=	=	=	=	=	>	=
New Centerville B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Northampton T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=

Municipality	Opioid Addiction Response	Flood, Flash Flood, Ice Jam	Invasive Species	Tornadoes and Windstorms	Environmental Hazards (Hazmat Release)	Dam Failure	Levee Failure	Utility Interruption	Environmental Hazards (Oil and Natural Gas Pipelines)	Pandemic and Infectious Disease	Winter Storm	Drought	Transportation Accidents	Wildfire	Environmental Hazards (Coal Mining)	Subsidence and Sinkholes	Hailstorm	Terrorism	Landslide	Earthquake
	3.7	3.4	3.4	3.2	3.1	3	3	2.9	2.8	2.8	2.8	2.5	2.5	2.5	2.4	2.4	2.1	1.9	1.8	1.3
Ogle T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Paint B	=	=	=	=	=	<	<	=	=	=	=	=	=	>	=	=	=	=	<	<
Paint T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Quemahoning T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Rockwood B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Salisbury B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Seven Springs B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Shade T	=	=	=	=	=	=	=	=	=	=	>	=	=	=	=	=	=	=	=	=
Shanksville B	<	=	<	=	<	>	>	=	<	=	=	=	=	=	=	=	=	<	=	=
Somerset B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Somerset T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Southampton T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Stonycreek T	=	=	=	=	=	>	>	=	=	=	>	=	=	=	=	=	=	=	=	=
Stoystown B	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=	=	=	=	=
Summit T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Upper Turkeyfoot T	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=

Municipality	Opioid Addiction Response	Flood, Flash Flood, Ice Jam	Invasive Species	Tornadoes and Windstorms	Environmental Hazards (Hazmat Release)	Dam Failure	Levee Failure	Utility Interruption	Environmental Hazards (Oil and Natural Gas Pipelines)	Pandemic and Infectious Disease	Winter Storm	Drought	Transportation Accidents	Wildfire	Environmental Hazards (Coal Mining)	Subsidence and Sinkholes	Hailstorm	Terrorism	Landslide	Earthquake
	3.7	3.4	3.4	3.2	3.1	3	3	2.9	2.8	2.8	2.8	2.5	2.5	2.5	2.4	2.4	2.1	1.9	1.8	1.3
Ursina B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Wellersburg B	=	=	=	=	<	<	<	=	>	=	=	=	=	=	=	=	=	<	=	=
Windber B	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=

Notes:
">" indicates that the risk is greater than the RF assigned to the county
"<" indicates that the risk is lower than the RF assigned to the county
"=" indicates that the risk is equal to the RF assigned to the county

4.4.3 Potential Loss Estimates

Potential loss estimates for hazard events help a community understand the monetary value of what might be at stake during a hazard event. Estimates are considered *potential* in that they generally represent losses that could occur in a countywide hazard scenario. Localized events could yield lower losses, while regional events could yield higher losses.

The data utilized to conduct the vulnerability assessment came from a variety of sources, as noted throughout each hazard profile. As summarized in the Methodology subsection, the 2018-2022 U.S. Census demographic data, HAZUS v6.1 default building inventory and its associated replacement cost value of the structures and contents, and the comprehensive critical facility inventory update in HAZUS v6.1 were used for Somerset County.

Potential loss estimates provided in Section 4.3 (Hazard Profiles) were either based on historical losses, current-condition losses, and/or predictive losses by performing spatial analyses in GIS and hazard probabilistic modeling. In summary, HAZUS v6.1 was used to estimate potential losses for the flood, hurricane/tropical storm, and tornado/windstorm hazards. For many of the hazards evaluated, historical data are not adequate to model future losses at this time. For these hazards of concern, areas and inventory susceptible to specific hazards were mapped, and exposure was evaluated to help guide mitigation efforts (mitigation efforts are discussed further in Section 6). Spatial analyses were conducted to assess potential exposure for hazards of concern with delineated hazard areas: dam failure; environmental hazard: hazardous materials release; environmental hazard: coal mining; environmental hazard: gas and liquid pipelines; flood, flash flood, and ice jam; landslide; levee failure; subsidence and sinkhole; and wildfire. Where GIS data are not available for some hazards, a qualitative analysis was conducted using the best available data and professional judgment.

4.4.4 Future Development and Vulnerability

Risk and vulnerability to natural and human-caused hazard events are not static. Risk will increase or decrease as counties and municipalities see changes in land use and development, as well as changes in population. Population change (in terms of total and demographics) and the age of the housing stock continue to be the main indicators of vulnerability change in Somerset County.

Somerset County experienced a 1.0 percent decrease in population from 2020 to 2022, as summarized in Section 2 of this HMP. According to PA DEP, the population in Somerset County is projected to decrease over the coming decades.

Continued analysis of the population's age structure in Somerset County will provide deeper understanding of future vulnerability to at-risk populations. Approximately 23 percent of Somerset County's population is age 65 or older (ACS 2022). As these residents continue to age in the county, they might have increased access and functional needs. For example, many residents in this age bracket might be unable to drive; therefore, development of special evacuation plans for them will be necessary. They might also have hearing or vision impairments that could hinder their reception of emergency instructions. Both older and younger populations are at higher risks for contracting certain diseases. Somerset County's combined under-5-years-of-age and over-65 populations constitute approximately 28 percent of its population (ACS 2022).

Future hazard mitigation strategies should consider addressing language barriers to ensure that all residents can receive emergency instructions since 0.3 percent of Somerset County's population is not proficient in English.

In addition, remote and sparsely populated municipalities face higher vulnerability to hazards because they do not have as easy access to care facilities or response personnel. For instance, sparsely populated municipalities face increased vulnerability to tornadoes, windstorms, and winter storms due to isolation, access issues, and longer emergency response times.

The aging housing stock in Somerset County is another source of current and future vulnerability in many hazard events. As discussed throughout Section 4, Risk Assessment, Somerset County can experience strong gusts of wind during windstorms, tornadoes, hurricanes, tropical storms, or Nor'easters. The structures of these older buildings can put them at greater risk of destruction under these strong wind conditions. These structures might also be at risk during flooding and winter storm events if the materials are either not strong enough to withstand the pressure or weight of the precipitation or are liable to leak, causing further risk of destruction to the house.

While any development increases the risk of damage and loss to natural hazards, a number of factors indicate that this increase in risk is low and mitigated by existing federal, state, county, and local regulations, policies, and programs. Municipalities in Somerset County have adopted subdivision regulations, and local zoning regulations.

Somerset County and its municipalities have not identified areas of potential new urban growth. In the future, as urban growth is planned, it should be compared with identified hazard areas to determine hazard vulnerability.

SECTION 5 CAPABILITY ASSESSMENT

The capability assessment evaluates the community's capabilities and resources already in place at the municipal, county, state, and federal levels to reduce hazard risks. The assessment also identifies where improvements can be made to increase disaster resistance in the community through future mitigation actions.

The first step in organizing hazard mitigation capabilities or resources is to describe the basic approaches available to reduce hazard risks. According to the 2020 Pennsylvania Emergency Management Agency (PEMA) All-Hazard Mitigation Planning Standard Operating Guide (SOG), the following four general mitigation actions may reduce hazard risks: (1) local plans and regulations, (2) structure and infrastructure, (3) natural systems protection, and (4) education and awareness. A brief description of each (according to the PEMA All-Hazard Mitigation Planning SOG) is provided below:

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

Structure and Infrastructure – These actions involve modifying existing structures and infrastructure or constructing new structures to reduce hazard vulnerability.

Natural Systems Protection – These actions minimize damage and losses and preserve or restore the functions of natural systems.

Education and Awareness – These actions inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate these hazards, including participation in national programs.

Capability assessments document the existing resources available to local communities to reduce hazard risks. Resources can be divided into five categories: human, physical, technical, informational, and financial. For each basic capability or approach, one or more of the five resources may be available. A brief description of each resource (PEMA 2020) is provided below:

Human resources include local police, fire, ambulance, and emergency management and response personnel; local government services; and electric, gas, and other utility providers that are critical during disasters.

Physical resources include the equipment and vehicles (such as emergency response and recovery equipment and vehicles), public lands, facilities, and buildings available to the community.

Technical/technological resources include early warning systems, weather alert radios, stream-level monitoring gauges, and 9-1-1 communications systems. They also include technical requirements established by law, regulation, or ordinance.

Informational resources include materials about disasters and hazard mitigation and planning; these resources are available from a wide variety of sources, such as applicable websites, libraries, and state and federal agencies.

Financial resources identify the sources of funding available for hazard mitigation. Most state and federal grant programs require local communities to provide at least part of the necessary project funding in real dollars or through in-kind services. Local communities need to assess their financial capability and resources to implement hazard mitigation action plans.

This section describes and summarizes the federal, state, county, and local capabilities to address hazard risks in Somerset County.

5.1 UPDATE PROCESS SUMMARY

During the plan update process, Somerset County and all participating municipalities were asked to provide an updated assessment of their mitigation planning capabilities. Each municipality was provided with a Capability Assessment Survey based on Appendix 3 of the October 2020 edition of the PEMA All-Hazard Mitigation Planning SOG (PEMA 2020). The survey was provided to each of the municipal planning points of contact at the Planning Team kickoff meeting. Appendix D provides completed Capability Assessment Surveys, whether completed by hand, electronically, or filled in working alongside the Somerset County Emergency Services staff or planning consultant.

Somerset County has several resources available to implement hazard mitigation initiatives, including emergency response measures; local planning and regulatory tools; administrative assistance and technical expertise; fiscal capabilities; and participation in local, regional, state, and federal programs. These resources enable community resiliency through actions taken before, during, and after a hazard event. Emergency services, manpower, equipment, and fiscal resources are important tools in addressing hazard potential and mitigation in Somerset County communities.

This section describes and summarizes the federal, state, county, and local capabilities to address hazard risk in Somerset County.

5.2 CAPABILITY ASSESSMENT FINDINGS

A jurisdiction's ability to effectively manage natural hazard risk is directly related to its level of hazard mitigation capabilities. As such, mitigation strategies developed in coordination with Somerset County's municipalities have a direct effect on establishing new capability functions in the community or strengthening existing capabilities.

Somerset County and most of its municipalities updated and completed the Capability Assessment Survey (Appendix D: Municipal Participation Documentation). If municipalities did not update or only partially updated their capabilities information, the information provided for the 2020 Hazard Mitigation Plan (HMP) was carried forward into this plan update.

In Somerset County, 48 out of 50 municipalities participate in the National Flood Insurance Program (NFIP); however, no municipality participate in the Community Rating System (CRS). Participating in CRS can reduce insurance premiums for properties located outside of Special Flood Hazard Areas of up to 10 percent. Properties located in Special Flood Hazard Areas can reduce premiums up to 45 percent by participating in the CRS program. These discounts can be obtained by undertaking public information, mapping and regulations, flood damage reduction and flood preparedness activities (FEMA 2021).

Finally, limited funding is a critical barrier to the implementation of hazard mitigation activities in Somerset County. The county will need to rely on regional, state, and federal partnerships for financial assistance. Somerset County will continue to alert municipalities when FEMA grant funding is available to apply for to implement eligible projects in this HMP update.

The following sections further detail the capability assessment findings.

5.2.1 Planning and Regulatory Capability

While municipalities in Pennsylvania must comply with the minimum regulatory requirements established under the Pennsylvania Municipal Planning Code, they otherwise have considerable latitude in adopting ordinances, policies, and programs that can be used to manage natural and non-natural hazard risks. Specifically, municipalities can manage these risks through comprehensive land use planning, hazard-specific ordinances (for example, flood damage prevention, sinkholes, and steep slopes), zoning, site-plan approval, and building code enforcement. When effectively prepared and administered, these regulations can lead to hazard mitigation.

For example, the adoption of the National Flood Insurance Program (NFIP) and the Pennsylvania Flood Plain Management Act (Act 166 of 1978) established minimum floodplain management criteria. A municipality must adopt and enforce these minimum criteria to be eligible for participation in the NFIP. Municipalities have the option of adopting a single-purpose ordinance or incorporating these provisions into their zoning and/or subdivision and land development ordinances or building codes, thereby mitigating the potential impacts of local flooding.

When effectively prepared and administered, these regulations can mitigate potential hazards. Guiding documents, known as the "Planning Series," can assist municipalities in developing regulations and best management practices. These documents can be found in the Pennsylvania Department of Community and Economic Development Library under Local Government – Handbooks and Guides – Community Planning**.**

5.2.1.1 Federal Planning Capabilities

Biggert-Waters National Flood Insurance Reform Act of 2012

Under the Biggert-Waters National Flood Insurance Reform Act of 2012, long-term changes to the National Flood Insurance Program (NFIP) have increased rates to more accurately reflect the flood risk to buildings in flood hazard areas. This has significantly influenced construction and reconstruction within flood hazard areas. Property owners are encouraged to consider long-term insurance costs when undertaking reconstruction or elevation of damaged buildings. An investment to reconstruct the lowest floor of a building an additional foot or two higher may translate into significant future flood insurance savings.

Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004

The Flood Insurance Reform Act of 2004 amended the National Flood Insurance Reform Act of 1968 to reduce losses to properties for which repetitive flood insurance claim payments have been made. This Act established a program for mitigation of severe repetitive loss properties and gave FEMA the authority to fund mitigation activities for individual repetitive loss properties. The Act provides additional coverage for compliance with land-use and control measures. It helps residents with affordable flood insurance and gives additional tools to states and communities to mitigate severe repetitive loss properties.

PEMA is the lead coordinator of Pennsylvania's NFIP efforts. PEMA's Mitigation Insurance and Resilient Communities (MIRC) Office is the agency working with local communities with severe repetitive loss properties.

Federal Regulations for Local Hazard Mitigation Plans

Federal regulations for local hazard mitigation plans (44 CFR Part 201.6) encourage local communities to prepare such plans. They outline the process for communities to achieve and fund mitigation activities based on risk assessments and assessment and development of local mitigation capabilities. FEMA has prepared policies and procedures for its own review and approval of local hazard mitigation plans.

Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA) is the current federal legislation addressing hazard mitigation planning. It encourages states, tribes, and local governments to undertake mitigation planning. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act) with mitigation plan requirements that emphasize the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. It emphasizes planning for disasters before they occur.

DMA 2000 requires plans to be in place before Hazard Mitigation Assistance (HMA) grant funds are available to communities. Applicants with an approved HMP are eligible to apply for federal funds for mitigation of hazards. The rules provide detailed guidance on what applicants should include in a plan. The PEMA MIRC Office is the lead agency to promote mitigation planning in Pennsylvania.

Disaster Recovery Reform Act

This bill permits the use of technical and financial assistance to implement codes, specifications, and standards that incorporate the latest hazard-resistant designs; establishes a National Public Infrastructure Pre-disaster Mitigation Fund; and authorizes the president's contribution to the cost of hazard mitigation measures to be used to increase resilience in any area affected by a major disaster.

PEMA's MIRC Office is the lead agency that reviews, submits, and administers federal funding through this Act to programs that mitigate hazards in Pennsylvania. These programs help find projects that are cost beneficial to help reduce damage from hazards.

Emergency Support Function #14, Long-Term Recovery Planning

Emergency Support Function (ESF) #14 Long-Term Recovery Planning coordinates federal support to state, tribal, regional, and local governments, nongovernmental organizations, and the private sector to enable community recovery from the long-term consequences of disasters. It identifies sources of recovery funding and provides technical assistance (such as impact analyses) for community recovery.

ESF #14 may be activated for incidents that require a coordinated federal response to foster sustainable recovery from significant long-term impacts (e.g., impacts on housing, government operations, agriculture, businesses, employment, community infrastructure, the environment, human health, and social services). Actions coordinated under ESF #14 include pre-incident planning and coordination, measures immediately prior to an incident, post-event planning, and operations.

Through this function, PEMA works with the Office of Homeland Security and Preparedness to have a plan for long-term planning and recovery prior to a disaster or emergency. One of the areas of planning includes mitigation.

Homeowner's Flood Insurance Affordability Act

This 2014 law lowered recent rate increases on some flood insurance policies, prevented some future rate increases, and implemented a surcharge on all policyholders. The Act authorized resources for the National Academy of Sciences (NAS) to complete an affordability study.

National Flood Insurance Program

The National Flood Insurance Act of 1968 enabled property owners in communities that participate in the NFIP to purchase flood insurance. Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Flood damage in the United States is reduced by nearly $1 billion each year through communities implementing floodplain management requirements and property owners purchasing flood insurance.

Community participation in the NFIP is voluntary. Participating communities are required to adopt a flood damage prevention ordinance (also sometimes called a "floodplain management ordinance") and update this ordinance when the regulatory NFIP Flood Insurance Rate Maps (FIRM) are officially updated. FEMA Region 3 makes an ordinance review checklist available to communities that lists the required provisions for floodplain management ordinances. This checklist helps communities develop an effective floodplain management ordinance that meets federal requirements for participation in the NFIP.

Participating communities may adopt higher regulatory standards than required by the provisions of the NFIP. The following elements of these standards may be altered to strengthen floodplain regulations:

- **Freeboard:** When there is a base flood elevation (BFE) available, the lowest floor, including any basement, must be at or above the base flood elevation. Where a local floodplain administrator has information to estimate a base flood elevation, such as historical flood records or a hydraulic study, that elevation must be used. Elevation may be by means of properly compacted fill, a solid slab foundation, or a "crawl space" foundation with permanent openings to let flood waters in and out. Non-residential structures may be flood-proofed in lieu of elevation. Pennsylvania requires BFE plus 1.5 feet for all construction. Communities may go beyond this requirement, providing for additional freeboard (Commonwealth of Pennsylvania 2016).

- **Cumulative Substantial Improvements/Damages:** The NFIP allows improvements valued at up to 50 percent of the building's pre-improvement value to be permitted without meeting the flood protection requirements. Over the years, a community may issue a succession of permits for different repairs or improvement to the same structures. This can greatly increase the overall flood damage potential for structures within a community. The community may wish to deem "substantial improvement" cumulatively so that once a threshold of improvement within a certain length of time is reached, the structure is considered to be substantially improved and must meet flood protection requirements.

Implementation in Pennsylvania

The Pennsylvania Department of Community and Economic Development (PA DCED) is the legislated Commonwealth coordinating agency for the NFIP, and PEMA is the Commonwealth agency that carries out floodplain coordination in practice. These agencies support municipalities by providing suggested text for floodplain management ordinances.

The Pennsylvania Floodplain Management Act (Act 166) mandates municipal participation in and compliance with the NFIP. It also prohibits new or substantially improved structures in the floodway that are used for the production or storage of dangerous materials. Act 166 requires a special permit for construction or expansion of any manufactured home park, hospital, nursing home, jail, or prison within a special flood hazard area.

As new Digital Flood Insurance Rate Maps (DFIRMs) are published, the Pennsylvania State NFIP Coordinator, who sits in PA DCED, works with communities to ensure the timely and successful adoption of an updated floodplain management ordinance by reviewing and providing feedback on existing and draft ordinances. In addition, DCED provides guidance and technical support through Community Assistance Contacts (CAC) and Community Assistance Visits (CAV) (FEMA 2011).

The DCED provides a suggested ordinance to assist municipalities in meeting the minimum requirements of the NFIP. It also presents provisions that are more restrictive than state and federal requirements. Suggested provisions include the following:

- Prohibiting manufactured homes in the floodway
- Prohibiting manufactured homes within the area 50 feet landward from the top of bank of any watercourse in a special flood hazard area
- Prohibiting new construction and development within the area 50 feet landward from the top of bank of any watercourse in a special flood hazard area
- Establishing special requirements for recreational vehicles within the special flood hazard area
- Establishing special requirement for accessory structures

County and Local Participation in the NFIP

In Somerset County, 48 out of 50 jurisdictions participate in the NFIP. Local municipalities participate in the program through ordinance adoption and floodplain regulation and enforcement. Permitting processes needed for building construction and development in the floodplain are implemented at the municipal level through various ordinances (e.g., zoning and floodplain ordinances).

Through participation in the NFIP, all municipalities in the County have floodplain regulations in place. Through floodplain ordinances, municipalities can ensure that all new construction or substantial improvements to existing structures in the floodplain are flood-proofed, dry-proofed, or built above anticipated flood elevations. Floodplain ordinances may also prohibit development in certain areas altogether.

Community Rating System

The Community Rating System (CRS) is a voluntary incentive program that encourages community floodplain management activities that exceed the minimum NFIP requirements. In participating communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from actions that meet the three goals of the CRS: reduce flood losses; facilitate accurate insurance rating; and promote the awareness of flood insurance.

There are 10 CRS classes that determine the amount of reduction in insurance premiums. Class 1 requires the most credit points and gives the largest premium reduction; Class 10 receives no premium reduction. CRS premium discounts on flood insurance range from 5 percent for Class 9 communities up to 45 percent for Class 1 communities. The CRS recognizes 18 creditable activities that are organized under four categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness. Currently, no Somerset County jurisdictions participate in the CRS Program.

Presidential Policy Directive 8

Presidential Policy Directive 8 (PPD-8) requires states to develop a threat hazard identification and risk assessment (THIRA) to remain eligible for Homeland Security Grant Program (HSGP) and Emergency Management Program Grant (EMPG) funding. PEMA is the lead agency in preparing Pennsylvania’s THIRA.

Risk Mapping, Assessment, and Planning

FEMA works with federal, state, tribal, and local partners across the nation to identify flood risk and to reduce it though planning and development practices. The Risk Mapping, Assessment, and Planning (RiskMAP) program provides high-quality flood maps and information, tools to better assess the risk from flooding, and planning and outreach support to help communities reduce flood risk. FEMA works directly with municipal floodplain managers during the RiskMAP process. The state NFIP Coordinator is kept apprised of project activities and consults as needed.

Risk Rating 2.0: Equity in Action

Risk Rating 2.0: Equity in Action provides more modern, individualized, and equitable flood insurance rates by considering specific characteristics of insured buildings. This rating methodology considers frequency of flooding, flood types, proximity to flood sources, and building characteristics such as first floor heights and costs to rebuilt.

Robert T. Stafford Disaster Relief and Emergency Assistance Act

The Stafford Act provides for assistance by the federal government to state and local governments in carrying out their responsibilities to alleviate the impacts of disasters. It has the following objectives:

- Revising and broadening the scope of disaster relief programs
- Encouraging the development of comprehensive disaster preparedness and assistance plans, programs, capabilities, and organizations by state and local governments
- Achieving greater coordination and responsiveness of disaster preparedness and relief programs
- Encouraging individuals and state and local governments to protect themselves by obtaining insurance coverage to supplement or replace governmental assistance
- Encouraging hazard mitigation measures to reduce losses from disasters, including development of land-use and construction regulations
- Providing federal assistance programs for both public and private losses sustained in disasters

The PEMA MIRC Office is the lead agency that reviews, submits, and administers federal funding under the Stafford Act to programs that mitigate hazards. These programs help fund projects that are cost beneficial to help reduce damages from hazards.

Clean Water Act Section 404(e)

Under Section 404(e) of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) can issue general permits to authorize activities that have minimal adverse environmental effects. There are three types of USACE permits (USACE 2017):

- A **nationwide permit** authorizes activities across the country unless a district or division commander revokes the nationwide permit in a state or other geographic region. There are 54 nationwide permits, and they authorize a wide variety of activities, including linear transportation projects, bank stabilization activities, residential development, commercial and industrial developments, aids to navigation, and certain maintenance activities.
- **Standard permits** are individual permits that involve full public interest review of an individual permit application and issuance of a public notice for any project that does not meet the terms and conditions of a nationwide permit.
- **Regional general permits** are for small, specialized projects.

5.2.1.2 Commonwealth Planning Capabilities

Counterterrorism Planning, Preparedness and Response Act

The Counterterrorism Planning, Preparedness and Response Act of December 16, 2002 (Act 227) provides for counterterrorism planning, preparedness, and response, including the organization of various response teams. Act 227 imposes powers and duties on PEMA, the Department of Health (DOH), counties, and municipalities. It defines the responsibilities of regional counter-terrorism task force groups, the urban search and rescue task force, and specialized response teams.

Marcellus Shale Drilling Regulations

Oil and gas exploration in Pennsylvania is regulated through the Oil and Gas Act, the Coal and Gas Resource Coordination Act, the Oil and Gas Conservation Law, the Clean Streams Law, the Dam Safety and Encroachments Act, the Solid Waste Management Act, and the Water Resources Planning Act. The Oil and Gas Act (Act 13 of 2012) presented major changes to the oil and gas industry in Pennsylvania, including the authorization for local governments to adopt an impact fee and the provision of stronger environmental protections.

The Bureau of Oil and Gas Management in the Pennsylvania Department of Environmental Protection (PA DEP), along with county conservation districts, the Susquehanna River Basin Commission, and the Delaware River Basin Commission, have authority to regulate the oil and gas industry in Pennsylvania to protect the environment and citizens of the Commonwealth.

Nutrient Management Law

Act 38, signed into law on July 6, 2005, updated Pennsylvania's nutrient management law. This act requires that concentrated animal operations develop and maintain a nutrient management plan, which includes best management practices to minimize environmental impact from nutrients on a farm. Act 38 Nutrient Management Plans are required to receive permits for concentrated animal feeding operations populated with livestock.

Pennsylvania Construction Code Act

The Pennsylvania Construction Code Act (Act 45) of 1999 establishes the basic requirements for the Uniform Construction Code (UCC), which applies to the construction, alteration, repair, demolition, or change of occupancy of buildings. Enforcement of the UCC began in April 2004. Utilization of the UCC provides for the protection of life, health, property, and the environment on a daily basis as well as during disasters by establishing construction standards. Over 90 percent of Pennsylvania's 2,562 municipalities administer compliance locally through their own staff or third-party agencies (DLI, 2018).

Revisions in 2017 provided exclusions for certain agricultural buildings, required a re-review of the 2015 International Code Council, changed the makeup of the UCC Review and Advisory Council, changed permitting fees, created a local board of appeals, and established a six-month statute of limitations for permit submissions after updated building codes go into effect (DLI, 2018).

Pennsylvania Emergency Management Service Code, Title 35

Pennsylvania's Emergency Management Service Code (Title 35) covers PEMA's overall legal responsibilities for emergency management, addressing PEMA's responsibilities before, during, and after a disaster. It defines emergency management as "the judicious planning, assignment and coordination of all available resources in an integrated program of prevention, mitigation, preparedness, response and recovery for emergencies of any kind, whether from attack, Human-caused or natural sources." It also establishes that PEMA was created "to assure prompt, proper and effective discharge of basic Commonwealth responsibilities relating to civil defense and disaster preparedness, operations and recovery."

Pennsylvania Flood Plain Management Act

The Pennsylvania Flood Plain Management Act (Act 166) encourages sound land use practices within floodplains. The Act requires municipalities with Special Flood Hazard Areas to participate in the NFIP, meeting the minimum standards. The Act establishes higher regulatory standards for hazardous materials and high-risk land uses and designates the state agency responsible for NFIP coordination and oversight (PEMA as of July 2022).

Local floodplain managers, who have the training and authority to help enforce regulations, are encouraged to enroll in FEMA training courses and even obtain a Certified Floodplain Manager certification. They work with federal, state, and local stakeholders to ensure proper development in the floodplain. PEMA's Orientation Guide describes the job as having four main roles: coordinator, regulator, educator, and planner.

Pennsylvania Hazardous Material Emergency Planning and Response Act

Requirements of the federal Superfund Amendments and Reauthorization Act (SARA) are implemented at the state level through Act 165 (Pennsylvania Hazardous Material Emergency Planning and Response Act). Act 165 creates a strong working relationship between business and industry, the Commonwealth, counties, and local municipalities to protect citizens from the dangers of hazardous materials.

SARA provisions include requirements for reporting releases of chemicals and for protecting responders. SARA Title III, relating to emergency planning and community right-to-know, has the greatest impact on local governments.

Pennsylvania Municipalities Planning Code Act

Per the Pennsylvania Municipalities Planning Code Act of 1968 (Act 247), boroughs, townships, and counties have the authority to prepare zoning, subdivision, land development, floodplain management, and other ordinances, as well as official zoning maps, all of which can be used individually or jointly to guide growth and minimize development in hazard-prone areas. Act 247 requires counties to create and adopt a comprehensive plan and encourages municipalities to adopt municipal or joint municipal comprehensive plans generally consistent with the county comprehensive plan.

Pennsylvania Radiation Protection Act

The Pennsylvania Radiation Protection Act (Act 147) deals specifically with radiation, control of radioactive sources, and accidental releases of radiation from any of the nuclear-powered electric generating facilities in Pennsylvania. As amended, this law empowers the PA DEP to implement a comprehensive statewide radiation protection program and enables PEMA to develop a radiological emergency response program with plans for each fixed nuclear power generating facility. In implementing the radiological emergency response program, PEMA has planned for evacuation or protection of persons in the area immediately surrounding a given facility with a 10-mile radius. Each affected municipality has a plan that addresses accidental releases of radiation at the facility. The law requires periodic exercise of these plans; every 2 years there is a full-scale exercise involving several hundred people to test the plan and response capabilities.

Act 147 also created a Radiation Emergency Response Fund and a Radiation Transportation Emergency Response Fund, which receive money from nuclear facility operators, spent fuel storage facilities, and spent nuclear fuel shippers. PEMA distributes this money to affected counties, which in turn distribute it to municipalities. Funds are distributed based on grant applications submitted by counties to reimburse expenses involved in preparing plans, providing equipment, training, and exercising the radiological emergency response program.

Public Safety Emergency Telephone Act

The Public Safety Emergency Telephone Act (Act 78), as amended, provides a toll-free standard number (911) accessible from both land and cellular phones for any individual in the Commonwealth to gain rapid, direct access to emergency services. As amended in 1998, the act places responsibility for developing a 911 system on county government. It also allows for end-user contributions based on the number of lines of telephone service. Act 78 establishes technical, training, and certification guidelines and minimum standards to be met in developing county 911 systems. Additionally, the act encourages the development of enhanced 911 systems and constant improvement of existing systems.

5.2.1.3 County and Municipal Planning Capabilities

Alleghenies Ahead: Regional Comprehensive Plan 2018

A comprehensive plan is a policy document that states objectives and guides the future growth and physical development of a municipality. The comprehensive plan is a blueprint for housing, transportation, community facilities, utilities and land use. It examines how the past led to the present and charts the community’s future path. The Pennsylvania Municipalities Planning Code (MPC Act 247 of 1968, as reauthorized and amended) requires counties to prepare and maintain a county comprehensive plan. In addition, the MPC requires counties to update the comprehensive plan every ten years.

Section 301a.(2) of the MPC requires comprehensive plans to include a plan for land use, which, among other provisions, suggests that the plan should give consideration to floodplains and other areas of special hazards and other similar uses. The MPC also requires comprehensive plans to include a plan for community facilities and services and recommends giving consideration to storm drainage and floodplain management.

Somerset County updated their comprehensive plan in 2018. This comprehensive plan was in conjunction with five other counties and is titled Alleghenies Ahead. This plan is a collaborative effort to develop and implement strategies that will increase the region’s chances to create jobs, increase the region’s capacity to compete for households who have choices, and become a region of stronger and more vital communities (SAPDC 2018).

Article III of the MPC enables municipalities to prepare a comprehensive plan; however, development of a comprehensive plan is voluntary. Eight municipalities in Somerset County have adopted their own comprehensive plan. The remaining forty-two fall under the county plan.

Stormwater Management Planning

In 1978, the Pennsylvania General Assembly passed the Stormwater Management Act (Act 167) of 1978 (Pennsylvania State Data Center 1978). Act 167 requires counties to prepare stormwater management plans on a watershed-by-watershed basis. The plans must be developed in consultation with the affected municipalities. Each new plan is required to include standards for control of runoff from new development based on a detailed hydrologic assessment. A key objective of each plan is to coordinate the stormwater management decisions of the watershed municipalities. Implementation of each plan is through mandatory municipal adoption of ordinance provisions consistent with the plan.

Plans prepared under Act 167 will not resolve all drainage issues. A key goal of the planning process is to maintain existing peak runoff rates throughout a watershed as land development continues to take place. While the planning process does not solve existing flooding problems, it aims to prevent these problems from getting worse. Each municipality is responsible for correcting existing flooding problems.

Somerset County has two approved Act 167 Stormwater Management Plans in place: Coxes Creek and Stonycreek. These plans provide a comprehensive watershed plan and model stormwater ordinance based on the unique physical conditions of each specific watershed. Municipalities are required to implement the Act 167 plan through adoption of the model ordinance.

Under the National Pollutant Discharge Elimination System (NPDES) and for small Municipal Separate Storm Sewer Systems (MS4), Somerset County is a regulated entity. The purpose of the NPDES MS4 program is to limit the amount of pollutants that enter into waterways and water bodies through separate storm sewer systems. These systems include, but are not limited to, inlets, pipes, outlets, and gutters. The MS4 program has six minimum control standards that include public education, public participation, illicit discharge detection and elimination, construction site stormwater management, post-construction stormwater management, and pollution prevention and good housekeeping at municipal facilities. All municipalities in Somerset County are listed as MS4 and are required to have a permit issued by the Pennsylvania Department of Environmental Protection (PA DEP). Additionally, the PA DEP permit requires municipalities to prepare pollutant reduction plans for each impaired stream.

Southern Alleghenies Region Comprehensive Economic Development Strategy 2025-2029

A Comprehensive Economic Development Strategy (CEDS) is a strategy-driven regional planning effort defined by the United States Economic Development Agency (EDA) to promote and coordinate economic development. It includes background studies, a SWOT analysis, and the development of prioritized strategies, goals, objectives, and measurable outcomes for regional economic development, resiliency, and equity. The process involves outreach to and participation from county and local governments, economic development organizations, labor unions, institutions of higher education, workforce developers, community organizations, non-profits, utilities, and businesses.

The CEDS for Pennsylvania's six-county Southern Alleghenies Economic Development District (EDD) encompasses Bedford, Blair, Cambria, Fulton, Huntingdon, and Somerset Counties. This region is served by the Southern Alleghenies Planning and Development Commission (SAP&DC). An up-to-date CEDS is required for SAP&DC to receive financial assistance from the EDA and to apply for funding to advance local economic development projects (SAPDC 2025)

Subdivision and Land Development Ordinance 2025

The Subdivision & Land Development Ordinance serves as a comprehensive regulatory framework designed to guide the orderly growth and development within the county. This ordinance establishes clear guidelines and standards for the subdivision and development of land, ensuring that all projects meet specific criteria for safety, infrastructure, and environmental protection. Key components of the ordinance include detailed procedures for the submission, review, and approval of subdivision plans, as well as stringent design standards for streets, sidewalks, water supply, sewage systems, and public use areas. Additionally, the ordinance addresses the development of mobile home parks, campgrounds, recreational vehicle parks, and residential cluster subdivisions, providing tailored requirements and design standards for each. By enforcing these regulations, Somerset County aims to mitigate potential hazards associated with land development, such as inadequate infrastructure, environmental degradation, and public safety risks. The ordinance also emphasizes the importance of ongoing monitoring and maintenance, requiring developers to secure certificates of completion and adhere to improvement guarantees. Overall, this document plays a crucial role in promoting sustainable development practices, protecting the well-being of residents, and enhancing the resilience of the community against potential hazards.

Southern Alleghenies Greenways and Open Space Network Plan

The Southern Alleghenies Greenways and Open Space Network Plan outlines a comprehensive strategy for linking natural and man-made resources across the region's six counties. By creating an interconnected greenway network, the plan aims to enhance the value of these resources for various purposes, including recreation, conservation, and economic development. The plan not only identifies the key elements that constitute the greenway network but also provides a strategic framework for its implementation and management. This framework includes prioritizing greenways or project corridors, offering a range of potential implementation tools, and summarizing available support and funding sources. By leveraging the region's natural assets, the plan seeks to promote sustainable development and strengthen the resilience of the community against potential hazards.

5.2.1.4 Local Emergency Management Capabilities

According to Pennsylvania Title 35 (Emergency Management Services Code), Chapter 7500, each political subdivision in the Commonwealth is directed and authorized to establish a local emergency management organization in accordance with the plan and program of the Pennsylvania Emergency Management Agency (PEMA). These local organizations are responsible for emergency response and recovery within their territorial limits and may also provide services outside their jurisdiction as required.

The governing body of a political subdivision can declare a local disaster emergency upon finding that a disaster has occurred or is imminent. This declaration activates the response and recovery aspects of all applicable local emergency management plans and authorizes the provision of aid and assistance. Each local emergency management organization must have a coordinator responsible for planning, administration, and operations. Additionally, political subdivisions must adopt Intergovernmental Cooperation agreements with other political subdivisions.

Disaster emergency management services are primarily the responsibility of the lowest level of government affected. When multiple political subdivisions within a county are impacted, the county organization coordinates and supports the area of operations. If multiple counties are involved, PEMA or area organizations established by PEMA provide coordination. When local resources are fully committed, assistance from higher levels of government is provided. Local emergency management coordinators are also tasked with developing mutual aid agreements with adjacent political subdivisions for reciprocal emergency assistance, consistent with PEMA's plans and programs.

Somerset County manages emergencies through two primary departments:

1. **Somerset County 911 Communications Center**: This center serves as the Public Safety Answering Point for the county's municipalities, assessing situations quickly, determining locations, and dispatching appropriate emergency services. The center interacts with emergency response entities, local and state agencies, municipal services, the private sector, and non-government organizations throughout incidents. An emerging challenge is adapting equipment and procedures to accommodate technological changes, such as texting to 911.
2. **Somerset County Emergency Management Agency**: This agency is responsible for preparedness, response, recovery, and mitigation. It partners with municipal governments, county and state agencies,

emergency services, the education community, and private and public entities. Preparedness is achieved through collaboration in or direct development of emergency action plans for various sites and situations.

WebEOC

WebEOC is an incident management application accessible through an online portal. It provides a means of sharing information locally and with all levels of government. Emergency plans, mapping data, resources, and contact information are immediately accessible to those logged into the portal. The application improves situational awareness and contributes to the effective utilization of resources.

Emergency Operations Plan

Pennsylvania's Emergency Management Services Code (PA Title 35) requires that all municipalities in the Commonwealth have a local emergency operations plan (EOP) that is updated every two years. The Somerset County Department of Emergency Services is responsible for preparing and maintaining the county's EOP, which governs both county and municipal emergency management operations and procedures. The EOP is reviewed at least annually. Whenever portions of the plan are implemented during an emergency event or training exercise, a review is conducted, and necessary changes are made. These updates are then distributed to the county's municipalities.

Continuity of Operations Plan

Continuity of operations planning is the process of developing advanced arrangements and procedures that enable an organization to continue its essential functions despite events that disrupt them.

Amateur Radio

Somerset County Amateur Radio Club is a 501(c)(3) non-profit corporation promoting Amateur Radio as a hobby, emergency communication services, advanced radio education and FCC Testing,

Somerset County Animal Response Team

The Somerset County Animal Response Team (CART) assists companion animals and livestock during emergencies and disasters in Somerset County, Pennsylvania. As a specialized team of emergency responders, we are activated through 9-1-1 to handle situations such as animal entrapment, livestock trailer accidents, loose animals on public roads, and pets involved in vehicle accidents. Additionally, we collaborate with the American Red Cross to set up shelters for companion animals during disaster evacuations.

Emergency Operations Centers

In anticipation of or during a disaster, the Somerset County Emergency Operations Center (EOC) is activated to address immediate issues related to the event. The EOC manages the emergency response and coordinates the distribution of resources to a disaster/incident at the local level. When activated, the EOC communicates with the 911 Center to ensure the coordination of activities.

Emergency Response

All municipalities are responsible for providing emergency response for their communities. This consists of EMS, fire, and police. Municipalities that do not have one of these providers should have mutual aid agreements with an adjacent political subdivision or the Commonwealth to respond (e.g., law enforcement coverage by the Pennsylvania State Police).

Monitoring Systems

The municipalities may also be equipped with several systems to monitor emergency information and warnings, including RACES and the NWS.

Emergency Response Planning

The municipalities may also assist with emergency response planning for the following:

1. EOPs
2. Medical facilities
3. Dams
4. Counterterrorism preparedness
5. Special events
6. School emergencies
7. Daycare, group homes, and special needs facilities
8. Evacuation

While the risk of certain hazards can be addressed at least partially through mitigation, the risks of other hazards (particularly certain non-natural hazards) are primarily managed through the preparedness and response elements of emergency management or through federal and state regulatory programs.

Mutual Aid Agreements

A The Pennsylvania Region 13 Task Force is a collaborative initiative involving multiple jurisdictions, agencies, and disciplines across 13 counties in Southwestern Pennsylvania. This task force enhances regional preparedness and response capabilities to prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other catastrophic events. The counties involved in this intergovernmental agreement are Allegheny, Armstrong, Beaver, Butler, Cambria, Fayette, Greene, Indiana, Lawrence, Mercer, Somerset, Venango, Washington, Westmoreland, and the City of Pittsburg. Somerset County has a mutual aid agreement in place with all counties in this task force.

Local Emergency Planning Committee

The Local Emergency Planning Committee (LEPC) of Somerset County was created as a direct result of the federal Superfund Amendments and Reauthorization Act (SARA). The LEPC develops plans to minimize emergency situations related to the release of hazardous materials. It works to ensure appropriate response to the release of hazardous material and creates a forum to foster knowledge of chemical related hazards and protective measures. The LEPC is responsible for the following tasks:

- Identifies the chemicals stored, used, and/or manufactured in the communities of Somerset County and determines the health risks that those chemicals pose to the public.
- Develops a comprehensive emergency plan for each facility and keeps the plans current.
- Receives information about accidental chemical releases.
- Collects, manages, and provides public access to information on hazardous chemicals in the communities of Somerset County.
- Develops training programs to enhance emergency response capabilities.
- Educates the public about risks from accidental and routine releases of chemicals and works with facilities to minimize these risks.

Community Organizations Active in Disaster

The Somerset County Community Organizations Active in Disaster (SC-COAD) is a humanitarian association of independent volunteer community organizations in within the County. SC-COAD is designed to foster cooperation and coordination among various organizations and community members during disaster situations. The group works to enhance the region's disaster response and relief efforts by bringing together resources and expertise from different sectors, including the American Red Cross, religious organizations, and other community groups.

SC-COAD operates under the guidance of the Pennsylvania Voluntary Organizations Active in Disaster (PA-VOAD) and aims to ensure that all participating organizations maintain their independence while collaborating effectively during emergencies. This collaborative approach helps maximize the benefits of collective efforts, ensuring a more efficient and comprehensive response to disasters in Somerset County.

5.2.1.5 Summary of Municipal Capabilities

Participating municipalities in this planning effort were provided a Capability Assessment Survey. Table 5-1 summarizes the responses of the municipalities based on planning and regulatory capability, supplemented by information received from the county regarding municipal capabilities. Appendix D includes the municipal survey responses with detailed information regarding the Somerset County municipalities' planning and regulatory capabilities.

Table 5-1. Planning and Regulatory Capability

Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	Continuity of Operations (COOP) Plan	NFIP	NFIP – CRS	Floodplain Regulations	Floodplain Mgmt. Plan	Zoning Regulations	Subdivision Regulations	Comprehensive Land Use Plan (or General, Master, or Growth Mgmt. Plan)	Open Space Mgmt. Plan	Stormwater Mgmt. Plan/Ordinance	Natural Resource Protection Plan	Capital Improvements Plan	Economic Dev. Plan	Historic Preservation Plan	Farmland Preservation	Building Code	Fire Code	Other
Somerset County	X	X	X	X	X	N/A	N/A	-	-	X	X	X	X	X	-	+	+	X	X	-	-	-
Addison (B)	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Addison (T)	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Allegheny (T)																						
Benson (B)																						
Berlin (B)	-	X	-	-	-	N/A	N/A	N/A	-	-	-	-	-	X	-	-	-	-	-	X	-	-
Black (T)																						
Boswell (B)	X	X	X	X	-	-	-	-	-	X	X	X	-	X	-	-	-	-	-	X	-	-
Brothersvalley (T)	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
Callimont (B)																						
Casselman (B)																						
Central City (B)																						
Conemaugh (T)	X	X	-	-	-	X	X	X	X	X	X	-	-	X	-	-	-	-	X	X	-	-
Confluence (B)	X	X	N/A	X	N/A	-	-	X	X	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	-
Elk Lick (T)	X	X	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-	X	-	-
Fairhope (T)																						
Garrett (B)																						
Greenville (T)																						
Hooversville (B)																						
Indian Lake (B)																						
Jefferson (T)	X	X	-	-	X	-	X	-	-	-	-	X	-	-	-	-	-	-	X	X	-	-

Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	Continuity of Operations (COOP) Plan	NFIP	NFIP – CRS	Floodplain Regulations	Floodplain Mgmt. Plan	Zoning Regulations	Subdivision Regulations	Comprehensive Land Use Plan (or General, Master, or Growth Mgmt. Plan)	Open Space Mgmt. Plan	Stormwater Mgmt. Plan/Ordinance	Natural Resource Protection Plan	Capital Improvements Plan	Economic Dev. Plan	Historic Preservation Plan	Farmland Preservation	Building Code	Fire Code	Other
Jenner (T)	X	X	-	-	-	-	-	X	-	-	-	-	-	X	-	-	-	-	-	X	-	-
Jennerstown (B)	X	X	-	-	+	X	-	X	-	X	-	-	-	X	-	-	-	-	-	-	-	X
Larimer (T)	X	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-
Lincoln (T)																						
Lower Turkeyfoot (T)	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Meyersdale (B)																						
Middlecreek (T)	X	X	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Milford (T)	X	X	X	X	X	-	-	-	-	X	X	X	-	X	-	-	-	-	X	X	X	-
New Baltimore (B)																						
New Centerville (B)	X	X	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-
Northampton (T)	X	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	X	X	-	-
Ogle (T)																						
Paint (B)	X	X	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	X	-	-
Paint (T)																						
Quemahoning (T)	X	X	-	-	-	-	-	X	X	-	-	-	-	X	-	-	-	-	-	X	X	-
Rockwood (B)																						
Salisbury (B)	X	X	-	-	X	-	-	X	X	-	X	X	-	-	-	-	-	-	-	X	-	-
Seven Springs (B)																						
Shade (T)																						
Shanksville (B)																						
Somerset (B)																						
Somerset (T)																						
Southampton (T)																						
Stonycreek (T)																						

Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	Continuity of Operations (COOP) Plan	NFIP	NFIP – CRS	Floodplain Regulations	Floodplain Mgmt. Plan	Zoning Regulations	Subdivision Regulations	Comprehensive Land Use Plan (or General, Master, or Growth Mgmt. Plan)	Open Space Mgmt. Plan	Stormwater Mgmt. Plan/Ordinance	Natural Resource Protection Plan	Capital Improvements Plan	Economic Dev. Plan	Historic Preservation Plan	Farmland Preservation	Building Code	Fire Code	Other
Stoystown (B)																						
Summit (T)																						
Upper Turkeyfoot (T)																						
Ursina (B)	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	X	-	-
Wellersburg (B)																						
Windber (B)																						

Notes: Jennerstown (B): StormReady
"X" indicates that the municipality currently has this capability in place.
"-" indicates no capability is currently in place.
"+" indicates that the capability is under development.
"N/A": Not applicable
Blank space indicates no response was received from the municipality in 2015/2016 or 2020/2021.

5.2.2 Administrative and Technical Capability

Administrative capability is described as the adequacy of departmental and personnel resources for the implementation of mitigation-related activities. Technical capability relates to an adequacy of knowledge and technical expertise of local government employees or the ability to contract outside resources for this expertise to effectively execute mitigation activities. Common examples of skillsets and technical personnel needed for hazard mitigation include: planners with knowledge of land development/management practices, engineers or professionals trained in construction practices related to buildings and/or infrastructure (e.g., building inspectors), planners or engineers with an understanding of natural and/or human-caused hazards, emergency managers, floodplain managers, land surveyors, scientists familiar with hazards in the community, staff with the education or expertise to assess community vulnerability to hazards, personnel skilled in geographic information systems, resource development staff or grant writers, and fiscal staff to handle complex grant application processes.

Municipalities are further supported by county, regional, state, and federal administrative and technical capabilities. For this HMP, most support agencies and resources have been identified and referenced throughout this plan update.

It is noted that the county and many of its municipalities have identified specific mitigation initiatives described in this plan update, which will help build and enhance mitigation-related administrative and technical capabilities in Somerset County.

5.2.2.1 Federal Administrative and Technical Capabilities

Federal Emergency Management Agency

FEMA is responsible for providing assistance before, during, and after disasters. FEMA is the federal reviewer of hazard mitigation plans and sets federal standards for local and state hazard mitigation plans. FEMA evaluates NFIP compliance through audits known as Community Assistance Visits (CAVs) or Community Assistance Contacts (CACs). CAVs and CACs are performed to ascertain community compliance with the NFIP, at entry into the CRS, and to maintain participation in the CRS. CAVs are generally more rigorous than CACs. These audits may be conducted by FEMA Region 3 staff, by PEMA staff (under the Compliance Assistance Program – State Support Services Element grant), or by private contractors. The audits evaluate the following key areas:

- The community’s flood damage prevention ordinance
- Mapping products and other ordinances used to regulate floodplain development
- Floodplain development permitting procedures
- Floodplain permit applications and other forms/records, including substantial damage and improvement determinations
- Floodplain development review and performance standards
- Floodplain development permits issued to applicants

National Weather Service

The NWS monitors weather and delivers weather forecasting for Pennsylvania. The Commonwealth is serviced by the Philadelphia/Mount Holly weather forecast office. The NWS also offers education and training programs on weather-related hazards.

The NWS StormReady Program encourages communities to take a proactive approach to improving local hazardous weather operations. The program gives emergency managers clear-cut guidelines on how to improve their hazardous weather operations. To participate, a community must establish a 24-hour warning point and emergency operations center; have more than one way to receive severe weather warnings and forecasts and to alert the public; create a system that monitors local weather; promote public readiness through community seminars; and develop a formal hazardous weather plan that includes training severe weather spotters and holding emergency exercises (NWS n.d.). Somerset County is a StormReady community.

U.S. Army Corps of Engineers

USACE builds and maintains infrastructure with projects such as dredging, storm damage reduction, and ecosystem restoration in and near waterways (USACE n.d.). Somerset County is serviced by the Philadelphia and Baltimore Districts. USACE has numerous initiatives to support hazard mitigation measures, including the Silver Jackets, planning assistance, and inspections and repair of flood control structures. USACE also maintains the National Inventory of Dams and the National Levee Database.

Silver Jackets

Silver Jackets is the state-level implementation program developed by USACE for the National Flood Risk Management Program. The program leverages information and resources from federal, state, and local agencies to improve flood risk management; improve public risk communication; and create a mechanism to collaboratively solve issues and implement initiatives beneficial to local communities.

Climate Preparedness and Resilience Community of Practice

The Climate Preparedness and Resilience Community of Practice develops and implements practical, nationally consistent, and cost-effective approaches and policies to reduce potential vulnerabilities to the nation's water infrastructure resulting from climate change and variability (USACE n.d.).

Planning Assistance to States Program

Section 22 of the 1974 Water Resources Development Act provides authority for the USACE to assist states, local governments, Native American tribes, and other non-federal entities in the preparation of comprehensive plans for the development and conservation of water and related land resources. Types of work that can be done include water quality studies, floodplain management studies, harbor/port studies, and other water resource planning investigations. The individual non-federal sponsors determine the needed planning assistance (USACE n.d.).

Floodplain Management Services Program

The federal Flood Control Act authorizes the USACE to provide assistance on all aspects of floodplain management planning. The Floodplain Management Services Program develops or interprets site-specific data on obstructions to flood flows, flood formation and timing, and the extent, duration, and frequency of flooding. Program services are available without charge to state, regional, and local governments, Native American tribes, and other non-federal public agencies (USACE n.d.).

Inspection of Completed Works Program

Civil works structures whose failure or partial failure could jeopardize operational integrity, endanger the lives and safety of the public, or cause substantial property damage are periodically inspected and evaluated to ensure their structural stability, safety, and operational adequacy. For structures constructed by the USACE and turned over to others for operation and maintenance, the operating entity is responsible for periodic inspection and evaluation. The USACE may conduct the inspection on behalf of the project sponsor provided appropriate reimbursement to the USACE is made. However, the USACE may participate in the inspection with the operating entity at the government's expense.

Rehabilitation and Inspection Program

The USACE Rehabilitation and Inspection Program provides for inspection of flood control projects, the rehabilitation of damaged flood control projects, and the rehabilitation of federally authorized and constructed hurricane or shore protection projects.

Dam Safety Program

The National Dam Safety Program is a partnership of states, federal agencies and other stakeholders to encourage and promote the establishment and maintenance of effective federal and state dam safety programs to reduce the risk to human life, property, and the environment from dam related hazards.

The USACE is responsible for safety inspections of some federal and non-federal dams in the United States that meet the size and storage limitations specified in the National Dam Safety Act. USACE has inventoried dams and has surveyed each state and federal agency's capabilities, practices, and regulations regarding design, construction, operation, and maintenance of the dams. USACE has also developed guidelines for inspection and evaluation of dam safety.

U.S. Geological Survey

The U.S. Geological Survey (USGS) maintains a network of gauges across the Commonwealth that continuously measure lake, reservoir table, stream, and tide levels. These data sets are transmitted to the USGS and made available over the Internet. As project needs and funding levels change, gauges may be added or deactivated, and deactivated gauges may be reactivated. USGS provides data to the PA DEP for drought determinations. USGS also recovers high water marks post-coastal flooding (USGS 2018).

HURREVAC

HURREVAC is the decision support tool of the National Hurricane Program, administered by FEMA, USACE, and the National Atmospheric and Oceanic Administration (NOAA) National Hurricane Center (HURREVAC n.d.). HURREVAC allows PEMA and counties to work as a unified team, coordinating notification, communication, activations, public warning, and evacuation and sheltering efforts. By operating together, the Commonwealth and the counties serve the public better by providing the same advisories and actions.

5.2.2.2 Commonwealth Administrative and Technical Capabilities

Pennsylvania Construction Codes Academy

The Pennsylvania Construction Codes Academy offers training to become certified as a building code official. The program provides interactive education focused on the practical application of the UCC regulations. Courses are held both in-person and online and address a number of building-related topics.

Pennsylvania Department of Community & Economic Development

The Pennsylvania Department of Community & Economic Development supports good stewardship and sustainable development initiatives across the Commonwealth. The Department acts as advisor and advocate, providing technical assistance, training, and financial resources to communities and industries.

Pennsylvania Department of Environmental Protection

The PA DEP's mission is to protect Pennsylvania's air, land, and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. The PA DEP partners with individuals, organizations, governments, and businesses to prevent pollution and restore natural resources. The PA DEP's mission is integral to hazard mitigation in Pennsylvania as it implements flood control projects, monitors, and conducts outreach for radon, participates in emergency response, and regulates safe practices for several industries.

Bureau of Clean Water

The Bureau of Clean Water administers the National Pollutant Discharge Elimination System permitting and compliance programs for commercial and municipal stormwater in Pennsylvania. Municipalities and other public institutions must maintain their storm sewer systems according to their permits, ensuring that any water discharged into public waterways meets standards. PA DEP is also charged with the implementation of Act 167 stormwater management programs (see Section 5.2.1.3.2). Proper stormwater management impacts water quality as well as the severity of flooding. Permits for commercial activities focus on industrial waste and large-scale earthmoving for construction.

Bureau of Radiation Protection

The PA DEP Bureau of Radiation Protection provides expertise in radiation protection and nuclear safety and possesses the equipment and personnel for radiation monitoring. Hazard mitigation is integrated into the Bureau's plans and procedures. This Bureau also participates in training programs, drills, and exercises, and has a public outreach program regarding radon.

Bureau of Waterways, Engineering, and Wetlands

The PA DEP Bureau of Waterways, Engineering, and Wetlands plans, designs, and manages the construction of flood control projects. Completed projects are inspected annually by either PA DEP or USACE. PA DEP reviews flood mitigation grant applications. The Bureau offers fact sheets on its programs and hosts annual flood protection workshops for municipal sponsors. It provides project sponsors with the emergency action plan guidelines for flood protection projects. The Bureau's Division of Dam Safety approves dam emergency action plans, completes design and construction review, inspects dams for safety, and requires dams to be upgraded or repaired when warranted, under the authority of the Dam Safety and Encroachments Act and the Pennsylvania Code. The Bureau is also involved in levee safety. USACE partners with the PA DEP for annual levee safety workshops and inspections at federal and state constructed flood protection projects, which includes most of Pennsylvania's levee systems.

Emergency Response Program

The Emergency Response Program provides timely response to incidents that require the immediate presence of PA DEP personnel to ensure the health and safety of the environment and the public. Responders gather critical information that may be transient, perishable, or otherwise unobtainable if a timely response is not made. The Emergency Response Program maintains the PA DEP Emergency Operations Plan, sends representatives to the PEMA Commonwealth Response Coordination Center, participates in PEMA/FEMA trainings, drills, and conferences, shares incident notifications, partners with neighboring states, and provides public information.

Pennsylvania Department of General Services

The Pennsylvania Department of General Services provides hazard mitigation for new or retrofit construction via the Bureau of Engineering and Architecture. The Bureau of Real Estate works to avoid leasing facilities in hazardous areas.

Pennsylvania Department of Health

Bureau of Communicable Diseases

The Bureau of Communicable Diseases' mission is to reduce the incidence of communicable diseases in Pennsylvania through strategies that incorporate all aspects of government and community partnerships.

Bureau of Emergency Medical Services

The Bureau of Emergency Medical Services works to prevent, respond to, and reduce the public health and medical consequences of emergencies and disasters.

Bureau of Health Promotion and Risk Reduction

The Bureau of Health Promotion and Risk Reduction supports community partners in implementing prevention strategies using current data and research for chronic disease, injury, and violence. The department also contributes to the Lyme and Other Tickborne Diseases Interagency Workgroup, which consists of multiple agencies to coordinate the commonwealth's response.

Pennsylvania Department of Transportation

PennDOT coordinates transportation projects and maintains state-owned infrastructure across the Commonwealth. Its role in hazard mitigation is to promote safety and implement plans, procedures, and projects that mitigate transportation accidents. PennDOT maintains the Pennsylvania Mobility Plan, Electric Vehicle Mobility Plan, Pennsylvania Transportation Security Plan, Winter Services Strategic Plan, and more. It is also engaged in the Federal Highway Administration's Alternative Fuels Corridor Program, which focuses on providing access to electric vehicle charging and hydrogen, propane, and natural gas fueling stations.

Pennsylvania Department of Labor and Industry

The PADLI's Bureau of Occupational & Industrial Safety serves as the data repository for the Pennsylvania Tier II System (PATTS) Hazardous Chemical Reports available to PEMA and to county LEPCs that participate in the online PATTS Enterprise Program. Numerous facilities also upload their emergency response plans to this system.

Pennsylvania Emergency Management Agency

PEMA helps communities and citizens mitigate against, prepare for, respond to, and recover from emergencies including natural disasters, acts of terrorism, or other human-caused disasters. PEMA supports emergency management agencies by coordinating and engaging the whole community including, federal and state partners, volunteer organizations involved in disasters, the private sector business community, and citizens.

Hazard Mitigation, NFIP Management, and Disaster Trainings

PEMA provides trainings and presentations to community officials and local emergency management staff in support of local hazard mitigation, NFIP management, and disaster preparedness. PEMA holds three two-day trainings each quarter in the east, west, and central regions of Pennsylvania, which are typically attended by county emergency managers. Other attendees include local emergency managers, other emergency management staff, and related planners.

Mitigation Insurance and Resilient Communities Office

The Mitigation Insurance and Resilient Communities (MIRC) Office provides and participates in hazard mitigation and disaster trainings, disaster exercises, and conferences. MIRC staff support the identification and implementation of mitigation projects and provide tools and technical assistance on line and in person for local agencies. MIRC supports two full-time NFIP program management positions—an NFIP coordinator and a deputy coordinator—who, with support from other MIRC staff, contribute to an increased capacity for NFIP management.

Regional Task Forces

PEMA coordinates with eight task forces across Pennsylvania that assist in regional planning, maintain shared equipment, and provide trainings and exercises to bolster their regions' ability to respond to hazards. Many of the task forces began with a focus on counterterrorism and critical infrastructure protection but later evolved an all-hazards focus. Each task force may offer hazmat teams, bomb disposal teams, water response teams, search and rescue, dive teams, SWAT teams, and more. These task forces play an important role in ensuring regional public safety communications infrastructure is maintained, improved, and effective.

Severe Weather Monitoring

PEMA uses conference calling with the NWS and county OEMs to share specific information and needs when severe weather is forecast. When an approaching storm warrants monitoring, PEMA sends out e-mails with EOC status information and advice to keep all emergency managers statewide up to date with PEMA's direction. Resources are deployed as early as possible to prepare for storm impacts.

Pennsylvania Housing Finance Agency

The Pennsylvania Housing Finance Agency staffs the Joint Field Office, serves on the statewide disaster planning committee, and partners with PEMA and the Department of Community & Economic Development, and the Department of Human Services on an apartment locator service.

Pennsylvania Insurance Department

The Pennsylvania Insurance Department's role in hazard mitigation is to educate the public on resources that may be available for hazard mitigation such as insurance and FEMA grants. The Pennsylvania Insurance Department posts fact sheets and press releases on its website on how to prepare and respond to disasters.

Pennsylvania Spatial Data Access

Pennsylvania Spatial Data Access is the Commonwealth's official public access open geospatial data portal, developed in 1995 by Pennsylvania State University. It is currently run as a cooperative project between Penn State's Institution of Energy and the Environment, the Governor's Office of Administration, and the Office for Information Technology. Penn State contributes system administration support and infrastructure while the Office for Information Technology provides funding. The data is provided by federal, state, local and regional government agencies, non-profit organizations, and academic institutions.

Pennsylvania State Geospatial Coordinating Board

The Pennsylvania State Geospatial Coordinating Board provides recommendations on geospatial issues, uniform data standards, and coordination on geospatial policy and technology issues among government agencies, academic institutions, and the private sector. The Board includes data access and sharing resources as well as a variety of reports in the Geoboard Library.

Pennsylvania State System of Higher Education

Each university in the Pennsylvania State System of Higher Education has a university-specific hazard mitigation plan, and Millersville University includes a Center for Disaster Research and Education.

Pennsylvania Treasury

The Pennsylvania Treasury evaluates the financial risk and consequences that can occur after a major disaster. The department also considers hazards that could put essential functions, such as payment processing, at risk. Also, staff members attend and practice table-top drills and exercises and train employees on emergency roles and home preparedness.

5.2.2.3 County Administrative and Technical Capabilities

Somerset County Planning Commission

The Somerset County Planning Commission serves as the advisory and research arm of the county government, tasked with promoting orderly growth and development. This agency provides technical advice to municipal officials, fosters inter-governmental cooperation, and formulates as well as implements comprehensive growth plans for Somerset County. Additionally, the Planning Commission administers the county's interchange area zoning and land subdivision regulations, ensuring that development aligns with the county's strategic vision and regulatory standards. Through these efforts, the Planning Commission plays a crucial role in enhancing the county's resilience and preparedness for potential hazards, contributing to a safer and more sustainable community.

Somerset County Conservation District

The Somerset Conservation District provides leadership, education, and guidance to ensure the wise use and protection of natural resources in Somerset County and Pennsylvania. Established on March 22, 1957, the district focuses on soil and water conservation, watershed protection, flood prevention, and maintaining river navigability. It also aims to preserve woodlands, wildlife, public lands, and the tax base, promoting community health and safety (Somerset CD 2023).

Over the years, the district has expanded its activities to include tree planting and environmental education in schools. Changes to state laws in the 1950s and 1960s allowed the district to broaden its services and take on a greater leadership role in resource management. The Somerset Conservation District is a member of the Pennsylvania Association of Conservation Districts (PACD) and the National Association of Conservation Districts (NACD), reflecting its commitment to collaboration and continuous improvement in conservation efforts.

Somerset County Emergency Manager

The Somerset County Emergency Manager is an appointed position under the direction and control of the Somerset County Board of Commissioners. This role, defined by law, carries a moral obligation to balance legal duties with the responsibility to protect and preserve the safety of the community. The Emergency Manager is granted broad authority to determine program priorities and support local, state, and national objectives. Key responsibilities include fostering interagency cooperation with elected and appointed officials at all government levels, maintaining and managing the EOC, coordinating activities related to disaster mitigation, prevention, preparedness, response, and recovery, serving as the principal advisor to the Board of Commissioners during emergencies, and managing public and private resources effectively (Somerset County 2025).

5.2.2.4 Summary of Municipal Capabilities

Participating municipalities in this planning effort were provided with a capabilities survey. Table 5-2 summarizes the responses of the municipalities based on administrative and technical capability. Appendix D includes copies of the individual municipal responses.

Table 5-2. Administrative and Technical Capability

Municipality	Planners (with land use/land development knowledge)	Planners or Engineers (with natural and/or human-caused hazards knowledge)	Engineers or Professionals trained in building and/or infrastructure construction practices	Emergency Managers	NFIP Floodplain Administrator	Land Surveyors	Scientists or Staff familiar with the hazards of the community	Personnel skilled in GIS and/or the FEMA HAZUS program	Grant Writers or Fiscal Staff to handle large/complex grants	Other
Somerset County	X	X	-	X	-	-	-	X	X	-
Addison (B)	-	-	-	X	-	-	-	-	-	-
Addison (T)	-	-	-	X	-	-	-	-	-	-
Allegheny (T)										
Benson (B)										
Berlin (B)	X	X	X	X	-	X	-	-	X	-
Black (T)										
Boswell (B)	-	X	X	X	-	-	-	-	X	-
Brothersvalley (T)	-	-	-	X	-	-	-	-	-	-
Callimont (B)										
Casselman (B)										
Central City (B)										
Conemaugh (T)	X	X	X	X	X	X	X	X	-	-
Confluence (B)	-	-	-	X	X	-	-	-	X	-
Elk Lick (T)	-	-	-	X	X	-	-	-	X	-
Fairhope (T)										
Garrett (B)										
Greenville (T)										
Hooversville (B)										
Indian Lake (B)										
Jefferson (T)	-	-	-	-	-	-	-	-	-	-
Jenner (T)	-	-	-	X	X	-	-	-	-	-
Jennerstown (B)	-	X	X	X	-	-	-	-	-	-
Larimer (T)	-	-	-	X	X	-	-	-	-	-
Lincoln (T)										
Lower Turkeyfoot (T)	-	-	-	X	-	-	-	-	-	-
Meyersdale (B)										
Middlecreek (T)	-	-	-	X	X	-	-	-	-	-
Milford (T)	X	X	X	X	-	-	-	-	-	-
New Baltimore (B)										
New Centerville (B)	-	-	-	X	-	-	-	-	-	-
Northampton (T)	-	-	-	X	-	-	-	-	-	-
Ogle (T)										

Municipality	Planners (with land use/land development knowledge)	Planners or Engineers (with natural and/or human-caused hazards knowledge)	Engineers or Professionals trained in building and/or infrastructure construction practices	Emergency Managers	NFIP Floodplain Administrator	Land Surveyors	Scientists or Staff familiar with the hazards of the community	Personnel skilled in GIS and/or the FEMA HAZUS program	Grant Writers or Fiscal Staff to handle large/complex grants	Other
Paint (B)	-	-	X	X	-	-	-	-	-	-
Paint (T)										
Quemahoning (T)	X	-	X	X	X	-	-	-	-	-
Rockwood (B)										
Salisbury (B)	-	-	-	X	X	-	X	-	-	-
Seven Springs (B)										
Shade (T)										
Shanksville (B)										
Somerset (B)										
Somerset (T)										
Southampton (T)										
Stonycreek (T)										
Stoystown (B)										
Summit (T)										
Upper Turkeyfoot (T)										
Ursina (B)	-	-	-	X	-	-	-	-	-	-
Wellersburg (B)										
Windber (B)										

Notes:
"X" indicates that the municipality currently has this capability in place.
"-" indicates no capability is currently in place.
Blank space indicates no response was received from the municipality.

5.2.3 Financial Capability

Mitigation projects and initiatives are largely or entirely dependent on available funding. As such, it is critical to identify all available sources of funding at the local, county, regional, state, and federal level to support implementation of the mitigation strategies identified in this plan update.

Jurisdictions fund mitigation projects though existing local budgets, local appropriations (including referendums and bonding), and through myriad federal and state loan and grant programs.

Federal mitigation grant funding (Stafford Act 404 and 406) (FEMA 2000) is available to all communities with a current HMP (this plan); however, most of these grants require a "local share" in the range of 10 to 25 percent of the total grant amount.

5.2.3.1 Federal Hazard Mitigation Funding Opportunities

The Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) (Stafford Act 404 and 406) is a post-disaster mitigation program made available to states by FEMA after each federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures and can be used to fund cost-effective projects to protect public or private property in an area covered by a federal disaster declaration or that projects to reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard-prone areas, flood proofing, or elevation to reduce future damage, minor structural improvements, and development of state or local standards.

Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved HMP. Applicants eligible for the HMGP include state and local governments, certain nonprofit organizations or institutions that perform essential government services, and federally recognized tribes. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to PEMA and ranked order for available funding and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and may be considered as additional HMGP funding becomes available.

Sections 404 and 406 hazard mitigation funding are two distinct criteria associated with mitigation funding. Participation in FEMA 404 HMGP may cover mitigation activities, including raising, removing, relocating, or replacing structures within flood hazard areas. FEMA 406 Public Assistance mitigation is applied after a Presidentially Declared Disaster. This assistance covers parts of a facility that were actually damaged and the mitigation measures that provide protection from subsequent events.

Flood Mitigation Assistance Program

Flood Mitigation Assistance (FMA) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. FMA is funded annually; no federal disaster declaration is required. Only NFIP-insured homes and businesses are eligible for mitigation in this program. Funding for FMA is limited, and, as with the HMGP, individuals cannot apply directly. Applications must come from local governments or other eligible organizations.

The federal government cost-share for an FMA project is 75 percent. At least 25 percent of the total eligible costs must be provided by a non-federal source. At a minimum, a FEMA-approved local HMP is required before a project can be approved. FMA funds are distributed from FEMA to the Commonwealth. PEMA serves as the grantee and program administrator for FMA.

As of fiscal year 2013, the Severe Repetitive Loss and Repetitive Flood Claims Programs were dismantled and incorporated into the FMA Program. As a result, residential and non-residential properties currently insured with NFIP are eligible to receive FMA funds if they meet either the Repetitive Loss Properties (RLP) or Severe Repetitive Loss (SRL) property definitions, as described in Section 4.3.8 of this plan. These properties are eligible to receive an increased federal cost share.

Building Resilient Infrastructure and Communities Program

The Building Resilient Infrastructure and Communities Program was first implemented in 2020 to replace and expand upon the Pre-Disaster Mitigation (PDM) Program. For FY20, FEMA provided $500 million through the Building Resilient Infrastructure and Communities (BRIC) Program (FEMA 2020). States and territories were allocated $33.6 million. $20 million was set aside for tribal governments. The remaining $446.4 million were included in the competitive portion of the funding program. Similar to the PDM Program, no disaster declaration is required. Federal funds will cover 75 percent of a project's cost up to $50 million per sub application, a substantial increase from the $3 million cap under the PDM Program. As with the HMGP, FMA, and (former)

PDM Program, a FEMA-approved local HMP is required to be approved for funding under the BRIC program. An increased federal cost share is available for economically disadvantaged rural communities.

Federal Disaster Assistance Programs

Following a disaster, various types of assistance may be made available by local, state, and federal governments. The types and levels of disaster assistance depend on the severity of the damage and the declarations that result from the disaster event. General types of assistance that may be provided, should the President of the United States declare the event a major disaster, include the following:

- Individual Assistance – Provides help for homeowners, renters, businesses, and some nonprofit entities after disasters occur. This program is largely funded by the U.S. Small Business Administration. For homeowners and renters, those who suffered uninsured or underinsured losses may be eligible for a Home Disaster Loan to repair or replace damaged real estate or personal property. Renters are eligible for loans to cover personal property losses. Individuals may borrow up to $200,000 to repair or replace real estate, $40,000 to cover losses to personal property, and an additional 20 percent for mitigation. For businesses, loans may be made to repair or replace disaster damages to property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Businesses of any size are eligible. Nonprofit organizations, such as charities, churches, private universities, etc., are also eligible. An Economic Injury Disaster Loan provides necessary working capital until normal operations resume after a physical disaster. These loans are restricted, by law, to small businesses only.
- Public Assistance – Provides cost reimbursement aid to local governments (state, county, local, municipal authorities, and school districts) and certain nonprofit agencies that were involved in disaster response and recovery programs or that suffered loss or damage to facilities or property used to deliver government-like services.

U.S. Department of Housing and Urban Development Community Development Block Grants

The U.S. Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG) are federal funds intended to provide low- and moderate-income citizens with decent housing, a suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration. Public improvements may include flood and drainage improvements. In limited instances, and during times of “urgent need” (for example, post-disaster) as defined by the CDBG National Objectives, CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event. All municipalities in the county are eligible for CDBG funds through the county, except for the City of Harrisburg, which receives CDBG funding directly from U.S. HUD.

High Hazard Potential Dam (HHPD) Program

Somerset County contains five High Hazard Potential dams. To reduce vulnerability, the county could apply for the FEMA Rehabilitation of HHPD grant program. “The main objective of the HHPD grant program is to provide technical, planning, design, and construction assistance in the form of grants to non-federal sponsors for rehabilitation of eligible high hazard potential dams” (FEMA 2020). New guidance for the HHPD grant program was provided in July 2020.

To receive the HHPD funding, the following are basic outline program eligibility requirements:

1. The applicant must be a non-federal government entity or a nonprofit and work with the State Administrative Agency (SSA) designee, which will serve as the applicant and/or pass-through entity for a sub-recipient.

   a. It is recommended that applicants pursue this grant in coordination with the State Dam Safety Officer and the State Hazard Mitigation Officer (SHMO). For Pennsylvania, Roger Adams is the PA DEP Dam Safety Division Chief, and Tom Hughes is the PA SHMO.

2. The sub-recipient must:
   a. Act in accordance with the state dam safety program, and the project must be regulated by the same program.
   b. Must be a full participant in the NFIP and not suspended.
   c. Must commit to operation and maintenance (O&M) for 50 years in addition to providing an O&M plan and assure that the plan will be carried out.
   d. Must have a floodplain management plan in place.
   e. Must comply with the Stafford Act, Davis-Bacon Act, Copeland Anti-Kickback Act, and the Brook Architect-Engineers Act.
3. Eligibility Requirements, as identified on page 2-7 of the HHPD guidance document, include:
   a. Be located in a state with a state dam safety program.
   b. Be classified as “high hazard potential” by the state dam safety program.
   c. Have an emergency action plan (EAP) approved by the state dam safety program/
   d. Fail to meet minimum state dam safety standards and pose an unacceptable risk to the public/
   e. Eligible project must meet non-federal cost-share requirements of 35% of entire project costs.
   f. Phased projects are allowable in the program/
4. Grant Fund Requirements:
   a. Environmental and Historic Preservation compliance
   b. Non-discrimination compliance
   c. Conflicts of interest compliance
   d. Procurement compliance
   e. Duplication of programs
   f. Duplication of benefits

Additional Federal Resources

Weatherization Assistance Program: Minimizes the adverse effects of high-energy costs on low-income, elderly, and handicapped citizens through client education activities and weatherization services such as modifying heating system and adding insulation (US DOE 2011).

Section 108 Loan Guarantee Programs: Provides loan guarantees as security for federal loans for acquisition, rehabilitation, relocation, clearance, site preparation, special economic development activities, and construction of certain public facilities and housing (HUD 2011).

U.S. Department of Agriculture: Provides disaster assistance through the following:

- The Emergency Conservation Program provides emergency funding for farmers to rehabilitate farmland damaged by natural disasters and for carrying out emergency water conservation measures during periods of severe drought.
- The Non-Insured Crop Disaster Assistance Program provides financial assistance for non-insurable crop losses and planting prevented by disasters.

Emergency Watershed Protection Program: Undertakes emergency measures, including the purchase of floodplain easements for runoff retardation and soil erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood, or any other natural occurrence is causing or has caused a sudden impairment of the watershed (NRCS 2011). It is not necessary for an emergency to be declared by the President for an area to be eligible for assistance. The program objective is to assist sponsors and individuals in implementing emergency measures to relieve imminent hazards to life and property created by a natural disaster. Activities include providing financial and technical assistance to remove debris from streams, protecting destabilized stream banks, establishing cover on critically eroding lands, repairing conservation practices, and purchasing floodplain easements. The program is designed for installation of recovery measures.

5.2.3.2 Commonwealth Hazard Mitigation Funding Opportunities

Marcellus Shale Legacy Fund - Act 13 of 2012

The Marcellus Legacy Fund, established by Act 13 of 2012, facilitates the distribution of unconventional gas well impact fees to counties, municipalities, and commonwealth agencies. According to Section 2315(a)(6)(i) of the Act, a portion of the fee revenue is allocated to the Commonwealth Financing Authority. This funding supports statewide initiatives such as abandoned mine drainage abatement, abandoned well plugging, sewage treatment, greenways, trails and recreation, baseline water quality data collection, watershed restoration, and flood control (PA DCED 2024). Programs under the Marcellus Legacy Fund are described below:

Watershed Restoration and Protection Program (WRPP): Act 13 of 2012 establishes the Marcellus Legacy Fund and allocates funds to the Commonwealth Financing Authority for watershed restoration and protection projects. The overall goal of this program is to restore, and maintain restored stream reaches impaired by the uncontrolled discharge of non-point source polluted runoff, and ultimately to remove these streams from the PA DEP's Impaired Waters list.

Greenways, Trails and Recreation Program (GTRP): In addition, Act 13 of 2012 allocates funds to the Commonwealth Financing Authority (the "Authority") for planning, acquisition, development, rehabilitation, and repair of greenways, recreational trails, open space, parks and beautification projects. Projects can involve development, rehabilitation, and improvements to public parks, recreation areas, greenways, trails, and river conservation.

Flood Mitigation Projects: Finally, Act 13 of 2012 allocates funds to the Commonwealth Financing Authority (the "Authority") for funding statewide initiatives to assist with flood mitigation projects.

While most of the identified fiscal capabilities are available to all municipalities in Somerset County, the extent to which communities have leveraged these funding sources varies widely. It is expected that communities familiar with accessing grant programs will continue to pursue those grant sources, as appropriate.

Other Commonwealth Hazard Mitigation Funding Opportunities

Commonwealth programs that may provide financial support for mitigation activities include, but are not limited to:

- Community Conservation Partnerships Program
- Community Revitalization Program
- Floodplain Land Use Assistance Program
- Growing Greener Program
- Keystone Grant Program
- Local Government Capital Projects Loan Program
- Land Use Planning and Technical Assistance Program
- Pennsylvania Heritage Areas Program
- Pennsylvania Recreational Trails Program
- Shared Municipal Services

Technical Assistance Program

H2O PA

5.2.3.3 County and Municipal Financial Capabilities

Capital Improvement Planning

Capital improvement plans are often recommended by counties to their municipalities because these plans help identify specific capital projects to be funded and completed according to a defined schedule. Some of these projects involve improvements to facilities and infrastructure that provide hazard mitigation benefits. As such, during this update process, the county and its municipalities have been encouraged to consider the mitigation benefits associated with known or anticipated capital projects to help prioritize the execution and to develop awareness that mitigation grants may be available to help fund such projects.

Redevelopment Authority

The Redevelopment Authority of Somerset County plays a crucial role in administering various federal and state funding programs on behalf of the County of Somerset and its municipalities. This includes managing funds from the federal Community Development Block Grant (CDBG), HOME Investment Partnership, and state programs such as the Housing & Redevelopment Assistance Program, Redevelopment Assistance Capital Program, and Main Street Anchor Building Program. Through these funding sources, the Authority undertakes and manages numerous public improvement projects, including water, sanitary sewer, storm sewer, and streetscape improvements, as well as demolition activities and housing rehabilitation. These projects not only enhance the infrastructure and living conditions within the county but also significantly contribute to reducing hazard risks and improving community resilience (Somerset County 2025).

Special Purpose Taxes

Communities may exercise their taxing authority to raise funds for any project they see fit. This includes special taxes to fund mitigation measures. Spreading the cost of a community project among the community's taxpayers helps provide the greatest public good for relatively little individual cost.

Indebtedness through General Obligation Bonds

Some projects may be financed with general obligation bonds. With this method, the jurisdiction's taxing power is pledged to pay interest and principal to retire debt. General obligation bonds can be sold to finance permanent types of improvements, such as schools, municipal buildings, parks and recreation facilities. Voter approval may be re-quired (Somerset County 2020).

Partnering Arrangements or Intergovernmental Agreements

Intergovernmental cooperation is one manner of accomplishing common goals, solving mutual problems, and reducing expenditures. There are 50 municipalities within Somerset County. Each of these municipalities conducts its daily operations and provides various community services according to local needs and limitations. Each municipality varies in staff size, resource availability, fiscal status, service provision, constituent population, overall size, and vulnerability to the identified hazards.

Water/Sewer Fees

Water Authorities and Fees

Water authorities are multipurpose authorities that operate both water and sewer systems. The financing of water systems for lease back to the municipality is among the principal activities of the local government facilities' financing authorities. An operating water authority issues bonds to purchase existing facilities or to construct, extend, or improve a system. The primary source of revenue is user fees based on metered usage.

The cost of constructing or extending water supply lines can be funded by special assessments against abutting property owners. Tapping fees also help fund water system capital costs. Water utilities are directly operated by municipal governments and by privately owned public utilities regulated by the Pennsylvania Public Utility Commission. The PA DEP has a program to assist with consolidation of small individual water systems to make system upgrades more cost-effective.

Sewer Authorities and Fees

Sewer authorities include multipurpose authorities with sewer projects. The authorities issue bonds to finance acquisition of existing systems or to finance construction, extension, and improvements. Sewer authority operating revenues originate from user fees. The fee frequently is based on the amount of water consumed, and payment is enforced by the ability to terminate service or the imposition of liens against real estate. In areas with no public water supply, flat rate charges are calculated on average use per dwelling unit.

Municipal Authorities

Municipal authorities are most often used when major capital investments are required. In addition to sewage treatment, municipal authorities have been formed for water supply, airports, bus transit systems, swimming pools and other purposes. Joint authorities have the power to receive grants, borrow money and operate revenue generating pro-grams. Municipal authorities are authorized to sell bonds, acquire property, sign contracts and take similar actions. Authorities are governed by authority board members, who are appointed by the elected officials of the member municipalities (Somerset County 2020).

Circuit Rider Program (Engineer)

The Circuit Rider Program is an example of intergovernmental cooperation. This program offers municipalities with the ability to join together to accomplish a common goal. The Circuit Rider is a municipal engineer who serves several small municipalities simultaneously. These are municipalities that may be too small to hire a professional engineer for their own operations yet need the skills and expertise offered by an engineer. Municipalities can jointly obtain what no single municipality could obtain on its own.

5.2.3.4 Summary of Municipal Capabilities

The implementation of mitigation actions requires time and fiscal resources. While some mitigation actions are less costly than others, it is important that funds are available locally to implement policies and projects. Financial resources are particularly important if jurisdictions are trying to take advantage of Commonwealth or federal mitigation grant funding opportunities that require local-match contributions.

Municipalities participating in this planning effort were provided with a capabilities survey. Table 5-3 summarizes the responses of the municipalities based on financial capabilities. Appendix D includes copies of the individual municipal responses.

Table 5-3. Fiscal Capability

Municipality	Capital Improvements Program	Community Development Block Grants (CDBG)	Special Purpose Taxes	Gas/Electric Utility Fees	Water/Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation, Revenue, and/or Special Tax Bonds	Partnering Arrangements or Intergovernmental Agreements	Other
Somerset County	X	X	-	-	X	-	-	X	-	-
Addison (B)	-	-	-	-	X	-	-	-	-	-

Municipality	Capital Improvements Program	Community Development Block Grants (CDBG)	Special Purpose Taxes	Gas/Electric Utility Fees	Water/Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation, Revenue, and/or Special Tax Bonds	Partnering Arrangements or Intergovernmental Agreements	Other
Addison (T)	-	-	-	-	X	-	-	-	-	-
Allegheny (T)										
Benson (B)										
Berlin (B)	-	X	-	-	-	-	-	-	-	-
Black (T)										
Boswell (B)	-	X	X	-	-	-	-	-	-	-
Brothersvalley (T)	-	-	-	-	-	-	-	-	-	-
Callimont (B)										
Casselman (B)										
Central City (B)										
Conemaugh (T)	X	X	X	-	X	-	-	-	X	-
Confluence (B)	-	X	-	-	X	-	-	-	-	-
Elk Lick (T)	-	-	-	-	X	-	-	-	-	-
Fairhope (T)										
Garrett (B)										
Greenville (T)										
Hooversville (B)										
Indian Lake (B)										
Jefferson (T)	-	-	-	-	-	-	-	-	-	-
Jenner (T)	-	X	-	-	-	-	-	-	-	-
Jennerstown (B)	-	-	-	-	X	-	-	-	-	-
Larimer (T)	-	-	-	-	-	-	-	-	-	-
Lincoln (T)										
Lower Turkeyfoot (T)	-	-	-	-	-	-	-	-	-	-
Meyersdale (B)										
Middlecreek (T)	-	-	-	-	-	-	-	-	-	X
Milford (T)	-	-	-	-	X	X	X	X	X	-
New Baltimore (B)										
New Centerville (B)	-	-	-	-	-	-	-	-	-	-
Northampton (T)	-	-	-	-	-	-	-	-	-	-
Ogle (T)										
Paint (B)	-	-	-	-	-	-	-	-	-	-
Paint (T)										
Quemahoning (T)	-	-	-	-	-	-	-	-	-	-
Rockwood (B)										
Salisbury (B)	-	-	-	-	-	-	-	-	-	-

Municipality	Capital Improvements Program	Community Development Block Grants (CDBG)	Special Purpose Taxes	Gas/Electric Utility Fees	Water/Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation, Revenue, and/or Special Tax Bonds	Partnering Arrangements or Intergovernmental Agreements	Other
Seven Springs (B)										
Shade (T)										
Shanksville (B)										
Somerset (B)										
Somerset (T)										
Southampton (T)										
Stonycreek (T)										
Stoystown (B)										
Summit (T)										
Upper Turkeyfoot (T)										
Ursina (B)	-	X	-	-	X	-	-	-	-	-
Wellersburg (B)										
Windber (B)										

Notes: Middlecreek (T): RE Tax, Fines, Franchise Fees, RE Transfer, etc.
"X" indicates that the municipality currently has this capability in place.
"-" indicates no capability is currently in place.
Blank space indicates no response was received from the municipality.

5.2.4 Education and Outreach

Education and outreach programs and methods are used to implement mitigation activities and communicate hazard-related information. Examples include obtaining certification in programs, such as Firewise and StormReady, and developing and communicating hazard awareness and safety information to residents.

At the municipal level, education and outreach capabilities vary. Some municipalities have the capability to handle outreach initiatives while others rely on county resources. Several municipal websites post local plans and ordinances, and many municipalities post information regarding hazard-related topics. The local fire departments and emergency managers are active in the schools participating in programs, such as fire safety in the fall and attending other community activities to conduct outreach. Appendix D details the outreach and education conducted at the municipal level.

5.2.4.1 Public Information Programs

Flood Maps

Flood maps and flood data, including new digital maps for Somerset County, are available at the municipal offices for municipalities participating in the NFIP. County and municipality maps, tax maps, and property assessment records are available at the Planning Department and Somerset County's Board of Assessments, and deeds are available at the Recorder of Deeds Office.

Library Education Tools

Libraries have educational materials, available upon request, which are used at public speaking events or county meetings, when appropriate. The following educational materials are available, but are not limited to:

- Various types of training videos
- Pennsylvania emergency preparedness guides
- American Red Cross packets for flash flooding, hurricane, thunder and lightning, tornado, and winter storms
- Family disaster planning guides
- Homeland security information for businesses, family, individuals, neighborhoods, and schools
- Pandemic brochures

Outreach Projects

Several organizations (both public and private sector) have developed outreach projects, educational tools, and training programs. The county promotes both online and traditional in-person programs to appeal to as wide an audience as possible.

ReadyPA Campaign: Established by the Commonwealth of Pennsylvania, www.readypa.org is a website that aims to prepare the public for times of disaster by providing education on the risks within Pennsylvania, template emergency plans and kits, and information on ways to get involved with community organizations to help others.

CodeRED: The County uses CodeRED to send emergency notifications by phone, email, text and social media to keep citizens informed of emergencies such as an evacuation notices, utility outages, water main breaks, fire or floods, chemical spills, or other emergency situations.

Technical Assistance

Somerset County Emergency Services can support local, public, and private entities, as needed, through coordination and provision of information and equipment resources. These include both existing county capabilities and predetermined private and public resources.

5.2.4.2 Summary of Municipal Capabilities

Municipalities participating in this planning effort were provided with a Capability Assessment Survey. Table 5-4 summarizes the responses of the municipalities based on education and outreach capabilities. Appendix D includes copies of the individual municipal responses.

Table 5-4. Education and Outreach Capability

Municipality	Firewise Communities Certification	StormReady Certification	Natural Disaster or Safety-Related School Programs	Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	Public-private partnership initiatives addressing disaster-related issues	Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Other
Somerset County	-	X	-	X	-	X	-
Addison (B)	-	-	-	-	-	X	-

Municipality	Firewise Communities Certification	StormReady Certification	Natural Disaster or Safety-Related School Programs	Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	Public-private partnership initiatives addressing disaster-related issues	Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Other
Addison (T)	-	-	-	-	-	X	-
Allegheny (T)							
Benson (B)							
Berlin (B)	-	-	-	-	-	-	-
Black (T)							
Boswell (B)	-	-	X	-	-	X	-
Brothersvalley (T)	-	-	-	-	-	-	-
Callimont (B)							
Casselman (B)							
Central City (B)							
Conemaugh (T)	-	-	-	X	-	X	-
Confluence (B)	-	-	-	-	-	-	-
Elk Lick (T)	-	-	-	-	-	-	-
Fairhope (T)							
Garrett (B)							
Greenville (T)							
Hooversville (B)							
Indian Lake (B)							
Jefferson (T)	-	-	-	-	-	-	-
Jenner (T)	-	-	-	-	-	-	-
Jennerstown (B)	-	X	-	X	-	-	-
Larimer (T)	-	-	-	-	-	-	-
Lincoln (T)							
Lower Turkeyfoot (T)	-	-	-	-	-	X	-
Meyersdale (B)							
Middlecreek (T)	-	-	-	X	-	X	-
Milford (T)	-	-	-	-	-	-	-
New Baltimore (B)							
New Centerville (B)	-	-	-	-	-	-	-
Northampton (T)	-	-	-	-	-	-	-
Ogle (T)							
Paint (B)	-	-	-	-	-	-	-
Paint (T)							
Quemahoning (T)	-	-	-	-	-	-	-

Municipality	Firewise Communities Certification	StormReady Certification	Natural Disaster or Safety-Related School Programs	Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	Public-private partnership initiatives addressing disaster-related issues	Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Other
Rockwood (B)							
Salisbury (B)	-	-	-	-	-	-	-
Seven Springs (B)							
Shade (T)							
Shanksville (B)							
Somerset (B)							
Somerset (T)							
Southampton (T)							
Stonycreek (T)							
Stoystown (B)							
Summit (T)							
Upper Turkeyfoot (T)							
Ursina (B)	-	-	-	-	-	-	-
Wellersburg (B)							
Windber (B)							

Notes:
"X" indicates that the municipality currently has this capability in place.
"-" indicates no capability is currently in place.
Blank space indicates no response was received from the municipality.

5.2.5 Self-Assessment

Through the Capability Assessment Surveys, all participating jurisdictions were further asked to provide a self-assessment of their jurisdiction's capability in the areas of Planning and Regulatory Capability, Administrative and Technical Capability, Financial Capability, and Education and Outreach Capability. Respondents evaluated their degree of capability in these areas as "Limited", "Moderate", or "High." provides the summary results from municipalities that completed capability self-assessment worksheets.

Table 5-5. Capability Self-Assessment Matrix

Municipality	Capability Category			
	Planning and Regulatory Capability	Administrative and Technical Capability	Financial Capability	Education and Outreach Capability
Somerset County	H	M	H	H
Addison (B)	M	L	L	L
Addison (T)	M	L	L	L
Allegheny (T)				

Municipality	Capability Category			
	Planning and Regulatory Capability	Administrative and Technical Capability	Financial Capability	Education and Outreach Capability
Benson (B)				
Berlin (B)	M	L	M	L
Black (T)				
Boswell (B)	M	M	L	L
Brothersvalley (T)	L	L	L	L
Callimont (B)				
Casselman (B)				
Central City (B)				
Conemaugh (T)	H	H	M	H
Confluence (B)	L	L	L	L
Elk Lick (T)	M	M	M	M
Fairhope (T)				
Garrett (B)				
Greenville (T)				
Hooversville (B)				
Indian Lake (B)				
Jefferson (T)	M	M	M	L
Jenner (T)	M	M	M	M
Jennerstown (B)	L	L	L	L
Larimer (T)	L	L	L	L
Lincoln (T)				
Lower Turkeyfoot (T)	M	L	L	L
Meyersdale (B)				
Middlecreek (T)	L	L	L	L
Milford (T)	L	M	L	L
New Baltimore (B)				
New Centerville (B)	L	L	L	L
Northampton (T)	L	L	L	L
Ogle (T)				
Paint (B)	L	L	L	L
Paint (T)				
Quemahoning (T)	L	L	L	L
Rockwood (B)				
Salisbury (B)	L	L	L	L
Seven Springs (B)				
Shade (T)				
Shanksville (B)				
Somerset (B)				
Somerset (T)				
Southampton (T)				

Municipality	Capability Category			
	Planning and Regulatory Capability	Administrative and Technical Capability	Financial Capability	Education and Outreach Capability
Stonycreek (T)				
Stoystown (B)				
Summit (T)				
Upper Turkeyfoot (T)				
Ursina (B)				
Wellersburg (B)				
Windber (B)				

Note: Blank space indicates no response was received from the municipality. N/A = Listed on worksheet by jurisdiction.

Detailed information regarding the municipalities' capabilities self-assessments can be found in the municipal survey responses provided in Appendix C.

5.2.6 Plan Integration

According to FEMA, plan integration is a process where communities look critically at their existing planning framework and align their efforts. Integration of hazard mitigation principles into other local planning mechanisms (comprehensive plans, transportation plans, floodplain ordinances, etc.) and vice versa is vital to build a safer, more resilient community. This two-way exchange of information supports community-wide risk reduction, both before and after disasters occur. Not only will the community's planning efforts be better integrated, but by going through this process, there is a higher level of interagency coordination, which is just as important as the planning mechanisms themselves.

Within Somerset County, there are many existing plans and programs that support hazard risk management; thus, it is critical that this HMP integrate and coordinate with, and complement, those mechanisms.

The intention of the Planning Team and participating jurisdictions is to incorporate mitigation planning as an integral component of daily government operations. Planning Team members will work with local government officials to integrate the newly adopted hazard mitigation goals and actions into the general operations of government and partner organizations. By doing so, the Planning Team anticipates the following:

1) Hazard mitigation planning will be formally recognized as an integral part of overall emergency management efforts.
2) Hazard mitigation planning will be formally recognized as an integral part of land use policies and mechanisms.
3) The HMP, the County and municipal comprehensive plans, and the County and municipal EOPs will become mutually supportive documents that work in concert to meet the goals and needs of County residents.
4) Duplication of effort can be minimized.

As noted in Section 6 of this plan, Somerset County has made a concerted effort to reduce its vulnerability to natural and non-natural hazards in its planning and in its daily operations since the Somerset County HMP was last updated in 2020. The County and its jurisdictions have implemented various programs and projects to reduce the impacts of hazards. These projects, programs, and regulations have reduced risk caused by natural and non-natural hazards and support the goals and objectives of this HMP. It is the intent of the County and its participating municipalities to strengthen this focus on mitigation by continuing existing policies and by further implementing the mitigation policies contained in this HMP.

Implementation actions will include incorporating the goals of the HMP into ongoing planning, zoning, building, and engineering activities. Specifically, the County will urge municipalities to take the following actions:

- Fund hazard mitigation projects or actions in operating budgets to the extent possible.
- Notify other municipalities about grant and other funding opportunities as they arise.
- Use data and maps from this HMP as supporting documentation in grant applications.
- Review mitigation actions when allocating funding for the municipal budgets.
- Include hazard mitigation when updating municipal ordinances.
- Identify hazard areas in updates of comprehensive plans to identify land use issues.
- Review the HMP prior to land use or zoning changes and permitting or development decisions.

The information on hazards, risk, vulnerability, and mitigation contained in this HMP is based on the best science and technology available at the time of the plan's preparation. Additionally, plans were incorporated directly into this HMP update. All participating jurisdictions recognize that this information can be invaluable in making decisions under comprehensive, capital improvement, and emergency management plans. Existing processes and programs through which the HMP should be implemented are described below. Figure 5-1 illustrates the interrelationships between the HMP, the Somerset County comprehensive plan, the County EOP, and other community planning mechanisms. Existing processes and programs through which the HMP should be implemented are described below.

Plan participants will make every effort to implement the relevant sections and or data contained in the HMP utilizing administrative, budgetary, and regulatory processes as well as partnerships to the maximum extent, as described below.

5.2.6.1 Administrative

Administrative processes include departmental or organizational work plans, policies, or procedural changes that can be addressed by the following departments:

- Emergency Services
- Human Services
- Planning Commission

The Somerset County Emergency Management Office provides education and support to residents, businesses, and local governments to reduce disaster impacts through a comprehensive, all-hazard emergency management program. The Emergency Manager, appointed by the Board of Commissioners, integrates various plans and strategies to enhance community safety. Key responsibilities include fostering interagency cooperation, managing the Emergency Operations Center (EOC), and coordinating disaster mitigation, prevention, preparedness, response, and recovery efforts. This integrated approach ensures a unified and effective response to emergencies, enhancing the resilience and safety of the community (Somerset County 2025).

The Somerset County Planning Commission plays a vital role in integrating various plans to enhance community resilience and preparedness. As the advisory and research arm of the county government, the commission provides technical advice to municipal officials and fosters inter-governmental cooperation. By formulating and implementing comprehensive growth plans, and administering zoning and land subdivision regulations, the commission ensures that development aligns with the county's strategic vision and regulatory standards. These efforts facilitate the seamless integration of plans, contributing to a safer and more sustainable community by enhancing the county's ability to prepare for and respond to potential hazards .

5.2.6.2 Budgetary Process

In terms of budgetary processes, the county will review capital budgets and, if funding is available, include a line item for mitigation actions. In addition, the county will maximize mitigation aspects of proposed projects and will encourage municipalities to do likewise.

5.2.6.3 Regulatory Measures

Regulatory measures—such as the creation of executive orders, ordinances, and other directives—will be considered to support hazard mitigation in the following areas:

- Comprehensive Planning – Institutionalize hazard mitigation for new construction and land use.
- Zoning and Ordinances
- Building Codes – Enforce codes or higher standard in hazard areas.
- Capital Improvements Plan – Ensure that the person responsible for projects under this plan evaluates whether new construction is in a high hazard area (such as a flood plain) so the construction is designed to mitigate the risk. Revise requirements for this plan to include hazard mitigation in the design of new construction.
- NFIP – Continue participation in this program and explore participation in CRS Program.
- Stormwater Management – Continue to implement stormwater management plans.
- HMP Plan Coordination – Prior to formal changes (amendments) to master plans, zoning, ordinances, capital improvement plans, or other mechanisms that control development, all above-mentioned plans must be reviewed to ensure they are consistent with the HMP.

5.2.6.4 Funding

The County and local municipalities will consider multiple grant sources to fund eligible projects. In addition to the funding sources described in Section 5.2.3, opportunities may include the following programs:

- Stafford Act, Section 406 – Public Assistance Program Mitigation Grants
- Federal Highway Administration
- Catalog of Federal Domestic Assistance
- U.S. Fire Administration – Assistance to Firefighter Grants
- U.S. Small Business Administration Pre- and Post-Disaster Mitigation Loans
- U.S. Department of Economic Development Administration Grants
- U.S. Army Corps of Engineers
- U.S. Department of Interior, Bureau of Land Management
- Other sources to be determined

5.2.6.5 Partnerships

The following opportunities for partnerships will be encouraged to provide a broader support and understanding of hazard mitigation:

Creative partnerships for funding and incentives:

- Public-private partnerships, including utilities and businesses
- Commonwealth of Pennsylvania cooperation
- American Red Cross
- In-kind resources

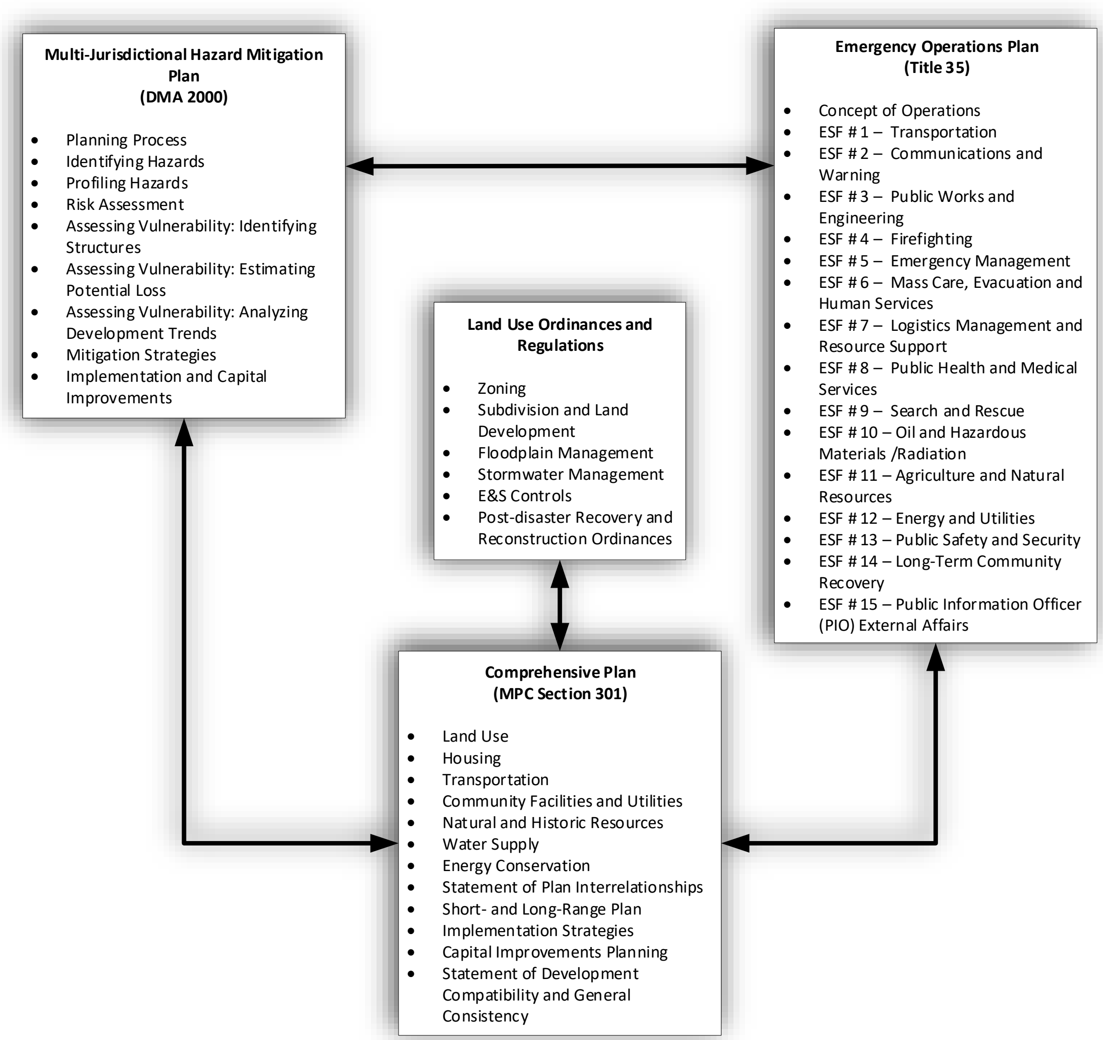
Working with federal and commonwealth agencies:

- Department of Homeland Security
- Federal Emergency Management Agency
- National Oceanic and Atmosphere Administration
- National Weather Service
- Pennsylvania Emergency Management Agency

- Pennsylvania Department of Transportation
- Pennsylvania Department of Environmental Protection
- Pennsylvania State Police
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture
- U.S. Department of Transportation
- U.S. Geological Service

During the plan evaluation process, the Planning Team will identify additional policies, programs, practices, and procedures that could be modified to accommodate hazard mitigation actions and will include these findings and recommendations in the HMP Progress Report.

Figure 5-1. Plan Interrelationships



Note:

E&S	*Erosion and Sedimentation*
ESF	*Emergency Support Function*
MPC	*Municipal Planning Code*

SECTION 6 MITIGATION STRATEGY

This section describes the process by which the Somerset County Planning Team will reduce or eliminate potential losses from the natural and non-natural hazards identified in Section 4.2 of this Hazard Mitigation Plan (HMP). The mitigation strategy focuses on existing and potential future mitigation actions to alleviate the effects of hazards on Somerset County's population, economy, and general building stock.

This section provides a summary of the 2025 HMP update process, outlines the mitigation goals and objectives set forth in the 2025 HMP update, describes the process for identifying and analyzing mitigation techniques, and provides the mitigation action plan.

6.1 UPDATE PROCESS SUMMARY

The goals and objectives listed in the Somerset County HMP were first examined through the dispersal of the Mitigation Strategy 5-Year Plan Review Worksheet (Mitigation Review Worksheet). During the 5-year review, the Planning Team members were afforded the opportunity to comment on the goals, objectives, and actions that were listed in the existing HMP.

The general mitigation planning approach used to develop this plan is based on (1) the Federal Emergency Management Agency (FEMA) publication, "Local Mitigation Planning Handbook" (FEMA 2013), and (2) the Pennsylvania All-Hazard Mitigation Planning Standard Operating Guide (SOG) (PEMA 2020):

1. **Review of Existing Mitigation Plan Goals, Objectives, and Mitigation Action Plan:** Existing mitigation goals and objectives, and the 2017 HMP mitigation actions were first examined at the Planning Team Kick-Off Meeting and revisited during the Mitigation Strategy Workshop. Both of these meetings were open to members of the Planning Team and stakeholders. The Steering Committee thoroughly reviewed and updated the mitigation goals and objectives utilizing the latest information gathered through the hazard profiles, vulnerability assessments, and the risk assessment; the mitigation goals and objectives were also compared to the State HMP goals and objectives. The updated goals and objectives were then presented at the Mitigation Solutions Workshop for final review and approval. Plan participants continued to review and provide progress on the 2017 mitigation actions throughout the planning process.
2. **Develop and Update Mitigation Strategies:** Mitigation actions were identified based on the risk assessment, mitigation goals and objectives, existing policies, and input from the Planning Team and planning partners.
3. **Mitigation Strategy Prioritization and Implementation:** The potential mitigation actions were qualitatively evaluated and are described in more detail in Section 6.4 of this HMP. Mitigation actions were prioritized into three categories: high, medium, and low. High priority and medium priority mitigation actions are recommended for implementation before low priority actions; however, based on county and municipal-specific needs, cost estimation, and available funding, some low priority mitigation actions may be addressed first.
4. **Document the Mitigation Planning Process:** The entire mitigation planning process is documented throughout this HMP, particularly in Section 3.

This section summarizes past mitigation goals and past mitigation action status and provides an update of mitigation strategies and additional past mitigation accomplishments.

6.1.1 Review of the Past Mitigation Goals

The mitigation goals identified in the 2020 version of the HMP are listed below:

- **Goal 1: Reduce potential injury/death and damage to existing community as-sets due to floods, flash floods, and ice jams.**

- **Goal 2: Reduce potential injury/death and damage to existing community as-sets due all hazards.**
- **Goal 3: Promote disaster-resistant future development.**
- **Goal 4: Promote hazard mitigation as a public value in recognition of its im-portance to the health, safety, and welfare of the population.**
- **Goal 5: Improve response and recovery capabilities.**
- **Goal 6: Protect critical infrastructure in hazard areas.**

Table 6-1 shows the results of the Steering Committee and Planning Team review of the 2020 goals and objectives. The Steering Committee chose to reorganize the goals and objectives by moving away from organizing them by hazard, to reduce redundancy and overlap. Additional information on the Steering Committee's evaluation of each goal and objective is provided in the table.

Table 6-1. Steering and Planning Team Evaluation of 2020 Goals and Objectives

2020 Somerset County Hazard Mitigation Plan Goals and Objectives		Evaluation
Goal 1	**Reduce potential injury/death and damage to existing community as- sets due to floods, flash floods, and ice jams.**	• Incorporated into new Goals 1 and 2.
Objective 1.1	**Identify, evaluate, and implement strategies for repetitive loss and severe repetitive loss properties.**	• Deleted from this goal.
Objective 1.2	**Provide public outreach/education to decrease the impact of flooding, flash flooding, and ice jam flooding.**	• Deleted from this goal. Added new objective 1.2
Objective 1.3	**Address identified data limitation regarding lack of detailed information about individual structures located in the special flood hazard area (SFHA).**	• Deleted from this goal. Added new objective 1.2
Objective 1.4	**Complete actions and projects to decrease the impact of flooding and to acquire, elevate, demolish or demolish/reconstruct properties, repetitive loss properties and severe repetitive loss properties.**	• Deleted from this goal. Added new objective 1.2
Objective 1.5	**Minimize the financial impact of personal mitigation measures on residents.**	• Deleted from this goal.
Goal 2	**Prevent hazards from impacting the community.**	• Incorporated into new Goals 1 and 2.
Objective 2.1	**Identify communities that do not have warning systems and shelters.**	• Deleted from this goal.
Objective 2.2	**Implement measures to reduce the likelihood of all natural and human caused hazards.**	• Deleted from this goal. Added new Objective 1.2
Objective 2.3	**Develop a comprehensive approach to reducing potential injury/damages for critical facilities and vulnerable populace in hazard areas.**	• Deleted from this goal.
Objective 2.4	**Evaluate water sources that could be impacted by contamination.**	• Deleted from this goal.
Objective 2.5	**Identify key roadways that are adequate to support vehicles transporting hazardous materials.**	• Deleted from this goal.
Objective 2.6	**Enhance response capability of county and municipal services.**	• Deleted and covered in Goal 5
Goal 3	**Promote disaster-resistant future development.**	• Carried over into new goal 2.
Objective 3.1	**Review and maintain comprehensive plan and encourage municipalities to implement zoning/land use ordinances that avoid high-hazard areas.**	• Carried over into new Objective 2.1.

2020 Somerset County Hazard Mitigation Plan Goals and Objectives		Evaluation
Objective 3.2	**Encourage municipalities to enforce building codes that provide protection for new construction and substantial renovations from the effects of identified hazards.**	• Carried over into new Objective 2.2.
Objective 3.3	**Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.**	• Carried over into new Objective 2.3
Goal 4	**Promote hazard mitigation as a public value in recognition of its im-portance to the health, safety, and welfare of the population.**	• Reworded to focus on Education and Awareness and carried over into new Goal 3
Objective 4.1	**Provide public education to increase awareness of hazards and opportunities for mitigation.**	• Carried over into new Objective 3.1
Objective 4.2	**Promote partnerships between municipalities and the county to continue to develop a county-wide approach to identifying and implementing mitigation actions.**	• Carried over into new Objective 3.2
Objective 4.3	**Continue the promotion of disaster resistance in the business community via the hazard mitigation planning initiative.**	• Carried over into new Objective 3.3
Goal 5	**Improve response and recovery capabilities.**	• New goal 4
Objective 5.1	**Increase awareness by residents (e.g., through public outreach/education) of actions to take during an emergency.**	• Carried over into new Objective 4.1
Objective 5.2	**Enhance response capabilities of county and municipal fire, police, and emergency medical services personnel to special populations.**	• Carried over into new Objective 4.2
Objective 5.3	**Ensure adequate emergency planning is conducted.**	• Carried over into new Objective 4.3
Goal 6	**Protect critical infrastructure in hazard areas.**	• New goal 5
Objective 6.1	**Identify the most vulnerable and critical structures and infrastructure due to the effects of natural and human caused hazards.**	• Carried over into new Objective 5.1
Objective 6.2	**Protect utilities from natural and human caused hazards.**	• Carried over into new Objective 5.2
Objective 6.3	**Enhance planning and mitigation strategy development for high hazard dams and levees.**	• Carried over into new Objective 5.3

6.1.2 Past Mitigation Action Status and Update of Mitigation Strategies

In the 2020 HMP, Somerset County identified 56 actions and initiatives to support an improved understanding of hazard risk and vulnerability, to enhance mitigation capabilities, and/or to reduce vulnerability of infrastructure. Progress on the 2020 mitigation actions was evaluated during the 2025 update process.

Somerset County, via various representatives on the Steering Committee and Planning Team, was provided with a Mitigation Review Worksheet identifying all of the county and municipal actions and initiatives from the 2020 HMP. The respondents were asked to indicate the status of each action ("No Progress/Unknown," "In Progress/Not Yet Complete," "Continuous," "Completed," or "Discontinued") and provide review comments on each.

The completed Mitigation Action Plan Review Worksheet is provided in Table 6-2. Projects and initiatives identified as "Complete" and "Discontinued" have been removed from this plan update. The actions that the county has identified as "No Progress/Unknown" or "In Progress/Not Yet Complete" have been carried forward in the updated mitigation strategies identified in Table 6-4 (unless otherwise determined by the county to be a discontinued project). Actions from the 2020 HMP that reflect continuously maintaining capabilities have also been removed. The language in some actions being carried over has been adjusted to reflect changes to county needs and capabilities. Some actions were also merged to reduce redundant efforts on behalf of the county and its municipalities.

Table 6-2. Past Mitigation Action Status

Description	Jurisdiction	Status	Review Comments
1.1.1 - Identify existing repetitive loss and severe repetitive loss properties	Conemaugh Township, Elk Lick Township, Garrett Borough, Meyersdale Borough, Middlecreek Township, Somerset Township, Windber Borough, Somerset County	In Progress	
1.1.2 - Investigate options for mitigating repetitive-loss properties within the floodplain	Conemaugh Township, Elk Lick Township, Garrett Borough, Meyersdale Borough, Middlecreek Township, Somerset Township, Windber Borough, Somerset County	In Progress	
1.1.3 - Protect natural wetlands that may absorb floodwaters.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	Salisbury Borough to discontinue.
1.2.1 - Work with township/borough officials to increase awareness among property owners, including informational mailings to property owners in the special flood hazard area (SFHA), and sponsoring a series of workshops about costs and benefits of: • Acquiring and minimizing the cost of flood insurance coverage • Property acquisition, relocation, elevation, dry flood proofing, and wet flood proofing."	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township,	No Progress	

Description	Jurisdiction	Status	Review Comments
	Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
1.3.1 - Obtain information for structures in the areas with the highest relative vulnerability to determine the best property protection methods. The information to be obtained includes: • Lowest-floor elevation • Number of stories • Presence of a basement • Market and/or replacement value	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	In-progress	
1.3.2 - Obtain information for all remaining structures in the special flood hazard area (SFHA) to determine the best property protection methods to promote with individual property owners. Techniques for gathering information over time should include developing and implementing a program for integrated information "capture" at key points in normal township administrative procedures, including ap-plications for building permits at township/borough offices.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
1.3.3 - Apply to PEMA for funding to undertake detailed flood studies for county's	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell	No Progress	

Description	Jurisdiction	Status	Review Comments
high-hazard areas to determine base flood elevation (BFE) and a full range of flood-recurrence intervals (50%, 20%, 10%, 4%, 2%, and 1% chance events) for use in future refinements of the mitigation plan.	Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
1.4.1 - Engage or collaborate with municipalities to identify repetitive flood properties that do not qualify as a severe repetitive or repetitive loss properties.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
1.4.2 - Elevate structures to above the base flood elevation.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner	Continuous	

Description	Jurisdiction	Status	Review Comments
	Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
1.4.3 - Encourage regular maintenance on stormwater management structures (culverts, drainage ditches, etc.) and replace any stormwater management structures as needed.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
1.4.4 - Raise roadways that routinely flood to above the base flood elevation.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning	Continuous	Somerset Borough has installed and raised curbing

Description	Jurisdiction	Status	Review Comments
	Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
1.4.5 - Upgrade and replace manholes to prevent the release of sewage during a flood.	Somerset County	In progress	
1.5.1 - Encourage participation of all municipalities in the National Flood Insurance Program (NFIP).	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	In progress	
2.1.1 - Identify at risk populations with the highest relative vulnerability to all hazards impacting Somerset County.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township,	In progress	

Description	Jurisdiction	Status	Review Comments
	Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
2.1.2- Conduct qualitative evaluation process for managing stranded travelers (e.g., temporary shelters).	Somerset County	No Progress	
2.2. 1- Complete a new digitized parcel project and develop a GIS data layer that would be used to assist with damage assessment and estimation of loss during mitigation efforts.	Somerset County	No Progress	
2.3.1 - Retrofit manufactured homes with anchors or tie-down straps.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	In progress	
2.4.1 - Obtain detailed topographic and planimetric surveys for areas along interstate highways in Somerset County identified as crossing points for tributaries that feed drinking water reservoir(s). Follow-up efforts would include preliminary engineering studies to determine earth-work and/or other diversions needed to prevent hazardous material spills in these areas from contaminating drinking water supplies.	Somerset County	Continuous	

Description	Jurisdiction	Status	Review Comments
2.5.1 - Maintain the county's commodity flow study to identify those roadways most travelled by vehicles transporting hazardous materials.	Somerset County	Continuous	
2.5.2 - Perform studies on roadways used to transport hazardous materials to ensure that they are adequate for this purpose.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	In Progress	
2.6.1 - Work with Southwestern Regional Counterterrorism Task Force (PA Region 13) to plan and prepare for terrorist activities and all hazards, including training and exercises.	Somerset County	Continuous	
3.1.1 - Ensure that land use, zoning, and related regulations require an adequate setback of structures from the edge of wild lands.	Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township,	Continuous	

Description	Jurisdiction	Status	Review Comments
	Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
3.1.2 - Distribute and promote the inclusion of vulnerability analysis information as part of the periodic plan review to all at the public/private levels.	Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
3.1.3 - Present cost/benefit analysis to townships/boroughs that do not have comprehensive plans and/or zoning/land use ordinances.	Somerset County	Continuous	
3.1.4 - Integrate evaluation of snow removal and emergency access logistics with new development planning.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven	Continuous	

Description	Jurisdiction	Status	Review Comments
	Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
3.2.1 - Enforce building codes include the use of roofing shingles that are less likely to be blown off of roofs.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
3.2.2 - Enforce building codes include the use of fire-resistant materials for structures near wild lands.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	

Description	Jurisdiction	Status	Review Comments
3.2.3 - Enhance building codes at the municipal level.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
3.2.4 - Create an ordinance requiring all buildings to have a fire break free of brush or trees of at least 100 feet around them in rural areas.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	No Progress	
3.3.1 - Provide updated training to municipal building inspectors.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope	Continuous	

Description	Jurisdiction	Status	Review Comments
	Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
3.3.2 - Work with township/borough officials to increase awareness among mobile homeowners (i.e., informational mailings, workshops) about requirements for proper anchoring for wind protection.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	No Progress	
4.1.1 - Continue to distribute quarterly newsletter to members of the public on current EMA projects hazard mitigation efforts.	Somerset County	Continuous	
4.1.2 - Educate residents to follow recommendations made by healthcare professionals to protect themselves from current risks.	Somerset County	No Progress	

Description	Jurisdiction	Status	Review Comments
4.1.3 - Identify and publicize easily prevented reasons for emergencies (e.g., careless smoking resulting in fires).	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
4.2.1- Convene regular meetings of the LPT to discuss issues and progress related to the implementation of the hazard mitigation plan.	Somerset County	No Progress	
4.3.1 - Renew and expand commitments to hazard mitigation planning among partner organizations through the local planning team.	Somerset County	Continuous	
5.1.1 - The LEPC should work with SARA facility owners and operators to ensure compliance with the emergency off-site response plan.	Somerset County	Continuous	
5.1.2 - Increase awareness by residents of actions to take during an emergency, including sheltering and evacuation procedures. Methods to be used can include public outreach and education.	Somerset County	No Progress	
5.1.3 - Continue to collaborate with local law enforcement and authorities to promote public awareness of the prevention, intervention, and treatment of drug abuse.	Somerset County	Continuous	

Description	Jurisdiction	Status	Review Comments
5.1.4- Collaborate with partnering agencies to promote awareness of invasive species (i.e. spotted lantern fly).	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
5.2.1 - Identify and maintain lists of functional needs populations requiring additional emergency response.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
5.2.2 - Evaluate means to enhance response capability for functional needs residents.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope	Continuous	

Description	Jurisdiction	Status	Review Comments
	Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
5.2.3 - Continue to actively engage with the first responder community through outreach to enhance and secure our local level emergency service capabilities.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
5.3.1 - Maintain county and municipal emergency operations plans in accordance with Title 35 requirements.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore	Continuous	

Description	Jurisdiction	Status	Review Comments
	Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
5.3.2 - Encourage organizations responsible for critical infrastructure to maintain current Continuity of Operations (COOP) plans.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
5.3.3 - Ensure that a current emergency plan is in place for each facility that uses, manufactures, or stores hazardous materials.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township,	Continuous	

Description	Jurisdiction	Status	Review Comments
	Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
5.3.4 - Conduct post-disaster community recovery planning.	Somerset County	Continuous	
5.3.5 - Maintain debris management plan.	Somerset County	Continuous	
5.3.6 - Enhance the public safety agency personnel and equipment update system to allow input of data from first responders and public works.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	Continuous	
6.1.1 - Investigate options for protecting critical infrastructure impacted by all-hazards.	Somerset County	In Progress	
6.1.2 - Conduct cost-benefit analysis of protection of critical infrastructure.	Somerset County	No Progress	
6.1.3 - Conduct qualitative evaluation process for critical facilities and residents to determine relative vulnerability and gather information for subsequent refinements of this mitigation plan.	Somerset County	No Progress	
6.1.4 - Develop action plan for reducing potential damage and loss of function at identified critical facilities and infrastructure.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh	No Progress	

Description	Jurisdiction	Status	Review Comments
	Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
6.2.1 - Amend development regulations to require below ground power and telephone transmission lines and bury lines already in existence.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough, Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County	No Progress	
6.3.1 - Review, update, and exercise high hazard dam plans.	Addison Borough, Addison Township, Allegheny Township, Benson Borough, Berlin Borough, Black Township, Boswell Borough, Brothersvalley Township, Callimont Borough, Casselman Borough, Central City Borough, Conemaugh Township, Confluence Borough, Elk Lick Township, Fairhope Township, Garrett Borough, Greenville Township, Hooversville Borough, Indian Lake Borough, Jefferson Township, Jenner Township, Jennerstown Borough, Larimer Township, Lincoln Township, Lower Turkeyfoot Township, Meyersdale Borough,	Continuous	

Description	Jurisdiction	Status	Review Comments
	Middlecreek Township, Milford Township, New Baltimore Borough, New Centerville Borough, Northampton Township, Ogle Township, Paint Borough, Paint Township, Quemahoning Township, Rockwood Borough, Salisbury Borough, Seven Springs Borough, Shade Township, Shanksville Borough, Somerset Borough, Somerset Township, Southampton Township, Stonycreek Township, Stoystown Borough, Summit Township, Upper Turkeyfoot Township, Ursina Borough, Wellersburg Borough, Windber Borough, Somerset County		
6.3.2 - Further examine inundation areas and how to better-inform and protect vulnerable populations.	Somerset County	Continuous	
6.3.3 - Work with the Greater Johnstown Water Authority and contracted engineer on constructing a new RCC spillway, stilling basin, and parapet wall for the North Fork Dam.	Somerset County	Completed	

6.2 MITIGATION GOALS AND OBJECTIVES

This section describes the mitigation goals and objectives set forth in the 2025 HMP update.

6.2.1 2025 Mitigation Goals

The Steering Committee reviewed the 2020 HMP goals to determine their continuing applicability to county mitigation needs and decided to update them. The updated goals and objectives were distributed to the Planning Team at the Mitigation Solutions Workshop. The Planning Team reviewed and approved the updated goals for the 2025 HMP. The 2025 Somerset County HMP goals are in line with the State HMP mitigation goals, embody the overarching needs and concerns of the county and participating municipalities, and address both natural and non-natural hazard risk reduction.

The 2025 Somerset County HMP goals are listed below:

1. **Goal 1:** Protect life, property, the environment, and critical infrastructure from hazard impacts.
2. **Goal 2**: Promote disaster-resistant future development.
3. **Goal 3**: Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.
4. **Goal 4**: Improve response and recovery capabilities.
5. **Goal 5:** Protect critical infrastructure in hazard areas.
6. **Goal 6**: Reduce the risk of natural hazards for socially vulnerable populations and underserved communities.
7. **Goal 7:** Address long-term vulnerabilities from High Hazard Dams.

6.2.2 2025 Mitigation Objectives

The goals listed above were used to develop relevant objectives. The objectives address the results of the vulnerability assessment in more specific terms and reflect the possible effects that can be mitigated for the identified hazards, as well as existing limitations in available data and information. The objectives that were originally identified during the 2020 HMP update process were reviewed by the Steering Committee and updated to reflect changes in county priorities and capabilities since the HMP was written in 2020. Objectives related to each of the goals are listed below, and Table 6-1 summarizes the evaluation of all goals and objectives from the 2020 HMP.

GOAL Objective	Description
GOAL 1	**Protect life, property, the environment, and critical infrastructure from hazard impacts.**
Objective 1.1	**Develop and enhance regulations limiting development in hazard-prone areas**
Objective 1.2	Lessen impacts on natural resources and open space from natural and human-caused hazards.
Objective 1.3	Direct new growth away from hazard-prone areas.
Objective 1.4	Integrate hazard mitigation into other community plans and programs.
GOAL 2	**Promote disaster-resistant future development.**
Objective 2.1	Review and maintain comprehensive plan and encourage municipalities to implement zoning/land use ordinances that avoid high-hazard areas.
Objective 2.2	Encourage municipalities to enforce building codes that provide protection for new construction and substantial renovations from the effects of identified hazards.

GOAL Objective	Description
Objective 2.3	Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.
GOAL 3	**Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.**
Objective 3.1	Provide public education to increase awareness of hazards and opportunities for mitigation.
Objective 3.2	Promote partnerships between municipalities and the county to continue to develop a county-wide approach to identifying and implementing mitigation actions.
Objective 3.3	Continue the promotion of disaster resistance in the business community via the hazard mitigation planning initiative.
Objective 3.4	Encourage local participation in the Community Rating System (CRS) Program.
Objective 3.5	Educate local officials regarding their municipalities' risk and the precautions they can take.
Objective 3.6	Encourage homeowners, renters, and businesses to insure their properties against all hazards, including flood insurance coverage under the National Flood Insurance Program (NFIP).
GOAL 4	**Improve response and recovery capabilities.**
Objective 4.1	Increase awareness by residents (e.g., through public outreach/education) of actions to take during an emergency.
Objective 4.2	Enhance response capabilities of county and municipal fire, police, and emergency medical services personnel to special populations.
Objective 4.3	Ensure adequate emergency planning is conducted.
GOAL 5	***Protect critical infrastructure in hazard areas.***
Objective 5.1	Identify the most vulnerable and critical structures and infrastructure due to the effects of natural and human caused hazards.
Objective 5.2	Protect utilities from natural and human caused hazards.
Objective 5.3	Enhance planning and mitigation strategy development for high hazard dams and levees.
GOAL 6	**Reduce the risk of natural hazards for socially vulnerable populations and underserved communities.**
Objective 6.1	Encourage the establishment of policies to help ensure the prioritization and implementation of mitigation actions and/or projects designed to benefit socially vulnerable populations and underserved communities.
Objective 6.2	Promote sustainable and equitable land development practices that direct future development away from vulnerable areas and, when that is not possible, encourage the use of more resilient design, construction, and materials.
Objective 6.3	Encourage and support multi-jurisdictional mitigation projects that leverage funding and support from multiple levels of government and community organizations.
GOAL 7	**Address long-term vulnerabilities from High Hazard Dams.**
Objective 7.1	Ensure dam infrastructure is maintained.
Objective 7.2	Support the identification and access to funding to repair/rehabilitate/replace dams.
Objective 7.3	Ensure emergency action plans are developed and updated.

6.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

Concerted efforts were made to ensure that the county and its municipalities developed updated mitigation strategies. Updated strategies included activities and initiatives covering the range of mitigation action types described in recent FEMA planning guidance, "Local Mitigation Planning Handbook" (FEMA 2013). Mitigation action types listed in the FEMA guidance include the following:

1. **Local Plans and Regulations:** These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
2. **Structure and Infrastructure Projects:** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. These project types could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
3. **Natural Systems Protection:** These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.
4. **Education and Awareness Programs:** These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as NFIP and CRS, StormReady (NOAA), and Firewise (National Fire Protection Association [NFPA]) Communities (FEMA 2013).

The participants of the Mitigation Strategy Workshop and the Planning Team identified actions that relate to the techniques listed above. Table 6-3 identifies which mitigation techniques are applicable for the hazards included in the 2025 HMP. In some cases, the mitigation techniques identified for a particular hazard reflect ongoing mitigation capabilities, not specific projects included in the updated HMP.

Table 6-3. Mitigation Technique Matrix

Hazard	Local Plans and Regulations	Structure and Infrastructure Projects	Natural Systems Protection	Education and Awareness Programs
Dam Failure	X	X		X
Drought	X	X		X
Earthquake	X	X		X
Environmental Hazards – Coal Mining	X	X		X
Environmental Hazards – Gas and Liquid Pipelines	X	X		X
Environmental Hazards – Hazardous Materials Releases	X	X		X
Flood, Flash Flood, and Ice Jam	X	X	X	X
Hailstorm	X	X		X
Invasive Species	X	X		X
Landslide	X	X		X
Levee Failure	X	X		X
Opioid Addiction Response	X	X		X
Pandemic and Infectious Disease	X	X		X
Subsidence, Sinkholes	X	X		X
Terrorism (Cyber Attacks)	X	X		X

Hazard	Local Plans and Regulations	Structure and Infrastructure Projects	Natural Systems Protection	Education and Awareness Programs
Tornado, Windstorm	X	X		X
Transportation Accidents	X	X		X
Utility Interruption	X	X		X
Wildfire	X	X		X
Winter Storm	X	X		X

6.4 MITIGATION ACTION PLAN

Representatives from the county and all participating municipalities selected mitigation strategies and initiatives to pursue until the next plan update. These actions also include some actions identified during the 2020 update that are still relevant or in progress. This section describes 2025 mitigation initiatives, mitigation strategy prioritization and implementation, and prioritization of mitigation actions.

6.4.1 2025 Mitigation Initiatives

Table 6-4 summarizes the updated mitigation strategies identified by the county and all municipalities, including the following information:

- Mitigation actions for individual and multiple hazards
- Mitigation action type
- Department or agency primarily responsible for project initiation and/or implementation
- Estimated cost for the mitigation action and identification of known or potential sources of funding
- Implementation schedule
- Implementation priority

The updated mitigation actions were documented using the Mitigation Action Worksheet distributed at the Mitigation Solution Workshop. Refer to Appendix X for a blank version of the Mitigation Action Worksheet and to Appendix X for completed worksheets. Specific mitigation actions were identified to prevent future losses; however, current funding is not identified for all of these actions at present, but potential funding sources (see Section 5) are indicated to support future implementation.

Likewise, limited information was available for addressing the long-term vulnerability of Somerset County's residents to pandemic and infectious disease. Though many preparedness actions can be identified for addressing that hazard, Somerset County's mitigation strategy includes few actions that specifically address pandemics and infectious disease. The county will continue to research long-term solutions to the risk from pandemic and infectious disease as part of the annual review process.

The county and municipalities have limited resources to take on new responsibilities or projects. The implementation of these mitigation actions is dependent on the approval of the local elected governing body and the ability of the jurisdiction to obtain funding from local or outside sources.

The Planning Team prioritized proposed mitigation actions during the Mitigation Action Worksheet documentation process. In general, mitigation actions ranked as highest priorities should be addressed first within each jurisdiction, depending upon funding. However, medium- or low priority mitigation actions will be considered for implementation as funding becomes available. Therefore, the ranking levels should be considered as a preliminary ranking, which will evolve based on prevailing priorities and discretion of local governments, the public, the Pennsylvania Emergency Management Agency (PEMA), and FEMA as the plan update is implemented.

Table 6-4. Hazard Mitigation Strategy

Note: Some of the identified mitigation initiatives in Table 6-4 are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in county or municipal priorities. Actions that have been carried over from the 2017 version of the HMP may have been reworded and given a new initiative designation to conform to current needs and procedures. The countywide actions apply to the county as an entity and participating municipalities. For most countywide actions, the action applies to all participating municipalities. See Appendix H for action worksheets that specify to which municipalities other countywide actions apply.

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
County-Led (Multiple Municipalities)												
1.1.1	Identify existing repetitive loss and severe repetitive loss properties	Existing	Flooding	1,2,6	Somerset County EMA		High	Low	Local	Short	Medium	SIP
1.1.2	Investigate options for mitigating repetitive-loss properties within the floodplain	Existing	Flooding	1,2,7	Somerset County EMA		High	Low	Local	Short	Medium	SIP
1.1.3	Protect natural wetlands that may absorb floodwaters.	N/A	Flooding	1,2	Somerset County EMA	Municipalities	High	Medium	Local, FMA and PDM	Short	Medium	NSP
1.2.1	Work with township/borough officials to increase awareness among property owners, including informational mailings to property owners in the special flood hazard area (SFHA), and sponsoring a series of workshops about costs and benefits of: • Acquiring and minimizing the cost of flood insurance coverage. • Property acquisition, relocation, elevation, dry flood proofing, and wet flood proofing.	New and Existing	Flooding	1,2,3,4,5	Somerset County EMA	Planning	Medium	Low	Local and FMA	Short	Medium	EAP

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
1.3.1	Obtain information for structures in the areas with the highest relative vulnerability to determine the best property protection methods. The information to be obtained includes: • Lowest-floor elevation • Number of stories • Presence of a basement • Market and/or replacement value	Existing	Flooding	1,2,3,4,5	Somerset County EMA	Planning	Medium	Low	Local	Short	Medium	SIP
1.3.2	Obtain information for all remaining structures in the special flood hazard area (SFHA) to determine the best property protection meth-ods to promote with individual property owners. Techniques for gathering information over time should include developing and im-plementing a program for integrat-ed information "capture" at key points in normal township admin-istrative procedures, including ap-plications for building permits at township/borough offices.	Existing	Flooding	1,2,3,4,5	Somerset County EMA	Planning	Medium	Low	Local	Short	Medium	SIP
1.3.3	Apply to PEMA for funding to undertake detailed flood studies for county's high-hazard areas to determine base flood elevation (BFE) and a full range of flood-recurrence intervals (50%, 20%, 10%, 4%, 2% and 1% chance events) for use in future refinements of the mitigation plan.	N/A	Flooding	1,2,5,	Somerset County EMA	Planning	Medium	Low	Local, FMA and PDM	Short	Medium	LPR
1.4.1	Engage or collaborate with municipalities to identify repetitive flood properties that do not qualify as a severe repetitive or repetitive loss properties.	Existing	Flooding	1,2,3,5	Somerset County Planning	EMA	Medium	Low	Local	Short	Medium	SIP

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
1.4.2	Elevate structures to above the base flood elevation.	New and Existing	Flooding	1,2,5	Somerset County Planning	EMA	High	High	Local, FMA and PDM	Short	Medium	SIP
1.4.3	Encourage regular maintenance on stormwater management structures (culverts, drainage ditches, etc.) and replace any stormwater management structures as needed.	New and Existing	Flooding	1,2,4	Somerset County EMA	Planning	Medium	Medium	Local	Short	Medium	SIP
1.4.4	Raise roadways that routinely flood to above the base flood elevation.	New	Flooding	1,2,5	Somerset County Municipalitie s		High	High	Local, FMA and PDM	Short	Medium	SIP
1.4.5	Upgrade and replace manholes to prevent the release of sewage during a flood.	N/A	Flooding	1,2,6	Somerset County Municipalitie s		Medium	Medium	Local, FMA and PDM	Short	Medium	SIP
1.5.1	Encourage participation of all municipalities in the National Flood Insurance Program (NFIP).	N/A	Flooding	1,2,3	Somerset County EMA		Medium	Low	Local	Short	High	EAP
2.1.1	Identify at risk populations with the highest relative vulnerability to all hazards impacting Somerset County	N/A	All-Hazards	1,3,6	Somerset County EMA		Medium	Low	Local and EMP G	Short	Medium	EAP
2.1.2	Conduct qualitative evaluation process for managing stranded travelers (e.g., temporary shelters).	N/A	All-Hazards	1,4,6	Somerset County EMA		Medium	Low	Local and EMP G	Short	Low	SIP
2.2.1	Complete a new digitized parcel project and develop a GIS data layer that would be used to assist with damage assessment and estimation of loss during mitigation efforts.	N/A	All-Hazards	2,4	Somerset County GIS		Medium	Low	Local	Short	Low	SIP

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
2.3.1	Retrofit manufactured homes with anchors or tie-down straps.	New and Existing	All-Hazards	1,2,6	Somerset County Municipalities	Somerset County GIS	Medium	Medium	PDM and FMA Funds	Short	Medium	SIP
2.4.1	Obtain detailed topographic and planimetric surveys for areas along interstate highways in Somerset County identified as crossing points for tributaries that feed drinking water reservoir(s). Follow-up efforts would include preliminary engineering studies to determine earth-work and/or other diversions needed to prevent hazardous material spills in these areas from contaminating drinking water supplies.	N/A	Utility Interruption, Environmental Hazards, Transportation Accidents, Drought	2,4	Somerset County EMA	Somerset County GIS	Medium	Low	Local and EMPG	Short	Low	SIP
2.5.1	Maintain the county's commodity flow study to identify those roadways most travelled by vehicles transporting hazardous materials.	N/A	Environmental Hazards, Transportation Accidents	1,2,6	Somerset County LEPC		Medium	Medium	Local, EMPG, LEPC, and HMEP	Short	High	LPR
2.5.2	Perform studies on roadways used to transport hazardous materials to ensure that they are adequate for this purpose.	N/A	Environmental Hazards, Transportation Accidents	1,2,6	Somerset County LEPC		Medium	Medium	Local, EMPG, LEPC, and HMEP	Short	High	LPR
2.6.1	Work with Southwestern Regional Counterterrorism Task Force (PA Region 13) to plan and prepare for terrorist activities and all hazards, including training and exercises.	N/A	All-Hazards	1,2,3,6	Somerset County EMA		Medium	Medium	Local and EMPG	Short	High	LPR
3.1.1	Ensure that land use, zoning, and related regulations require an adequate setback of structures from the edge of wild lands.	New and Existing	Wildfire	1,2,5,6	Somerset County Planning	Municipalities	Low	Low	Local	Short	Medium	LPR

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
3.1.2	Distribute and promote the inclusion of vulnerability analysis information as part of the periodic plan review to all at the public/private levels.	N/A	All-Hazards	1,2,3,6	Somerset County EMA, Somerset County Planning	Municipalities	Low	Low	Local	Short	Medium	EAP
3.1.3	Present cost/benefit analysis to townships/boroughs that do not have comprehensive plans and/or zoning/land use ordinances.	N/A	All-Hazards	1,2,5	Somerset County Planning		Low	Low	Local	Short	Low	EAP
3.1.4	Integrate evaluation of snow removal and emergency access logistics with new development planning.	N/A	Winter Storms	4	Somerset County Planning	Municipalities	Low	Low	Local	Short	Medium	LPR
3.2.1	Enforce building codes include the use of roofing shingles that are less likely to be blown off of roofs.	New and Existing	Tornado/Windstorms, Winter Storm, Hail, Hurricane	1,2	Somerset County Municipalities		Medium	Low	Local	Short	Medium	LPR
3.2.2	Enforce building codes include the use of fire-resistant materials for structures near wild lands.	New and Existing	Wildfire	1,2	Somerset County Municipalities		Medium	Low	Local	Short	Medium	LPR
3.2.3	Enhance building codes at the municipal level.	New and Existing	All-Hazards	1,2	Somerset County Planning	Municipalities	Medium	Low	Local	Short	Medium	LPR
3.2.4	Create an ordinance requiring all buildings to have a fire break free of brush or trees of at least 100 feet around them in rural areas.	New and Existing	Wildfire	1,2,5,6	Somerset County Planning	Municipalities	Medium	Low	Local	Short	Medium	LPR

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
3.3.1	Provide updated training to municipal building inspectors.	N/A	All-Hazards	1,3	Somerset County Planning	Municipalities	Medium	Low	Local	Short	Low	EAP
3.3.2	Work with township/borough officials to increase awareness among mobile homeowners (i.e., informational mailings, workshops) about requirements for proper anchoring for wind protection.	N/A	Tornado/Windstorms, Hail, Hurricane, Flooding	1,3,6	Somerset County Planning		Medium	Low	Local	Short	Medium	LPR
4.1.1	Continue to distribute quarterly newsletter to members of the public on current EMA projects hazard mitigation efforts.	N/A	All-Hazards	3	Somerset County EMA		Medium	Low	Local and EMP G	Short	Medium	LPR
4.1.2	Educate residents to follow recommendations made by healthcare professionals to protect themselves from current risks.	N/A	Pandemic and Infectious Disease	3	PADOH		Medium	Low	Local	Short	High	LPR
4.1.3	Identify and publicize easily prevented reasons for emergencies (e.g., careless smoking resulting in fires).	N/A	All-Hazards	1,3,4	Somerset County EMA		Medium	Low	Local	Short	Medium	LPR
4.2.1	Convene regular meetings of the LPT to discuss issues and progress related to the implementation of the hazard mitigation plan.	N/A	All-Hazards	3	Somerset County EMA	Somerset County Planning	Medium	Low	Local	Short	Medium	LPR
4.3.1	Renew and expand commitments to hazard mitigation planning among partner organizations through the local planning team.	N/A	All-Hazards	3	Somerset County EMA	Somerset County Planning	Medium	Low	Local	Short	High	EAP

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
5.1.1	The LEPC should work with SARA facility owners and operators to ensure compliance with the emergency off-site response plan.	N/A	Environmental Hazards	1,4	Somerset County EMA	LEPC	Medium	Low	Local and HME RP	Short	High	LPR
5.1.2	Increase awareness by residents of actions to take during an emergency, including sheltering and evacuation procedures. Methods to be used can include public outreach and education.	N/A	All-Hazards	1,3	Somerset County EMA		Medium	Low	Local and EMP G	Short	Medium	EAP
5.1.3	Continue to collaborate with local law enforcement and authorities to promote public awareness of the prevention, intervention, and treatment of drug abuse.	N/A	Opioid Epidemic	1,3	Somerset County EMA		Medium	Low	Local	Short	Medium	EAP
5.1.4	Collaborate with partnering agencies to promote awareness of invasive species (i.e. spotted lantern fly).	N/A	Invasive Species	1,3	Somerset County EMA		Medium	Low	Local	Short	Medium	EAP
5.2.1	Identify and maintain lists of functional needs populations requiring additional emergency response.	N/A	All-Hazards	1,6	Somerset County EMA	Municipality EMAs	Medium	Low	Local and EMP G	Short	Medium	LPR
5.2.2	Evaluate means to enhance response capability for functional needs residents.	N/A	All-Hazards	1,6	Somerset County EMA	Municipality EMAs	Medium	Low	Local and EMP G	Short	Medium	LPR
5.2.3	Continue to actively engage with the first responder community through outreach to enhance and secure our local level emergency service capabilities.	N/A	All-Hazards	3,4	Somerset County EMA		Medium	Low	Local Grant s	Short	Medium	EAP
5.3.1	Maintain county and municipal emergency operations plans in accordance with Title 35 requirements.	N/A	All-Hazards	1,2,3 ,4,5, 6	Somerset County EMA	Municipality EMAs	Medium	Low	Local and EMP G	Short	Low	LPR

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
5.3.2	Encourage organizations responsible for critical infrastructure to maintain current Continuity of Operations (COOP) plans.	N/A	All-Hazards	1,2,4 ,5,6	Somerset County EMA	Municipalities	Medium	Low	Local	Short	High	LPR
5.3.3	Ensure that a current emergency plan is in place for each facility that uses, manufactures, or stores hazardous materials.	N/A	All-Hazards	1,2,4 ,5,6	Somerset County EMA	Municipalities	Medium	Low	Local and HME RP	Short	Medium	LPR
5.3.4	Conduct post-disaster community recovery planning.	N/A	All-Hazards	1,2,4 ,5,6	Somerset County EMA		Medium	Low	Local and EMP G	Short	Medium	LPR
5.3.5	Maintain debris management plan.	N/A	Tornado/Windstorm, Dam Failure, Flash Flood, Flooding, Ice Jams, Winter Storm, Hurricane, Tropical Storm, Landslide, Earthquake	1,2,4 ,5,6	Somerset County EMA		Medium	Low		Short	High	EAP
5.3.6	Enhance the public safety agency personnel and equipment update system to allow input of data from first responders and public works.	N/A	All-Hazards	1,4	Somerset County EMA	Municipalities	Medium	Medium	Local Grant s	Short	Medium	EAP
6.1.1	Investigate options for protecting critical infrastructure impacted by all-hazards.	New and Existing	All-Hazards	1,5	Somerset County EMA	Planning	Medium	Low	Local	Short	High	EAP
6.1.2	Conduct cost-benefit analysis of protection of critical infrastructure.	New and Existing	All-Hazards	1,5	Somerset County EMA		Medium	Low	Local and FMA	Short	High	LPR

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
6.1.3	Conduct qualitative evaluation process for critical facilities and residents to determine relative vulnerability and gather information for subsequent refinements of this mitigation plan.	New and Existing	All-Hazards	1,5,6	Somerset County EMA	Planning	Medium	Low	Local and PDM	Short	Medium	LPR
6.1.4	Develop action plan for reducing potential damage and loss of function at identified critical facilities and infrastructure.	New and Existing	All-Hazards	1,5,6	Somerset County EMA	Business Owners	Medium	Low	Local	Short	Medium	LPR
6.2.1	Amend development regulations to require below ground power and telephone transmission lines and bury lines already in existence.	New and Existing	Utility Interruption	1,2,4 ,5,6	Somerset County EMA	Municipalities	Medium	Medium	Local	Short	Medium	SIP
6.3.1	Review, update, and exercise high hazard dam plans.	N/A	Dam Failure	1,5,7	High Hazard Dam Owners		Medium	Low	Local, EMPG, HHPD	Short	High	LPR
6.3.2	Further examine inundation areas and how to better-inform and protect vulnerable populations.	N/A	Dam Failure	1,6	Somerset County EMA		Medium	Low	Local, EMPG, HHPD	Short	Medium	EAP
6.3.3	Install generator, concrete pad, and all connections at Somerset County Emergency Management Building	New	All-Hazards	1,2,4	Somerset County EMA		Medium	Medium	Local, HMA	Medium	High	SIP

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Mitigated Hazard(s)	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
Boswell Borough												
6.3.4	Upgrade drainage areas to prevent stormwater from causing damages.	New	Flooding	1,2,6	Boswell Borough		Medium	High	Local, HMA	Medium	High	SIP
Jefferson Township												
6.3.5	Replace and improve existing piping at Moores School Road and Shaffer Run Road to mitigate flooding and erosion.	New	Flooding and Erosion	1,2,6	Jefferson Township		Medium	High	Local, HMA	Medium	High	SIP
New Centerville Borough												
6.3.6	Upgrade culvert under Reese Street.	New	Flooding	1,2,6	New Centerville Borough		Medium	High	Local, HMA	Medium	High	SIP

Notes:

** The letters associated with the initiative number indicate the lead agency (i.e., county or municipality)*
*** Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.*

EMA = Emergency Management Agency
EMS = Emergency Medical Services
FEMA = Federal Emergency Management Agency
FMA = Flood Mitigation Assistance
PA DEP = Pennsylvania Department of Environmental Protection
PDM = Pre-Disaster Mitigation Program
PEMA = Pennsylvania Emergency Management Agency

Costs: *These rough estimates should be used where actual project costs cannot reasonably be established at this time:*

Low = < $10,000
Medium = $10,000 to $100,000
High = > $100,000

DOF = Depending on funding
HMGP = Hazard Mitigation Grant Program

Timeline:
Short Term = 1 to 5 years. Long Term = 5 years or greater.

Mitigation Category:

- Education and Awareness Programs (EAP) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.
- Local Plans and Regulations (LPR) - Actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
- Natural Systems Protection (NSP) - Actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Structure and Infrastructure Project (SIP) - Actions that involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.

6.4.2 Mitigation Strategy Prioritization and Implementation

Section 201.6(c) (3) (iii) of Title 44 Code of Federal Regulations (44 CFR) requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a cost-benefit review of the proposed projects and their associated costs. This allows the jurisdictions to select the most cost-effective actions for implementation first, not only to use resources efficiently, but also to make a realistic start toward mitigating risks.

Mitigation benefits are defined as future damages and losses that would be eliminated and/or reduced by implementing the proposed mitigation project, and include physical damage to structures and infrastructure, loss of service or function, and emergency management costs. Particularly for physical ("shovel-in-the-ground") mitigation projects, jurisdictions were encouraged to estimate project costs as well as to identify the anticipated benefits. Where exact project costs and potential benefits were not available, ranges were identified (high, medium, low) for each, allowing a qualitative evaluation of project cost-effectiveness.

PEMA has developed a mitigation actions evaluation and prioritization process to provide a consistent, uniform approach for counties and jurisdictions to use to consider, in a systematic way, the best mitigation strategies for their communities (PEMA 2020). Jurisdictions first evaluate feasibility of mitigation actions by using the following ten evaluation criteria:

- **Life Safety:** The Planning Team assesses to what extent a mitigation action will protect individuals from being injured or killed by a hazard.
- **Property Protection:** The Planning Team assesses to what extent the action will protect property, including homes, businesses, and critical infrastructure.
- **Technical:** It is important to determine whether the proposed action is technically feasible, will help to reduce losses in the long term, and has minimal secondary impacts. Here, the Planning Team determines whether the alternative action is a whole or partial solution, or not a solution at all.
- **Political:** Understanding current opinions of community and state political leadership regarding issues related to the environment, economic development, safety, and emergency management will provide valuable insight into the level of political support offered for mitigation activities and programs. Proposed mitigation objectives sometimes fail because of a lack of political acceptability.
- **Legal:** Without the appropriate legal authority, the action cannot lawfully be undertaken. When considering this criterion, the Planning Team determines whether a jurisdiction has the legal authority at the state, tribal, or local level to implement the action, or whether the jurisdiction must pass new laws or regulations. Each level of government operates under a specific source of delegated authority. As a general rule, most local governments operate under enabling legislation that gives them the power to engage in different activities. Jurisdictions should identify the unit of government undertaking the mitigation action and include an analysis of the inter-relationships between local, regional, state, and federal governments. Legal authority is likely to have a significant role later in the process when the state, tribe, or community determines the ways in which mitigation activities can best be carried out, and the extent to which mitigation policies and programs can be enforced.
- **Environmental:** Impact on the environment is an important consideration because of public desire for sustainable and environmentally healthy communities. In addition, many statutory considerations, such as the National Environmental Policy Act (NEPA), should be counted when using federal funds. Jurisdictions need to evaluate whether, when implementing mitigation actions, the potential negative consequences to environmental assets such as threatened and endangered species, wetlands, and other protected natural resources.
- **Social:** The public must support the overall implementation strategy and specific mitigation actions. Therefore, the projects have to be evaluated in terms of community acceptance. Likewise, the Planning Team should determine if implementing a mitigation action will have a beneficial or negative effect on a particular segment of the population.

- **Administrative:** Under this part of the evaluation criteria, the Planning Team examines the anticipated staffing, funding, and maintenance requirements for the mitigation action to determine whether the jurisdiction has the personnel and administrative capabilities necessary to implement the action or whether outside help will be necessary.
- **Local Champion:** Having an individual who will lead the implementation of a project, particularly a complex project, is essential for implementing it.
- **Other Community Objectives:** The Planning Team evaluates to what extent implementing the mitigation action supports other community objectives, such as increasing parks and recreation, quality of life, and economic development.

Table 6-5 shows the feasibility evaluation for each identified mitigation action. For each criterion, how feasible or effective the action is in the above criteria was indicated with a "+" (highly effective or feasible), "N" (neutral or not applicable), or a "-" (ineffective or not feasible). All actions were deemed feasible.

Table 6-5. Evaluation of Mitigation Actions

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
1.1.1	Identify existing repetitive loss and severe repetitive loss properties	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
1.1.2	Investigate options for mitigating repetitive-loss properties within the floodplain	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
1.1.3	Protect natural wetlands that may absorb floodwaters.	+	+	+	+	+	+	+	+	+	+	(10) + (0) N (0) -
1.2.1	Work with township/borough officials to increase awareness among property owners, including informational mailings to property owners in the special flood hazard area (SFHA), and sponsoring a series of workshops about costs and benefits of: - Acquiring and minimizing the cost of flood insurance coverage - Property acquisition, relocation, elevation, dry flood proofing, and wet flood proofing.	+	+	+	+	+	N	+	N	+	+	(8) + (2) N (0) -
1.3.1	Obtain information for structures in the areas with the highest relative vulnerability to determine the best property protection methods. The information to be obtained includes: · Lowest-floor elevation · Number of stories · Presence of a basement · Market and/or replacement value	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
1.3.2	Obtain information for all remaining structures in the special flood hazard area (SFHA) to determine the best property protection meth-ods to promote with individual property owners. Techniques for gathering information over time should include developing and im-plementing a program for integrat-ed information “capture” at key points in normal township admin-istrative procedures, including ap-plications for building permits at township/borough offices.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
1.3.3	Apply to PEMA for funding to undertake detailed flood studies for county’s high-hazard areas to determine base flood elevation (BFE) and a full range of flood- recurrence intervals (50%, 20%, 10%, 4%, 2% and 1% chance events) for use in future refinements of the mitigation plan.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
1.4.1	Engage or collaborate with municipalities to identify repetitive flood properties that do not qualify as a severe repetitive or repetitive loss properties.	+	+	+	+	+	N	+	-	+	+	(8) + (1) N (1) -
1.4.2	Elevate structures to above the base flood elevation.	+	+	+	+	+	N	+	-	+	+	(8) + (1) N (1) -
1.4.3	Encourage regular maintenance on stormwater management structures (culverts, drainage ditches, etc.) and replace any stormwater management structures as needed.	+	+	+	+	+	N	+	-	+	+	(8) + (1) N (1) -
1.4.4	Raise roadways that routinely flood to above the base flood elevation.	+	+	+	+	+	N	+	-	+	+	(8) + (1) N (1) -
1.4.5	Upgrade and replace manholes to prevent the release of sewage during a flood.	+	+	-	+	+	N	+	-	+	+	(7) + (1) N (2) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
1.5.1	Encourage participation of all municipalities in the National Flood Insurance Program (NFIP).	+	+	+	N	+	N	+	-	+	+	(7) + (2) N (1) -
2.1.1	Identify at risk populations with the highest relative vulnerability to all hazards impacting Somerset County	+	+	+	+	+	N	+	+	-	+	(8) + (1) N (1) -
2.1.2	Conduct qualitative evaluation process for managing stranded travelers (e.g., temporary shelters).	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
2.2.1	Complete a new digitized parcel project and develop a GIS data layer that would be used to assist with damage assessment and estimation of loss during mitigation efforts.	+	N	N	-	+	N	+	-	N	+	(4) + (4) N (2) -
2.3.1	Retrofit manufactured homes with anchors or tie-down straps.	+	+	+	+	+	N	-	-	+	+	(7) + (1) N (2) -
2.4.1	Obtain detailed topographic and planimetric surveys for areas along interstate highways in Somerset County identified as crossing points for tributaries that feed drinking water reservoir(s). Follow-up efforts would include preliminary engineering studies to determine earth-work and/or other diversions needed to prevent hazardous material spills in these areas from contami-nating drinking water supplies.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
2.5.1	Maintain the county's commodity flow study to identify those roadways most travelled by vehicles transporting hazardous materials.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
2.5.2	Perform studies on roadways used to transport hazardous materials to ensure that they are adequate for this purpose.	+	N	N	+	+	N	+	+	+	+	(7) + (3) N (0) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
2.6.1	Work with Southwestern Regional Counterterrorism Task Force (PA Region 13) to plan and prepare for terrorist activities and all hazards, including training and exercises.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
3.1.1	Ensure that land use, zoning, and related regulations require an adequate setback of structures from the edge of wild lands.	+	+	+	+	+	+	+	+	+	+	(10) + (0) N (0) -
3.1.2	Distribute and promote the inclusion of vulnerability analysis information as part of the periodic plan review to all at the public/private levels.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
3.1.3	Present cost/benefit analysis to townships/boroughs that do not have comprehensive plans and/or zoning/land use ordinances.	+	+	N	N	+	N	+	-	+	+	(6) + (3) N (1) -
3.1.4	Integrate evaluation of snow removal and emergency access logistics with new development planning.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
3.2.1	Enforce building codes include the use of roofing shingles that are less likely to be blown off of roofs.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
3.2.2	Enforce building codes include the use of fire-resistant materials for structures near wild lands.	+	+	+	+	+	+	-	+	+	+	(9) + (0) N (1) -
3.2.3	Enhance building codes at the municipal level.	+	+	+	+	+	N	-	N	+	+	(7) + (2) N (1) -
3.2.4	Create an ordinance requiring all buildings to have a fire break free of brush or trees of at least 100 feet around them in rural areas.	+	+	+	+	+	+	-	+	+	+	(9) + (0) N (1) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
3.3.1	Provide updated training to municipal building inspectors.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
3.3.2	Work with township/borough officials to increase awareness among mobile homeowners (i.e., informational mailings, workshops) about requirements for proper anchoring for wind protection.	+	+	+	+	+	N	-	+	+	+	(8) + (1) N (1) -
4.1.1	Continue to distribute quarterly newsletter to members of the public on current EMA projects hazard mitigation efforts.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
4.1.2	Educate residents to follow recommendations made by healthcare professionals to protect themselves from current risks.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
4.1.3	Identify and publicize easily prevented reasons for emergencies (e.g., careless smoking resulting in fires).	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
4.2.1	Convene regular meetings of the LPT to discuss issues and progress related to the implementation of the hazard mitigation plan.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
4.3.1	Renew and expand commitments to hazard mitigation planning among partner organizations through the local planning team.	+	+	N	+	+	N	+	+	+	+	(8) + (2) N (0) -
5.1.1	The LEPC should work with SARA facility owners and operators to ensure compliance with the emergency off-site response plan.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
5.1.2	Increase awareness by residents of actions to take during an emergency, including sheltering and evacuation procedures. Methods to be used can include public outreach and education.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
5.1.3	Continue to collaborate with local law enforcement and authorities to promote public awareness of the prevention, intervention, and treatment of drug abuse.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
5.1.4	Collaborate with partnering agencies to promote awareness of invasive species (i.e. spotted lantern fly).	+	+	+	+	+	+	+	+	+	+	(10) + (0) N (0) -
5.2.1	Identify and maintain lists of functional needs populations requiring additional emergency response.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
5.2.2	Evaluate means to enhance response capability for functional needs residents.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
5.2.3	Continue to actively engage with the first responder community through outreach to enhance and secure our local level emergency service capabilities.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -
5.3.1	Maintain county and municipal emergency operations plans in accordance with Title 35 requirements.	+	N	+	+	+	N	+	+	-	+	(7) + (2) N (1) -
5.3.2	Encourage organizations responsible for critical infrastructure to maintain current Continuity of Operations (COOP) plans.	+	+	N	+	+	N	+	+	N	+	(7) + (3) N (0) -
5.3.3	Ensure that a current emergency plan is in place for each facility that uses, manufactures, or stores hazardous materials.	+	+	+	+	+	+	+	+	+	+	(10) + (0) N (0) -
5.3.4	Conduct post-disaster community recovery planning.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
5.3.5	Maintain debris management plan.	+	+	+	+	+	+	+	+	+	+	(10) + (0) N (0) -
5.3.6	Enhance the public safety agency personnel and equipment update system to allow input of data from first responders and public works.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.1.1	Investigate options for protecting critical infrastructure impacted by all-hazards.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.1.2	Conduct cost-benefit analysis of protection of critical infrastructure.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.1.3	Conduct qualitative evaluation process for critical facilities and residents to determine relative vulnerability and gather information for subsequent refinements of this mitigation plan.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.1.4	Develop action plan for reducing potential damage and loss of function at identified critical facilities and infrastructure.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.2.1	Amend development regulations to require below ground power and telephone transmission lines and bury lines already in existence.	+	N	+	+	+	N	-	+	N	+	(6) + (3) N (1) -
6.3.1	Review, update, and exercise high hazard dam plans.	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.3.2	Further examine inundation areas and how to better-inform and protect vulnerable populations.	+	N	+	+	+	N	+	+	+	+	(8) + (2) N (0) -

Initiative*	Mitigation Initiative	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total
6.3.3	Install generator, concrete pad, and all connections at Somerset County Emergency Management Building	+	+	+	+	+	N	+	+	+	+	(9) + (1) N (0) -
6.3.4	Upgrade drainage areas to prevent stormwater from causing damages.	+	+	+	+	+	N	+	+	N	N	(7) + (3) N (0) -
6.3.5	Replace and improve existing piping at Moores School Road and Shaffer Run Road to mitigate flooding and erosion.	+	+	+	+	+	N	+	+	N	N	(7) + (3) N (0) -
6.3.6	Upgrade culvert under Reese Street.	+	+	+	+	+	N	+	+	N	N	(7) + (3) N (0) -

6.4.3 Prioritization of Mitigation Actions

Actions that are deemed feasible (i.e., receive a positive evaluation score) were then compared and prioritized using another set of criteria (PEMA 2020):

- Effectiveness (20% of score) – The extent to which an action reduces the vulnerability of people and property.
- Efficiency (30% of score) – The extent to which time, effort, and cost is well used as a means of reducing vulnerability. This criterion assesses the benefits of an action versus the cost of the action's implementation.
- Multi-Hazard Mitigation (20% of score) – The action reduces vulnerability for more than one hazard.
- Addresses High-Risk Hazard (15% of score) – The action reduces vulnerability for people and property from a hazard(s) identified as high-risk.
- Addresses Critical Communications/Critical Infrastructure (15% of score) – The action pertains to the maintenance of critical functions and structures such as transportation, supply chain management, data circuits, etc.

Scores in each criterion range from 0 to 3. The action's priority is determined by using a formula based on the criteria values and weights. Priority values range from 0 to 3 as well. An action's priority is then determined using the following scale (PEMA 2020):

- Low priority = 0 – 1.8
- Medium priority = 1.9 – 2.4
- High priority = 2.5 – 3

Table 6-6 shows the prioritization scores for the identified, feasible mitigation actions. Municipal officials reviewed and updated the prioritization values based on local needs.

Table 6-6. Prioritization Scoring of Mitigation Actions

Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard	Address High Risk	Address Crit Communications/ Infrastructure	Priority
1.1.1	Identify existing repetitive loss and severe repetitive loss properties	2	2	2	3	2	2.15
1.1.2	Investigate options for mitigating repetitive-loss properties within the floodplain	2	2	2	3	2	2.15
1.1.3	Protect natural wetlands that may absorb floodwaters.	2	2	2	3	2	2.15
1.2.1	Work with township/borough officials to increase awareness among property owners, including informational mailings to property owners in the special flood hazard area (SFHA), and sponsoring a series of workshops about costs and benefits of: • Acquiring and minimizing the cost of flood insurance coverage • Property acquisition, relocation, elevation, dry flood proofing, and wet flood proofing.	2	2	2	3	3	2.3
1.3.1	Obtain information for structures in the areas with the highest relative vulnerability to determine the best property protection methods. The information to be obtained includes: • Lowest-floor elevation • Number of stories • Presence of a basement • Market and/or replacement value	2	2	1	3	2	1.95
1.3.2	Obtain information for all remaining structures in the special flood hazard area (SFHA) to determine the best property protection meth-ods to promote with individual property owners. Techniques for gathering information over time should include developing and im-plementing a program for integrat-ed information “capture” at key points in normal township admin-istrative procedures, including ap-plications for building permits at township/borough offices.	2	2	1	3	2	1.95
1.3.3	Apply to PEMA for funding to undertake detailed flood studies for county’s high-hazard areas to determine base flood elevation (BFE) and a full range of flood- recurrence intervals (50%, 20%, 10%, 4%, 2% and 1% chance events) for use in future refinements of the mitigation plan.	2	2	2	3	3	2.3
1.4.1	Engage or collaborate with municipalities to identify repetitive flood properties that do not qualify as a severe repetitive or repetitive loss properties.	2	2	2	3	2	2.15
1.4.2	Elevate structures to above the base flood elevation.	2	2	1	3	3	2.1
1.4.3	Encourage regular maintenance on stormwater management structures (culverts, drainage ditches, etc.) and replace any stormwater management structures as needed.	2	2	2	3	2	2.15

Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard	Address High Risk	Address Crit Communications/ Infrastructure	Priority
1.4.4	Raise roadways that routinely flood to above the base flood elevation.	2	2	2	3	2	2.15
1.4.5	Upgrade and replace manholes to prevent the release of sewage during a flood.	2	2	1	3	2	1.95
1.5.1	Encourage participation of all municipalities in the National Flood Insurance Program (NFIP).	3	3	2	3	2	2.65
2.1.1	Identify at risk populations with the highest relative vulnerability to all hazards impacting Somerset County	2	2	3	3	2	2.35
2.1.2	Conduct qualitative evaluation process for managing stranded travelers (e.g., temporary shelters).	2	2	1	3	1	1.8
2.2.1	Complete a new digitized parcel project and develop a GIS data layer that would be used to assist with damage assessment and estimation of loss during mitigation efforts.	1	1	2	2	2	1.5
2.3.1	Retrofit manufactured homes with anchors or tie-down straps.	2	2	3	3	2	2.35
2.4.1	Obtain detailed topographic and planimetric surveys for areas along interstate highways in Somerset County identified as crossing points for tributaries that feed drinking water reservoir(s). Follow-up efforts would include preliminary engineering studies to determine earth-work and/or other diversions needed to prevent hazardous material spills in these areas from contami-nating drinking water supplies.	1	1	2	3	2	1.65
2.5.1	Maintain the county's commodity flow study to identify those roadways most travelled by vehicles transporting hazardous materials.	2	3	2	3	3	2.6
2.5.2	Perform studies on roadways used to transport hazardous materials to ensure that they are adequate for this purpose.	2	3	2	3	3	2.6
2.6.1	Work with Southwestern Regional Counterterrorism Task Force (PA Region 13) to plan and prepare for terrorist activities and all hazards, including training and exercises.	3	2	3	3	2	2.55
3.1.1	Ensure that land use, zoning, and related regulations require an adequate setback of structures from the edge of wild lands.	2	2	2	3	2	2.15
3.1.2	Distribute and promote the inclusion of vulnerability analysis information as part of the periodic plan review to all at the public/private levels.	3	2	1	3	2	2.15
3.1.3	Present cost/benefit analysis to townships/boroughs that do not have comprehensive plans and/or zoning/land use ordinances.	1	2	2	2	2	1.8
3.1.4	Integrate evaluation of snow removal and emergency access logistics with new development planning.	2	2	2	3	2	2.15
3.2.1	Enforce building codes include the use of roofing shingles that are less likely to be blown off of roofs.	2	2	1	3	2	1.95
3.2.2	Enforce building codes include the use of fire-resistant materials for structures near wild lands.	2	2	2	3	3	2.3
3.2.3	Enhance building codes at the municipal level.	2	2	3	2	3	2.35
3.2.4	Create an ordinance requiring all buildings to have a fire break free of brush or trees of at least 100 feet around them in rural areas.	2	2	2	3	3	2.3
3.3.1	Provide updated training to municipal building inspectors.	1	2	2	2	2	1.8

Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard	Address High Risk	Address Crit Communications/ Infrastructure	Priority
3.3.2	Work with township/borough officials to increase awareness among mobile homeowners (i.e., informational mailings, workshops) about requirements for proper anchoring for wind protection.	2	2	2	3	2	2.15
4.1.1	Continue to distribute quarterly newsletter to members of the public on current EMA projects hazard mitigation efforts.	2	2	3	3	2	2.35
4.1.2	Educate residents to follow recommendations made by healthcare professionals to protect themselves from current risks.	3	3	2	3	2	2.65
4.1.3	Identify and publicize easily prevented reasons for emergencies (e.g., careless smoking resulting in fires).	2	2	3	2	2	2.2
4.2.1	Convene regular meetings of the LPT to discuss issues and progress related to the implementation of the hazard mitigation plan.	2	2	3	3	2	2.35
4.3.1	Renew and expand commitments to hazard mitigation planning among partner organizations through the local planning team.	3	2	3	3	2	2.55
5.1.1	The LEPC should work with SARA facility owners and operators to ensure compliance with the emergency off-site response plan.	2	2	3	3	3	2.5
5.1.2	Increase awareness by residents of actions to take during an emergency, including sheltering and evacuation procedures. Methods to be used can include public outreach and education.	2	2	3	3	2	2.35
5.1.3	Continue to collaborate with local law enforcement and authorities to promote public awareness of the prevention, intervention, and treatment of drug abuse.	3	2	2	3	1	2.2
5.1.4	Collaborate with partnering agencies to promote awareness of invasive species (i.e. spotted lantern fly).	3	3	1	3	1	2.3
5.2.1	Identify and maintain lists of functional needs populations requiring additional emergency response.	2	2	3	3	2	2.35
5.2.2	Evaluate means to enhance response capability for functional needs residents.	2	2	3	3	2	2.35
5.2.3	Continue to actively engage with the first responder community through outreach to enhance and secure our local level emergency service capabilities.	2	2	3	3	2	2.35
5.3.1	Maintain county and municipal emergency operations plans in accordance with Title 35 requirements.	1	1	3	2	2	1.7
5.3.2	Encourage organizations responsible for critical infrastructure to maintain current Continuity of Operations (COOP) plans.	2	2	3	3	3	2.5
5.3.3	Ensure that a current emergency plan is in place for each facility that uses, manufactures, or stores hazardous materials.	2	2	2	2	3	2.15
5.3.4	Conduct post-disaster community recovery planning.	2	2	3	3	2	2.35
5.3.5	Maintain debris management plan.	3	3	3	3	2	2.85
5.3.6	Enhance the public safety agency personnel and equipment update system to allow input of data from first responders and public works.	3	2	2	2	3	2.35

Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard	Address High Risk	Address Crit Communications/ Infrastructure	Priority
6.1.1	Investigate options for protecting critical infrastructure impacted by all-hazards.	2	2	3	3	3	2.5
6.1.2	Conduct cost-benefit analysis of protection of critical infrastructure.	2	2	3	3	3	2.5
6.1.3	Conduct qualitative evaluation process for critical facilities and residents to determine relative vulnerability and gather information for subsequent refinements of this mitigation plan.	2	2	3	2	3	2.35
6.1.4	Develop action plan for reducing potential damage and loss of function at identified critical facilities and infrastructure.	2	2	2	2	3	2.15
6.2.1	Amend development regulations to require below ground power and telephone transmission lines and bury lines already in existence.	2	1	3	3	3	2.2
6.3.1	Review, update, and exercise high hazard dam plans.	3	2	2	3	3	2.5
6.3.2	Further examine inundation areas and how to better-inform and protect vulnerable populations.	2	2	2	3	2	2.15
6.3.3	Install generator, concrete pad, and all connections at Somerset County Emergency Management Building	3	3	3	3	3	3
6.3.4	Upgrade drainage areas to prevent stormwater from causing damages.	3	3	1	3	3	2.6
6.3.5	Replace and improve existing pipeing at Moores School Road and Shaffer Run Road to mitigate flooding and erosion.	3	3	1	3	3	2.6
6.3.6	Upgrade culvert under Reese Street.	3	3	1	3	3	2.6

The actions in Table 6-7 are listed in order of priority, with the high priority actions first. This list of actions is the result of the planning effort led by the Planning Team and represents what the county and municipalities consider most important. Any actions, including projects, to be implemented will have benefits outweighing their associated costs (i.e., the benefit-cost ratio would be greater than 1).

A blank Mitigation Action Worksheet template is included in Appendix G. The set of completed action worksheets and a table summarizing the worksheets by jurisdiction are presented in Appendix H.

Table 6-7. Prioritized Mitigation Actions

	Mitigation Action	Score
High Priority		
6.3.3	Install generator, concrete pad, and all connections at Somerset County Emergency Management Building	3
5.3.5	Maintain debris management plan.	2.85
1.5.1	Encourage participation of all municipalities in the National Flood Insurance Program (NFIP).	2.65
4.1.2	Educate residents to follow recommendations made by healthcare professionals to protect themselves from current risks.	2.65
2.5.1	Maintain the county's commodity flow study to identify those roadways most travelled by vehicles transporting hazardous materials.	2.6
2.5.2	Perform studies on roadways used to transport hazardous materials to ensure that they are adequate for this purpose.	2.6
6.3.4	Upgrade drainage areas to prevent stormwater from causing damages.	2.6
6.3.5	Replace and improve existing piping at Moores School Road and Shaffer Run Road to mitigate flooding and erosion.	2.6
6.3.6	Upgrade culvert under Reese Street.	2.6
2.6.1	Work with Southwestern Regional Counterterrorism Task Force (PA Region 13) to plan and prepare for terrorist activities and all hazards, including training and exercises.	2.55
4.3.1	Renew and expand commitments to hazard mitigation planning among partner organizations through the local planning team.	2.55
5.1.1	The LEPC should work with SARA facility owners and operators to ensure compliance with the emergency off-site response plan.	2.5
5.3.2	Encourage organizations responsible for critical infrastructure to maintain current Continuity of Operations (COOP) plans.	2.5
6.1.1	Investigate options for protecting critical infrastructure impacted by all-hazards.	2.5
6.1.2	Conduct cost-benefit analysis of protection of critical infrastructure.	2.5
6.3.1	Review, update, and exercise high hazard dam plans.	2.5
Medium Priority		
3.2.3	Enhance building codes at the municipal level.	2.35
5.3.6	Enhance the public safety agency personnel and equipment update system to allow input of data from first responders and public works.	2.35
6.1.3	Conduct qualitative evaluation process for critical facilities and residents to determine relative vulnerability and gather information for subsequent refinements of this mitigation plan.	2.35
2.1.1	Identify at risk populations with the highest relative vulnerability to all hazards impacting Somerset County	2.35
2.3.1	Retrofit manufactured homes with anchors or tie-down straps.	2.35

	Mitigation Action	Score
4.1.1	Continue to distribute quarterly newsletter to members of the public on current EMA projects hazard mitigation efforts.	2.35
4.2.1	Convene regular meetings of the LPT to discuss issues and progress related to the implementation of the hazard mitigation plan.	2.35
5.1.2	Increase awareness by residents of actions to take during an emergency, including sheltering and evacuation procedures. Methods to be used can include public outreach and education.	2.35
5.2.1	Identify and maintain lists of functional needs populations requiring additional emergency response.	2.35
5.2.2	Evaluate means to enhance response capability for functional needs residents.	2.35
5.2.3	Continue to actively engage with the first responder community through outreach to enhance and secure our local level emergency service capabilities.	2.35
5.3.4	Conduct post-disaster community recovery planning.	2.35
1.2.1	Work with township/borough officials to increase awareness among property owners, including informational mailings to property owners in the special flood hazard area (SFHA), and sponsoring a series of workshops about costs and benefits of: - Acquiring and minimizing the cost of flood insurance coverage - Property acquisition, relocation, elevation, dry flood proofing, and wet flood proofing.	2.3
1.3.3	Apply to PEMA for funding to undertake detailed flood studies for county's high-hazard areas to determine base flood elevation (BFE) and a full range of flood- recurrence intervals (50%, 20%, 10%, 4%, 2% and 1% chance events) for use in future refinements of the mitigation plan.	2.3
3.2.2	Enforce building codes include the use of fire-resistant materials for structures near wild lands.	2.3
3.2.4	Create an ordinance requiring all buildings to have a fire break free of brush or trees of at least 100 feet around them in rural areas.	2.3
5.1.4	Collaborate with partnering agencies to promote awareness of invasive species (i.e. spotted lantern fly).	2.3
4.1.3	Identify and publicize easily prevented reasons for emergencies (e.g., careless smoking resulting in fires).	2.2
6.2.1	Amend development regulations to require below ground power and telephone transmission lines and bury lines already in existence.	2.2
5.1.3	Continue to collaborate with local law enforcement and authorities to promote public awareness of the prevention, intervention, and treatment of drug abuse.	2.2
1.1.1	Identify existing repetitive loss and severe repetitive loss properties	2.15
1.1.2	Investigate options for mitigating repetitive-loss properties within the floodplain	2.15
1.1.3	Protect natural wetlands that may absorb floodwaters.	2.15
1.4.1	Engage or collaborate with municipalities to identify repetitive flood properties that do not qualify as a severe repetitive or repetitive loss properties.	2.15
1.4.3	Encourage regular maintenance on stormwater management structures (culverts, drainage ditches, etc.) and replace any stormwater management structures as needed.	2.15
1.4.4	Raise roadways that routinely flood to above the base flood elevation.	2.15
3.1.1	Ensure that land use, zoning, and related regulations require an adequate setback of structures from the edge of wild lands.	2.15

	Mitigation Action	Score
3.1.2	Distribute and promote the inclusion of vulnerability analysis information as part of the periodic plan review to all at the public/private levels.	2.15
3.1.4	Integrate evaluation of snow removal and emergency access logistics with new development planning.	2.15
3.3.2	Work with township/borough officials to increase awareness among mobile homeowners (i.e., informational mailings, workshops) about requirements for proper anchoring for wind protection.	2.15
5.3.3	Ensure that a current emergency plan is in place for each facility that uses, manufactures, or stores hazardous materials.	2.15
6.1.4	Develop action plan for reducing potential damage and loss of function at identified critical facilities and infrastructure.	2.15
6.3.2	Further examine inundation areas and how to better-inform and protect vulnerable populations.	2.15
1.4.2	Elevate structures to above the base flood elevation.	2.1
1.3.1	Obtain information for structures in the areas with the highest relative vulnerability to determine the best property protection methods. The information to be obtained includes: · Lowest-floor elevation · Number of stories · Presence of a basement · Market and/or replacement value	1.95
1.3.2	Obtain information for all remaining structures in the special flood hazard area (SFHA) to determine the best property protection meth-ods to promote with individual property owners. Techniques for gathering information over time should include developing and im-plementing a program for integrat-ed information "capture" at key points in normal township admin-istrative procedures, including ap-plications for building permits at township/borough offices.	1.95
1.4.5	Upgrade and replace manholes to prevent the release of sewage during a flood.	1.95
3.2.1	Enforce building codes include the use of roofing shingles that are less likely to be blown off of roofs.	1.95
Low Priority		
3.1.3	Present cost/benefit analysis to townships/boroughs that do not have comprehensive plans and/or zoning/land use ordinances.	1.8
3.3.1	Provide updated training to municipal building inspectors.	1.8
2.1.2	Conduct qualitative evaluation process for managing stranded travelers (e.g., temporary shelters).	1.8
5.3.1	Maintain county and municipal emergency operations plans in accordance with Title 35 requirements.	1.7
2.4.1	Obtain detailed topographic and planimetric surveys for areas along interstate highways in Somerset County identified as crossing points for tributaries that feed drinking water reservoir(s). Follow-up efforts would include preliminary engineering studies to determine earth-work and/or other diversions needed to prevent hazardous material spills in these areas from contami-nating drinking water supplies.	1.65

	Mitigation Action	Score
2.2.1	Complete a new digitized parcel project and develop a GIS data layer that would be used to assist with damage assessment and estimation of loss during mitigation efforts.	1.5

SECTION 7 PLAN MAINTENANCE PROCEDURES

7.1 UPDATE PROCESS SUMMARY

The process of monitoring, evaluating, and updating the HMP is critical to maintaining its value and supporting the success of Somerset County's hazard mitigation efforts. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and supports future resiliency.

The Steering Committee reviewed the 2020 plan maintenance procedures and carried them forward to the current HMP update, as described in the sections below. Going forward, the plan will be available on the Somerset County HMP website (https://www.somersetcountypahmp.com/). The 2025 plan maintenance procedures also describe the ways in which this plan may be integrated into other planning mechanisms in the county.

7.2 MONITORING, EVALUATING, AND UPDATING THE PLAN

The Somerset County HMP Planning Team intends to remain intact as the organization responsible for monitoring, evaluating, and updating this plan. The Emergency Management Agency(EMA) Director, Joel D. Landis, of the Somerset County Department of Emergency Services, will serve as HMP Coordinator for the Planning Team. Each participating jurisdiction is expected to retain a hazard mitigation representative to support the jurisdiction's input to monitor, evaluate, and update the responsibilities identified in this section. Section 3 lists the Planning Team members.

Individual commitments change over time; therefore, each jurisdiction and its representatives will be responsible for informing the Somerset County HMP Coordinator of any changes in representation by formal letter. The HMP Coordinator will strive to ensure the Planning Team represents planning partners and stakeholders within the county. The HMP Coordinator will maintain the membership of the Planning Team on the Somerset County HMP website (https://www.somersetcountypahmp.com/) or in publicly accessible county records.

Somerset County contains 50 municipalities, 11 school districts, and 3 municipal authorities; 28 of these jurisdictions did not participate in the 2025 HMP update process and are therefore not currently eligible for federal mitigation funding to implement their projects. Each of these jurisdictions can elect to join the 2025 HMP by working with the Somerset County HMP Coordinator to complete the following steps:

1. Provide information on the hazards and risks that can affect its operations, residents, businesses, property, and environment.
2. Provide information on its capabilities.
3. Provide an update on the status of its mitigation actions from the 2020 version of the HMP.
4. Identify mitigation actions to include in the current HMP.
5. Adopt the current HMP by resolution (see Section 8).

Steps 1 to 3 above can be accomplished by completing the information-gathering worksheets that were used during the planning process. Any jurisdiction that has adopted the 2025 HMP will not have to re-adopt the 2025 HMP if the HMP is updated with another jurisdiction's information.

The following sections describe the monitoring, evaluating, and updating processes and protocols for the Somerset County HMP.

7.2.1 Monitoring

The Planning Team will be responsible for monitoring implementation and evaluating the effectiveness of the HMP and documenting this information in a progress report. Prior to Planning Team progress meetings (detailed below), Planning Team representatives may collect information from departments, agencies, and organizations involved with the mitigation activities identified in Section 6 of this plan. The representatives will make phone calls and conduct meetings with persons responsible for initiating and/or overseeing the mitigation projects to obtain progress information. Copies of any grant applications filed on behalf of any of the participating jurisdictions will be provided to the Planning Team. The Somerset County HMP Coordinator will work with municipal representatives to provide additional opportunities for members of the public to learn about the hazards they face and to provide information to be incorporated into the HMP. The Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer interactive tools can be used to facilitate this process. Further, the representatives will obtain any public comments made on the plan from their Municipal Supervisor, Mayor, or Councilperson and provide them to the Planning Team for inclusion in the progress report.

The Planning Team representatives will be expected to document the following, as needed and as appropriate:

- Additional stakeholders (such as planning agencies and business representatives) who should be invited to participate in the planning process
- Additional local assets (such as major employers, local points of interest, residential areas, etc.) to consider in the risk assessment and mitigation strategy to ensure that items considered vital by each municipality can be included in the HMP
- Hazard events and losses occurring in their jurisdiction, including their nature and extent and the effects that hazard mitigation actions have had on impacts and losses
- Progress on the implementation of mitigation actions, including efforts to obtain outside funding for mitigation actions
- Any obstacles or impediments to the implementation of actions
- Additional mitigation actions believed to be appropriate and feasible
- How floodplain management, in accordance with the National Flood Insurance Program (NFIP), is carried out in the municipality (through completion of the NFIP Survey worksheet)
- Public and stakeholder input and comments on the plan

Local Planning Team representatives may use the progress reporting forms (Worksheets #1 and #3 in the FEMA 386-4 guidance document) to facilitate collection of progress data and information on specific mitigation actions.

7.2.2 Evaluating

The evaluation of the HMP is an assessment of whether (1) the planning process and actions have been effective, (2) the plan's goals are being reached, and (3) changes are needed. The plan will be evaluated on an annual basis to determine the effectiveness of the programs and to reflect changes that may affect mitigation priorities or available funding.

After information is gathered on the status of the HMP, as described in Section 7.2.1, the information will be discussed and documented at an annual plan review meeting of the Planning Team. At least one month before the progress plan review meeting, the Somerset County HMP Coordinator will advise Planning Team members of the meeting date, agenda, and expectations of the members. The Somerset County HMP Coordinator may also distribute additional flood mitigation surveys and mitigation project opportunity forms for jurisdictions with new information or for those that did not participate in the update process.

The Somerset County HMP Coordinator will be responsible for calling and coordinating the progress plan review meeting and assessing progress toward achieving plan goals and objectives. These evaluations will assess whether:

- Goals and objectives address current and expected conditions
- The nature or magnitude of the risks has changed
- The HMP has been implemented into land use processes on the county and municipal levels

- Current resources are appropriate for implementing the HMP and if different or additional resources are now available
- Actions are cost effective
- Schedules and budgets are feasible
- Implementation problems exist, such as technical, political, legal, or coordination issues with other agencies
- Outcomes have occurred as expected
- Changes in jurisdictional resources have impacted plan implementation (for example, funding, personnel, and equipment)
- New agencies, departments, or staff should be included, including other local governments, as defined under 44 *Code of Federal Regulations* (CFR), Section 201.6
- Documentation has been completed for any hazards that occurred during the last year

Specifically, the Planning Team will review the mitigation goals, objectives, activities, and projects using the following performance-based indicators:

- New agencies or departments created that have authority to implement mitigation actions or are required to meet goals, objectives, and actions
- Project evaluation based on current needs of the mitigation plan
- Project completion regarding progress of proposed or ongoing actions
- Underspending or overspending regarding proposed mitigation action budgets
- Achievement of the goals and objectives
- Resource allocation records to note whether resources are required to implement mitigation activities
- Timeframe comments on whether proposed schedules are sufficient to address actions
- Budget notes (if budget basis should be changed or is sufficient)
- Lead or support agency commitment notes (if there is a lack of commitment on the part of lead or support agencies)
- Resource comments on whether resources are available to implement actions
- Feasibility comments to determine whether certain goals, objectives, or actions prove to be unfeasible

Finally, the Planning Team will evaluate the ways other programs and policies have conflicted or augmented planned or implemented measures and will identify policies, programs, practices, and procedures that could be modified to accommodate hazard mitigation actions (described further in Section 5.2.5). These other programs and policies can include those that address the following:

- Economic development
- Environmental preservation and permitting
- Historic preservation
- Redevelopment
- Health and/or safety
- Recreation
- Land use and zoning
- Public education and outreach
- Transportation

The Planning Team may refer to the evaluation forms (Worksheets #2 and #4 in the FEMA 386-4 guidance document) to assist in the evaluation process.

The Somerset County HMP Coordinator will be responsible for preparing an annual HMP progress report based on the annual local progress reports provided by each jurisdiction, information presented at the Planning Team meeting, and other information as appropriate and relevant. These HMP annual county progress reports will provide data for the 5-year update of this HMP and will assist in pinpointing implementation challenges. By monitoring the implementation of the plan, the Planning Team will assess which projects are completed, are no longer feasible, or may require additional funding.

The annual HMP progress report will apply to all planning partners who have provided input, and as such, will be developed according to an agreed-upon format and with adequate allowance for input and comment of each planning partner prior to completion and submission to the State Hazard Mitigation Officer. Each planning partner will be responsible for providing this report to its governing body for their review.

During the Planning Team meeting, the planning partners will establish a schedule for the development, review, comment, amendment, and submittal of the annual HMP progress report to the State Hazard Mitigation Officer. The HMP Coordinator will ensure that the reports are submitted to the State Hazard Mitigation Officer and FEMA Region III.

The plan will also be evaluated and revised following any major disasters to determine whether the recommended actions remain relevant and appropriate. The risk assessment will also be revisited to determine whether any changes are necessary based on the pattern of disaster damage or if data listed in Section 4.3 (Hazard Profiles) have been collected to facilitate the risk assessment. Revisiting the risk assessment is an opportunity to increase the community's disaster resistance and build a better and stronger community.

7.2.3 Updating

Section 44 CFR 201.6.d.3 requires that local HMPs be reviewed, revised (as appropriate), and resubmitted for approval to remain eligible for benefits awarded under the Disaster Mitigation Act of 2000 (DMA 2000). The Somerset County Hazard Mitigation Planning Team will update this plan on a 5-year cycle from the date of plan adoption.

To facilitate the update process, the Somerset County HMP Coordinator (with support from the Planning Team) will hold a meeting 3 years from the date of plan approval to develop and commence with the implementation of a detailed plan update program. The Somerset County HMP Coordinator will invite representatives from the Pennsylvania Emergency Management Agency (PEMA) to this meeting to provide guidance on plan update procedures. This program will, at a minimum, establish (1) the parties responsible for managing and completing the plan update effort, (2) features needed to be included in the updated plan, and (3) a detailed timeline with milestones to ensure that the update is completed according to regulatory requirements.

At this meeting, the Planning Team will determine the resources needed to complete the update. The Somerset County HMP Coordinator will be responsible for ensuring that needed resources are secured.

The Somerset County HMP Coordinator will also be responsible for coordinating the plan evaluation portion of the meeting, soliciting feedback, collecting and reviewing the comments, and ensuring their incorporation in the 5-year plan update, as appropriate. Additional meetings may also be held, as deemed necessary by the Planning Team. These meetings will provide an opportunity for the public to express concerns, opinions, and ideas about the HMP.

7.3 CONTINUED PUBLIC INVOLVEMENT

Somerset County and participating jurisdictions are committed to the continued involvement of the public in the hazard mitigation process. Therefore, the plan will be posted on the Somerset County HMP website (http://www.co.somerset.pa.us/hazard_mitigation/) and copies of the plan will be made available for review during normal business hours at the Department of Emergency Services (address below). Somerset County will make electronic copies of the plan available for local jurisdictions to provide to the public.

Following each 5-year update of the HMP, the updated plan will be distributed for public comment. After all comments are addressed, the HMP will be revised and distributed to all Planning Team members and the Pennsylvania State Hazard Mitigation Officer.

The Somerset County HMP Coordinator will be responsible for receiving, tracking, and filing public comments on the HMP. The public will have an opportunity to comment on the plan at the review meeting for the HMP and during the 5-year plan update. Somerset County will maintain an active link on the HMP website to collect public comments.

The Planning Team representatives will be responsible for ensuring the following:

- Public comment and input on the HMP (and hazard mitigation in general) are recorded and addressed, as appropriate. An opportunity to comment on the plan will be provided directly on the HMP website, and provisions will be made for public comments submitted in writing. All public comments should be addressed to:

  Joel D. Landis, EMA Director
  Somerset County Department of Emergency Services
  (814) 445-1515
  100 E. Union Street, Somerset, PA 15501

- Copies of the latest approved version of the plan will be available for review at the jurisdictional offices, along with instructions to facilitate public input and comment on the plan.
- Appropriate links to the Somerset County website will be maintained. The website will be monitored throughout the course of the HMP update process, and a draft copy of the plan will be posted for public comment. Upon conclusion of the update, appropriate links to the Somerset County HMP will be maintained on the HMP website (http://www.co.somerset.pa.us/hazard_mitigation/).
- Public notices will be made, as appropriate, to inform the public of the availability of the plan, particularly during plan update cycles.

The Somerset County HMP Coordinator will be responsible for ensuring the following:

- Public comment and input on the HMP (and hazard mitigation in general) will be recorded and addressed, as appropriate.
- The HMP website’s content will be maintained and updated, as appropriate.
- All public and stakeholder comments received will be documented and maintained.
- Copies of the latest approved plan will be available for review at the Somerset County Department of Emergency Services office, along with instructions to facilitate public input and comment on the plan.
- Public notices, including media releases, will be developed (as appropriate) to inform the public of the availability of the plan, particularly during plan update cycles.

SECTION 8 PLAN ADOPTION

By adopting the Somerset County Hazard Mitigation Plan (HMP), local governing bodies demonstrate their commitment to fulfill the mitigation goals and objectives outlined in the plan. Adoption of the HMP by Somerset County and each participating jurisdiction legitimizes the HMP and authorizes responsible agencies to execute their responsibilities.

Each participating jurisdiction in Somerset County will continue with formal adoption proceedings upon conditional approval of this HMP from the Federal Emergency Management Agency (FEMA), known as Approval Pending Adoption (APA). Each participating jurisdiction understands that conditional approval of the HMP will be provided for those municipalities that meet the planning requirements except for the adoption requirement, as stated above.

Following adoption or formal action on the HMP, each participating jurisdiction must submit a copy of the resolution or other legal instrument showing formal adoption (acceptance) of the HMP to the Somerset County Hazard Mitigation Coordinator. Somerset County will forward the executed resolutions to the Pennsylvania Emergency Management Agency (PEMA), which will subsequently forward the resolutions to FEMA. Each participating jurisdiction understands that FEMA will transmit acknowledgment of verification of formal HMP adoption and the official approval of the HMP to the Hazard Mitigation Coordinator. Resolutions reflecting the formal adoption of this HMP by Somerset County and participating jurisdictions are included in Appendix F of this HMP. A sample resolution to be used by Somerset County and its jurisdictions is provided on the following pages.

Somerset County Hazard Mitigation Plan

County Adoption Resolution

Resolution No. ___________________

Somerset County, Pennsylvania

WHEREAS, the municipalities of Somerset County, Pennsylvania, are most vulnerable to natural and human-made hazards, which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS Somerset County, Pennsylvania has prepared a multi-hazard mitigation plan, hereby known as the Somerset County Hazard Mitigation Plan, in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, Somerset County acknowledges the requirement of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Somerset County Hazard Mitigation Plan has been developed by the Somerset County Department of Emergency Services in cooperation with other county departments, local municipal officials, and the citizens of Somerset County, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Somerset County Hazard Mitigation Plan, and

WHEREAS, the Somerset County Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the jurisdictions from the impacts of future hazards and disasters, and.

WHEREAS adoption by Somerset County, Pennsylvania demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Somerset County Hazard Mitigation Plan 2025.

NOW THEREFORE BE IT RESOLVED by the governing body for the County of Somerset that:

The Somerset County Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the county. While content may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Somerset County to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED, this _________ day of ________________, 2025

ATTEST:

____

SOMERSET COUNTY COMMISSIONERS

By ______________________________

By ______________________________

By ______________________________

Somerset County Hazard Mitigation Plan

Jurisdictional Adoption Resolution

Resolution No. ___________________

<*Jurisdiction Name*>, Somerset County, Pennsylvania

WHEREAS, the <*Jurisdiction Name*>, Somerset County, Pennsylvania, is most vulnerable to natural and human-made hazards, which may result in loss of life and property, economic hardship, and threats to public health and safety, and

WHEREAS the <*Jurisdiction Name*> has prepared a multi-hazard mitigation plan, hereby known as the Somerset County Hazard Mitigation Plan, in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

WHEREAS, the <*Jurisdiction Name*> acknowledges the requirement of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the Somerset County Hazard Mitigation Plan has been developed by the Somerset County Department of Emergency Services in cooperation with other county departments, and officials and citizens of <*Jurisdiction Name*>, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Somerset County Hazard Mitigation Plan, and

WHEREAS, the Somerset County Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the jurisdictions from the impacts of future hazards and disasters, and.

WHEREAS adoption by <*Jurisdiction Name*> demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Somerset County Hazard Mitigation Plan 2025.

NOW THEREFORE BE IT RESOLVED by the governing body for the <*Jurisdiction Name*>:

> The Somerset County Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the <*Jurisdiction Name*>. While content may require revisions to meet the plan approval requirements, changes occurring after adoption will not require <*Jurisdiction Name*> to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED, this _________ day of ________________, 2025

ATTEST:

____

< *JURISDICTION NAME*> REPRESENTATIVES

By _______________________________

By _______________________________

By _______________________________