

# Lancaster County Hazard Mitigation Plan 2019 Update



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## EXECUTIVE SUMMARY

The 2019 update to the Lancaster 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 Lancaster County HMP represents the work of citizens, elected and appointed government officials, business leaders, and volunteer and nonprofit groups to protect community assets, preserve 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, Lancaster County and inclusive jurisdictions actively participated in updating the County HMP. Extensive outreach efforts by Lancaster County’s Emergency Management Agency resulted in full participation from 53 of its municipalities. Upon completion and approval of the HMP, participating jurisdictions will continue to address and implement findings and recommendations of this plan update. This 2019 version is the first update of the County HMP, with the original HMP developed in 2014.

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

**Table ES-1. Participating Jurisdictions in the 2019 Lancaster County HMP Update**

Jurisdictions				
• Lancaster County	• Drumore Township	• Elizabethtown Borough	• Millersville Borough	• Strasburg Borough
• Adamstown Borough	• Earl Township	• Ephrata Borough	• Mount Joy Borough	• Strasburg Township
• Akron Borough	• East Cocalico Township	• Ephrata Township	• Mount Joy Township	• Terre Hill Borough
• Bart Township	• East Donegal Township	• Fulton Township	• Mountville Borough	• Upper Leacock Township
• Caernarvon Township	• East Drumore Township	• Lancaster City	• New Holland Borough	• Warwick Township
• Christiana Borough	• East Earl Township	• Leacock Township	• Paradise Township	• West Cocalico Township
• Clay Township	• East Hempfield Township	• Lititz Borough	• Penn Township	• West Donegal Township
• Colerain Township	• East Lampeter Township	• Manheim Borough	• Providence Township	• West Earl Township
• Columbia Borough	• East Petersburg Borough	• Manheim Township	• Rapho Township	• West Hempfield Township
• Conestoga Township	• Eden Township	• Marietta Borough	• Sadsbury Township	• West Lampeter Township
• Denver Borough	• Elizabeth Township	• Martic Township	• Salisbury Township	

During the plan update process, Lancaster 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 municipalities’ 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 general public was offered an opportunity to comment on the existing HMP and provide suggestions for the updated version. The County hosted two Planning Team meetings that were open to the public, during which residents could provide input on the HMP.

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

- Flood, Flash Flood, and Ice Jam
- Tornado, Windstorm
- Invasive Species
- Pandemic
- Utility Interruptions
- Winter Storm
- Environmental Hazards
- Drought
- Hailstorms

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

- Transportation Accidents
- Radon Exposure
- Earthquake
- Wildfire
- Subsidence and Sinkholes
- Nuclear Incidents
- Dam Failure

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

1. **Goal 1:** Prevent injury/death and damage from natural and human-caused hazards in Lancaster County.
2. **Goal 2:** Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards.
3. **Goal 3:** Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards.
4. **Goal 4:** Increase public education and awareness of existing and potential hazards in Lancaster County.



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, if 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 Lancaster County Emergency Management Agency. Contact information is provided below:

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c/o Lancaster County Emergency Management Agency  
PO Box 219  
Manheim, PA 17545

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## CERTIFICATION OF ANNUAL REVIEW MEETINGS

The Lancaster County Hazard Mitigation Steering Committee and Planning Team have reviewed this Hazard Mitigation Plan (HMP). See Section 7 of this document for further details regarding this certification section. The HMP Coordinator hereby certifies the review.

Year	Date of Meeting	Public Outreach Addressed?*	Signature
2015	N/A	N/A	To the best of the knowledge of the Lancaster County Steering Committee, no HMP progress reports were submitted from municipalities for the period of 2015 to 2018, although some mitigation actions were accomplished during this period and reported during the 2018 HMP planning process. Progress on actions is discussed in detail in Section 6.
2016	N/A	N/A	
2017	N/A	N/A	
2018	N/A	N/A	
2019			
2020			
2021			
2022			
2023			
2024			

\* Confirm yes here annually and describe on record of changes page.



## RECORD OF CHANGES

Date	Description of Change Made, Mitigation Action Completed, or Public Outreach Performed	Change Made By (Print Name)	Change Made By (Signature)
2015-2018	To the best of the knowledge of the Lancaster County Steering Committee, no HMP progress reports were submitted from municipalities for the period of 2015 to 2018, although some mitigation actions were accomplished during this period and reported during the 2018 HMP planning process. Progress on actions is discussed in detail in Section 6.	N/A	N/A

REMINDER: *Please attach all associated meeting agendas, sign-in sheets, handouts, and minutes.*





## SECTION 1 INTRODUCTION

This section presents background information, describes the purpose, and defines the scope of the 2019 update of the Lancaster 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 resources, diverting attention from important public programs and private agendas.

Lancaster County, Pennsylvania, has experienced a significant number of statewide or County-specific disaster declarations since 1954. The emergency management community, citizens, elected officials, and other stakeholders in Lancaster 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. To that purpose, Lancaster County is committed to updating and maintaining the Lancaster County HMP.

“Hazard mitigation” describes actions taken to prevent or reduce the long-term risks to life and property caused by a hazard event. Pre-disaster mitigation actions are taken in advance of a hazard event and are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, mitigation actions can be long-term, cost-effective measures taken to reduce the risk of loss.

The Lancaster County Hazard Mitigation Steering Committee (composed of Lancaster County officials) and the Planning Team (composed of Lancaster County officials, municipal representatives, emergency responders, and representatives from State and federal agencies and utility companies) has updated this HMP. Lancaster County contracted Tetra Tech, Inc. (Tetra Tech), to prepare the 2019 HMP update.

The HMP update is the result of several months of collaboration between the citizens and officials of the County and representatives from Tetra Tech 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.

### 1.2 PURPOSE

The purpose of this HMP is to minimize the effects that natural, technological, and man-made hazards have on the people, property, environment, and business operations within Lancaster County. This document exists to provide the background information and rationale for the mitigation actions that the Steering Committee, Planning Team, and municipal representatives have chosen to implement across the County.

The document is governed by the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations (Title 44 *Code of Federal Regulations* [CFR] §201.6, published February 26, 2002). Local jurisdictions must comply with the DMA 2000 and these regulations to remain eligible for funding and technical assistance from State and federal hazard mitigation programs.

### 1.3 SCOPE

The implementation actions outlined within this HMP apply to Lancaster 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 State and federal hazard mitigation funding. For the purpose of this plan, municipal participation was defined as completion and submission of an Evaluation of Identified Hazards Worksheet, Capability Assessment Survey, and/or Mitigation Strategy 5-Year Plan Review Worksheet, and



attendance by an official municipal representative at a planning or public meeting, or participation in individual outreach conducted as part of the planning process.

## **1.4 AUTHORITY AND REFERENCE**

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

- FEMA “Local Mitigation Planning Handbook,” March 2013
- FEMA “Integrating Hazard Mitigation into Local Planning,” March 1, 2013
- FEMA “Plan Integration: Linking Local Planning Efforts,” July 2015
- Local Mitigation Plan Review Guide, October 1, 2011
- DMA 2000 (Public Law 106-390), October 30, 2000
- 44 CFR Parts 201 and 206 (including Feb. 26, 2002, Oct. 1, 2002, Oct. 28, 2003, and Sept. 13, 2004 Interim Final Rules)
- FEMA “How-To Guide for Using HAZUS-MH for Risk Assessment” (Document No. 433), February 2004
- FEMA Mitigation Planning How-To Series (FEMA 386-1 through 4), 2002  
Available on-line at: <http://www.fema.gov/fima/planhowto.shtm>.
- FEMA “Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards,” January 2013
- Commonwealth of Pennsylvania’s All-Hazard Mitigation Planning Standard Operating Guide, October 18, 2013

A full set of references used in updating the HMP is included in Appendix A.





## SECTION 2 COUNTY PROFILE

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

### 2.1 GEOGRAPHY AND ENVIRONMENT

Lancaster County is located in the southeastern portion of Pennsylvania (Figure 2-1) and encompasses approximately 946 square miles. The County is bordered to the north by Lebanon and Berks County, to the east by Chester County, to the south by Cecil County (Maryland), and to the west by Dauphin and York Counties. Lancaster County is naturally bordered to the west by the Susquehanna River.

Situated in southeastern Pennsylvania, Lancaster County has a scenic landscape characterized by historical agricultural communities and vast farmlands. Lancaster County has a rich legacy of natural resources that has allowed people to thrive for centuries. Activities such as farming and agriculture, construction of roads and other infrastructure, and suburban and rural development have all contributed to the degradation of the County's natural resources. Although these activities have impacted the County, the County's landscape still retains a number of important natural resources. The extensive network of rivers and streams, the wooded slopes of Furnace Hills and Welsh Mountain, and the Susquehanna River gorge are a few examples of the current natural environment of Lancaster County (Lancaster County Planning Commission 2009).

### 2.2 COMMUNITY FACTS

The settlement of Lancaster County was established as Pennsylvania's fourth county in 1729. Many of the routes in Lancaster County were established by the original Native American inhabitants prior to 1729 and validated as a system of trade routes that evolved into well-traveled and interconnected roadways over centuries of use and technical advancements. William Penn, Pennsylvania's founder, left a legacy of religious tolerance and the area became a haven for those seeking religious freedom, leading to the Mennonites settling in 1710, closely followed by Amish, German, and English settlers.

As the rural areas of Lancaster County grew and prospered, settlements and small towns appeared. The pinnacle of this development was the City of Lancaster, located at the center of the County and serving as the County Seat today.

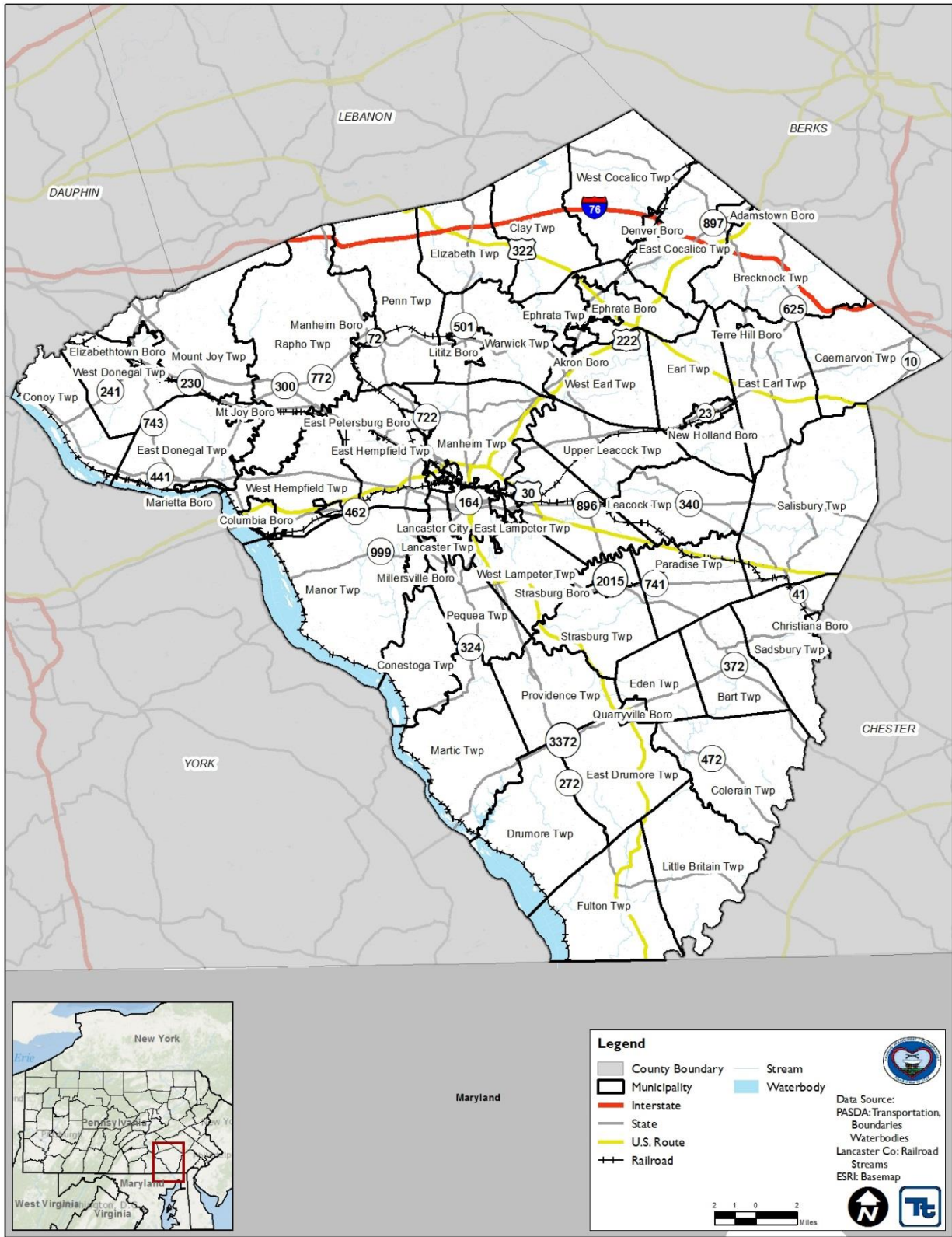
Lancaster County includes 41 townships, 18 boroughs, and the City of Lancaster. Transportation routes in the northern portion of the County are concentrated on Interstate 76 and U.S. Route 322 and PA Route 283 for eastbound and westbound travels. PA Route 501 in the north leads to U.S. Route 222 for north-south destinations. The major population centers within the County are primarily located at the intersection of all the major roadways such as U.S. Route 222 and PA Route 501, or PA Route 283 and U.S. Routes 30 and 222 in the City of Lancaster.

Several major population centers are located just outside of Lancaster County: the City of York, located approximately 26 miles west; the City of Harrisburg, located approximately 40 miles northwest; the Greater Philadelphia region, located approximately 70 miles east; Allentown–Bethlehem–Easton Area, located approximately 76 miles to the northeast; Williamsport, located approximately 126 miles north; and the Scranton–Wilkes-Barre area, located approximately 137 miles to the north.

Despite being known for the strength of its agriculture industry, Lancaster County has a strong economy due to its diversity. The trade, transportation, and utilities industries combine to form the largest workforce in Lancaster County, employing close to 60,000 workers (U.S. Bureau of Labor Statistics 2018). Educational and health services industries combine to employ over 46,000 workers. Manufacturing is the third largest industry in Lancaster County, employing over 37,000 workers. Also, tourism and agriculture are strong contributors to the economy due to Lancaster's fertile land and historical heritage.



Figure 2-1. Base Map of Lancaster County



Source: PASDA, Lancaster County 2017





## 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 2010 U.S. Census, Lancaster County had a population of 519,445, which represents a 10.4-percent increase from the 2000 U.S. Census population of 470,658. Table 2-1 presents the population statistics for Lancaster County based on the 2000 and 2010 U.S. Census, and 2016 estimates (the most current available) data. Table 2-2 provides details regarding the demographics for Lancaster County.

**Table 2-1. Lancaster County Population Statistics**

Municipality	2000 Census	2010 Census	2016 Estimate	Population Change 2000-2016	Population Change 2000-2016 (%)	Population Density Per Square Mile
Adamstown Borough	1,201	1,772	1,824	623	51.87%	1,302.8
Akron Borough	4,046	3,876	3,983	-63	-1.56%	3,171.9
Bart Township	3,003	3,094	3,322	319	10.62%	188.7
Brecknock Township	6,699	7,199	7,199	500	7.46%	292.1
Caernarvon Township	4,378	4,748	4,807	429	9.80%	206.8
Christiana Borough	1,124	1,168	1,168	44	3.91%	2,215.2
Clay Township	5,173	6,308	6,819	1,646	31.82%	287.4
Colerain Township	3,261	3,635	3,839	578	17.72%	128.2
Columbia Borough	10,311	10,400	10,359	48	0.47%	4,308.4
Conestoga Township	3,749	3,776	3,854	105	2.80%	257.9
Conoy Township	3,067	3,194	3,441	374	12.19%	219.4
Denver Borough	3,332	3,861	3,867	535	16.06%	3,020.9
Drumore Township	2,243	2,560	2,620	377	16.81%	106.5
Earl Township	6,183	7,024	7,154	971	15.70%	319.9
East Cocalico Township	9,954	10,310	10,495	541	5.44%	504.7
East Donegal Township	5,405	7,755	8,315	2,910	53.84%	361.8
East Drumore Township	3,535	3,691	3,876	341	9.65%	163.9
East Earl Township	5,723	6,507	6,792	1,069	18.68%	265.1
East Hempfield Township	21,399	23,522	24,366	2,967	13.87%	1,116.4
East Lampeter Township	13,566	16,424	16,996	3,430	25.28%	835.5
East Petersburg Borough	4,450	4,506	4,520	70	1.57%	3,730.5
Eden Township	1,856	2,094	2,172	316	17.03%	167.1
Elizabeth Township	3,833	3,886	3,988	155	4.04%	223.4
Elizabethtown Borough	11,887	11,545	11,629	-258	-2.17%	4,370.7
Ephrata Borough	13,213	13,394	13,833	620	4.69%	3,918.5
Ephrata Township	8,026	9,400	10,212	2,186	27.24%	578.7
Fulton Township	2,826	3,074	3,149	323	11.43%	119.2
Lancaster City	56,348	59,322	59,218	2,870	5.09%	8,210.0
Lancaster Township	13,944	16,149	17,077	3,133	22.47%	2,759.5
Leacock Township	4,878	5,220	5,494	616	12.63%	254.0



Municipality	2000 Census	2010 Census	2016 Estimate	Population Change 2000-2016	Population Change 2000-2016 (%)	Population Density Per Square Mile
Lititz Borough	9,029	9,369	9,210	181	2.00%	4,055.7
Little Britain Township	3,514	4,106	4,225	711	20.23%	150.7
Manheim Borough	4,784	4,858	4,856	72	1.51%	3,511.7
Manheim Township	33,697	38,133	38,893	5,196	15.42%	1,598.4
Manor Township	16,498	19,612	20,756	4,258	25.81%	511.6
Marietta Borough	2,689	2,588	2,601	-88	-3.27%	3,465.3
Martic Township	4,990	5,190	5,199	209	4.19%	178.8
Millersville Borough	7,774	8,168	8,383	609	7.83%	4,200.9
Mount Joy Borough	6,765	7,410	8,104	1,339	19.79%	3,073.7
Mount Joy Township	7,644	9,873	10,800	3,156	41.29%	354.7
Mountville Borough	2,444	2,802	2,849	405	16.57%	3,255.2
New Holland Borough	5,092	5,378	5,435	343	6.74%	2,767.6
Paradise Township	4,698	5,131	5,615	917	19.52%	275.9
Penn Township	7,312	8,789	9,472	2,160	29.54%	297.1
Pequea Township	4,358	4,605	4,794	436	10.00%	343.0
Providence Township	6,651	6,897	6,968	317	4.77%	347.0
Quarryville Borough	1,994	2,576	2,748	754	37.81%	1,995.0
Rapho Township	8,578	10,442	11,820	3,242	37.79%	220.2
Sadsbury Township	3,025	3,395	3,490	465	15.37%	173.6
Salisbury Township	10,012	11,062	11,408	1,396	13.94%	264.9
Strasburg Borough	2,800	2,809	2,939	139	4.96%	2,933.1
Strasburg Township	4,021	4,182	4,276	255	6.34%	209.3
Terre Hill Borough	1,237	1,295	1,397	160	12.93%	2,850.1
Upper Leacock Township	8,229	8,708	8,879	650	7.90%	480.6
Warwick Township	15,475	17,783	18,859	3,384	21.87%	899.2
West Cocalico Township	6,967	7,280	7,410	443	6.36%	266.5
West Donegal Township	6,539	8,260	8,720	2,181	33.35%	523.2
West Earl Township	6,766	7,868	8,298	1,532	22.64%	443.3
West Hempfield Township	15,128	16,153	16,488	1,360	8.99%	875.3
West Lampeter Township	13,145	15,209	15,952	2,807	21.35%	927.6
<b>Lancaster County</b>	<b>470,658</b>	<b>519,445</b>	<b>538,500</b>	<b>67,842</b>	<b>14.41%</b>	<b>550.4</b>

Sources: U.S. Census Bureau 2000, 2010, and 2018

Table 2-2. Demographics for Lancaster County

Demographics	2000 Census	2010 Census	2016 Estimate
Total population	470,658	519,445	538,500
Male	229,454	253,836	260,976
Female	241,204	265,609	272,134
Median age (years)	35.3	38.2	38.5



Demographics	2000 Census	2010 Census	2016 Estimate
Under 5 years	32,680	35,521	35,519
18 years and over	345,367	390,430	404,577
65 years and over	66,060	77,780	87,338
Total Households	172,560	193,602	206,308
Group quarters population	14,356	12,638	13,276

Source: U.S. Census Bureau 2000, 2010, and 2018

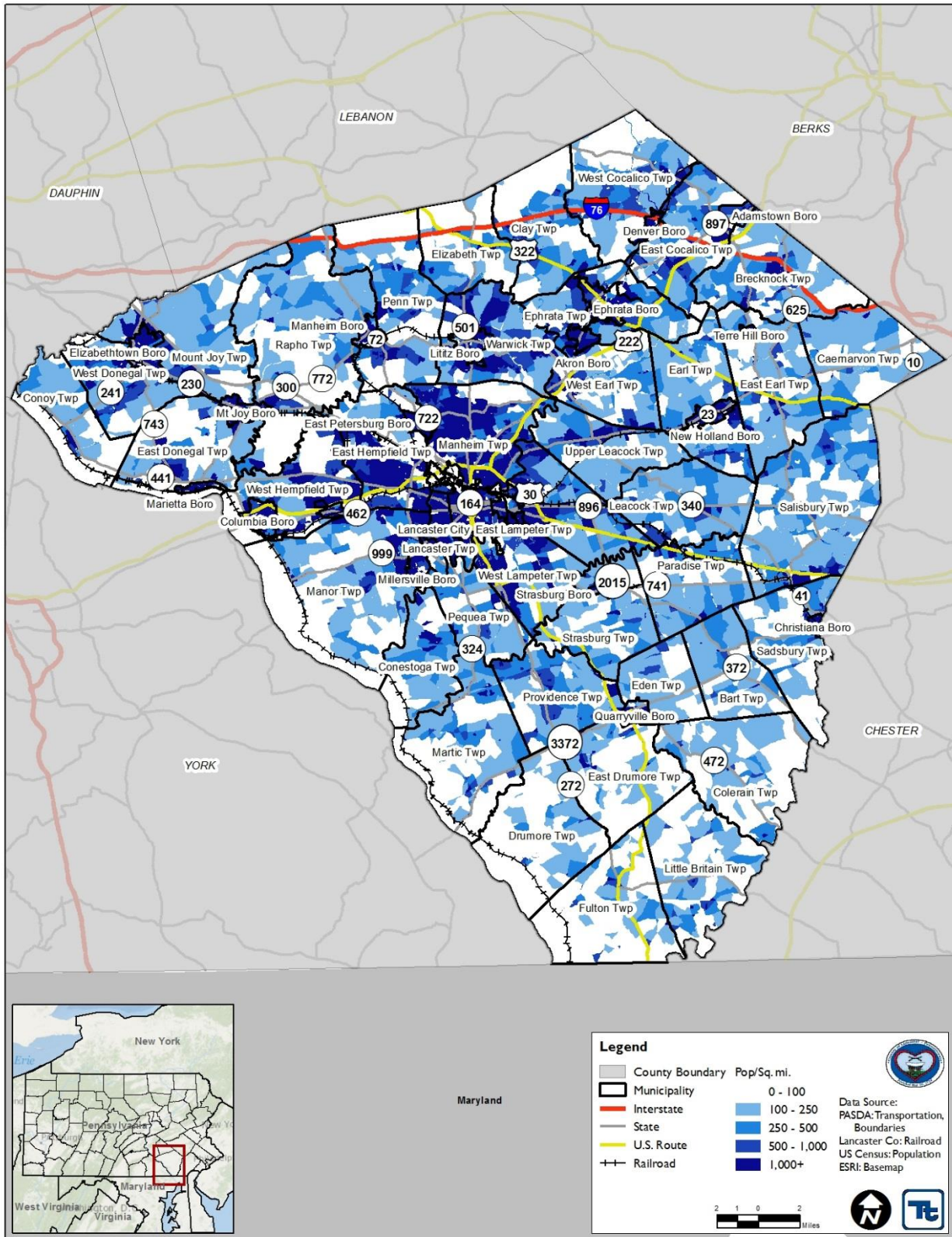
As shown in the tables above, Lancaster County’s 2010 Census population was 519,445. Based on these data, the population density of Lancaster County is 550.4 persons per square mile, which is considerably higher than the Pennsylvania statewide average of 284 persons per square mile. The City of Lancaster has the highest population density all the municipalities in the County (8,210 persons per square mile) (U.S. Census 2010). A majority of the municipalities in Lancaster County have population densities above the statewide average. However, many municipalities in the County have low population density. A low population density means that people are spread throughout the County rather than clustered in groups. Dispersing information, instructions, and resources during a disaster response effort to residents in low-density areas is more difficult than in more densely populated areas because individuals are not centralized. Lancaster County 2010 population density data is illustrated on Figure 2-2.

While low-density areas provide challenges to disseminating hazard mitigation information, a low population density also means that hazards will not affect as many people. For example, diseases may not spread as quickly because citizens are in contact with less people. Similarly, fires are less likely to spread to other structures because of the large distances between them. The magnitude of an event is typically smaller in a less-populated area because each event affects fewer people and properties.





Figure 2-2. Lancaster County 2010 Population Distribution



Source: U.S. Census Bureau 2010







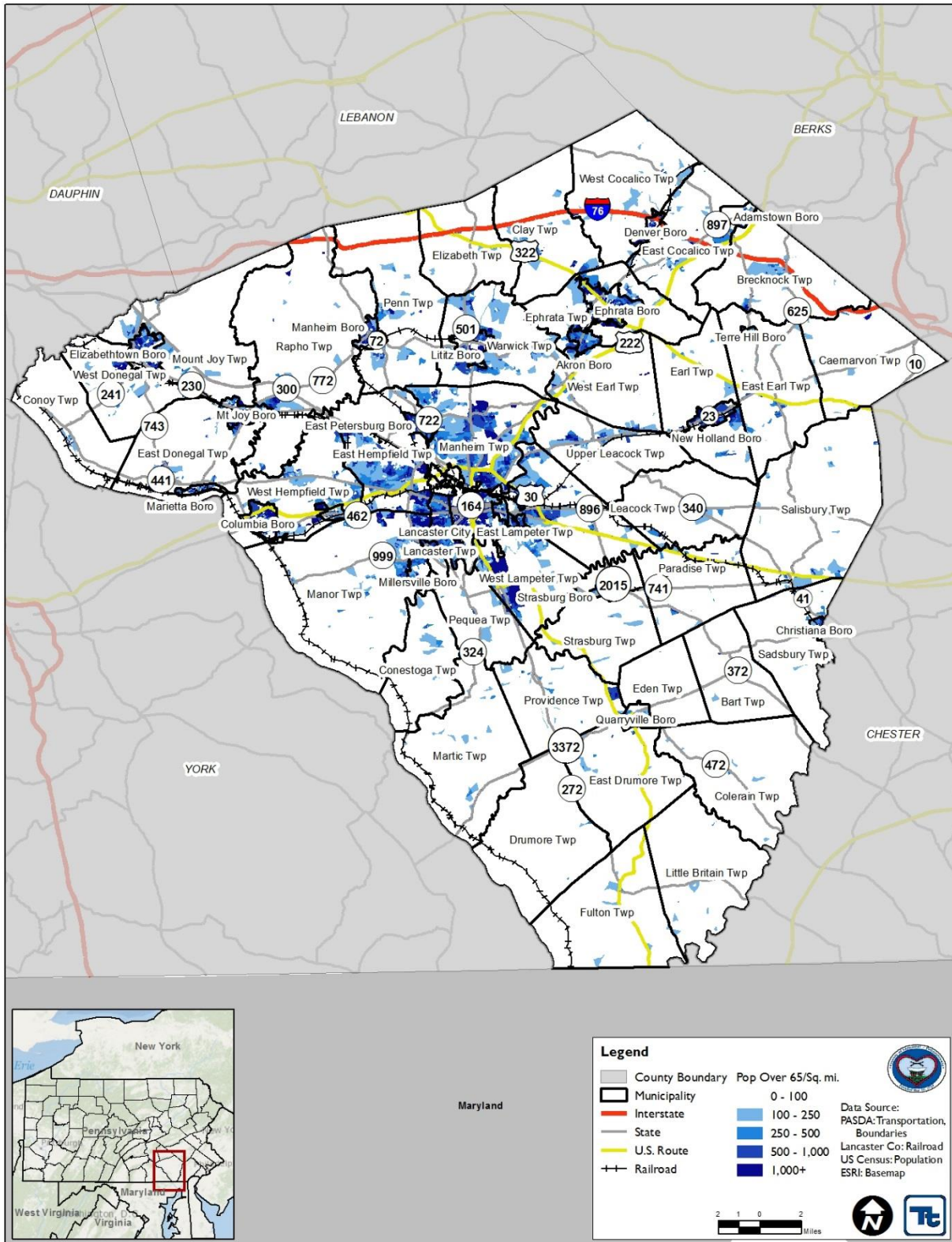
The Disaster Mitigation Act of 2000 (DMA 2000) requires that HMPs consider socially vulnerable populations. These populations can be more susceptible to hazard events based on a number of factors, including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. For the purposes of this study, vulnerable populations shall include (1) the elderly and younger populations (persons aged 65 and over; persons aged 5 and younger) and (2) those living in low-income households.

Approximately 15 percent of the County's total population is aged 65 and older. 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, 6.8 percent of the County's total population is under the age of 5 years. 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 represent approximately 21.8 percent of its total population.

Figure 2-3 and Figure 2-4 illustrate the distribution of these populations for Lancaster County.



Figure 2-3. Lancaster County Population Over 65 Years

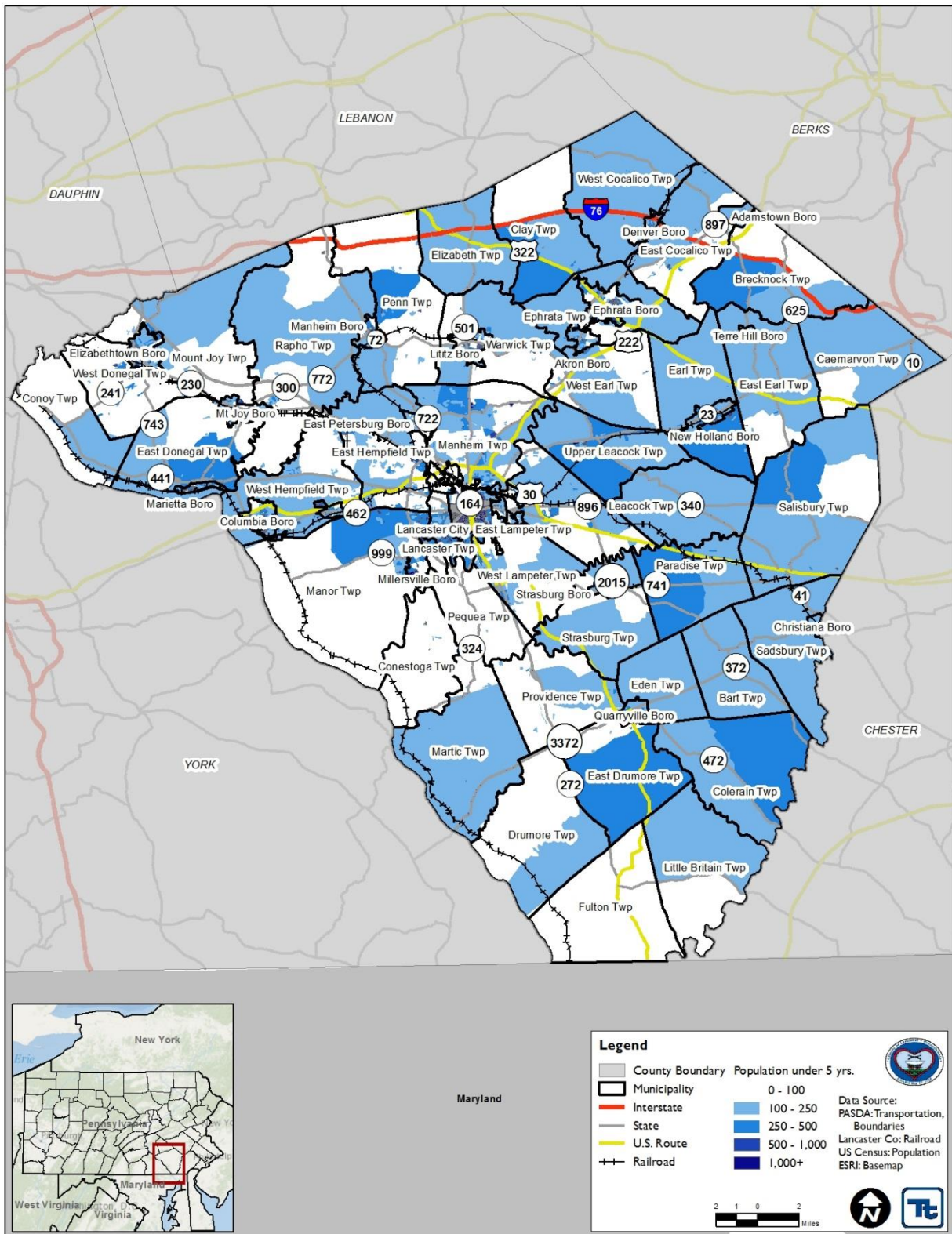


Source: U.S. Census Bureau 2010; FEMA 2018





Figure 2-4. Lancaster County Population Under 5 Years



Source: U.S. Census Bureau 2010; FEMA 2018







Only 2.4 percent of Lancaster County’s population lives in group quarters. The term “group quarters” refers to people living in communal settings, which can include inmates in a prison, students in a dorm, or elderly or mentally disabled individuals living in group care homes. Residents living in group quarters are often special needs populations. It is important to ensure that each group quarter facility has its own emergency plan to account for the unique needs of its residents during a hazard event.

Table 2-3 provides population estimates and projections for each municipality in Lancaster County and for the County as a whole. The population of the entire County is estimated to be 651,982 by the year 2040, which represents a net population increase of 132,537 people in a 30-year period. As shown in the table below, nearly every municipality in Lancaster County is projected to see an increase in population. The table also shows that only one municipality, Marietta Borough, is projected to see a decrease in population. 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 Lancaster County to better assess magnitudes of hazards and develop more specific mitigation plans and strategies.

**Table 2-3. Lancaster County Population Projections by Municipality**

Municipality	2000 Census	2010 Census	Population Change 2000-2010 (%)	2020 Projection	2030 Projection	2040 Projection	Projected Population Change 2010-2040 (%)
Adamstown Borough	1,201	1,772	47.5%	1,990	2,187	2,364	33.4%
Akron Borough	4,046	3,876	-4.2%	3,999	4,077	4,119	6.3%
Bart Township	3,003	3,094	3.0%	3,332	3,530	3,692	19.3%
Brecknock Township	6,699	7,199	7.5%	8,172	9,066	9,887	37.3%
Caernarvon Township	4,378	4,748	8.5%	5,162	5,511	5,805	22.3%
Christiana Borough	1,124	1,168	3.9%	1,202	1,223	1,236	5.8%
Clay Township	5,173	6,308	21.9%	7,062	7,746	8,366	32.6%
Colerain Township	3,261	3,635	11.5%	4,079	4,482	4,848	33.4%
Columbia Borough	10,311	10,400	0.9%	10,502	10,500	10,428	0.3%
Conestoga Township	3,749	3,776	0.7%	3,997	4,169	4,300	13.9%
Conoy Township	3,067	3,194	4.1%	3,463	3,689	3,878	21.4%
Denver Borough	3,332	3,861	15.9%	4,417	4,939	5,431	40.7%
Drumore Township	2,243	2,560	14.1%	2,816	3,039	3,232	26.3%
Earl Township	6,183	7,024	13.6%	7,661	8,202	8,658	23.3%
East Cocalico Township	9,954	10,310	3.6%	11,538	12,639	13,625	32.2%
East Donegal Township	5,405	7,755	43.5%	9,051	10,275	11,434	47.4%
East Drumore Township	3,535	3,691	4.4%	4,157	4,474	4,748	28.6%
East Earl Township	5,723	6,507	13.7%	7,020	7,445	7,794	19.8%
East Hempfield Township	21,399	23,522	9.9%	26,048	28,269	30,217	28.5%
East Lampeter Township	13,566	16,424	21.1%	18,506	20,390	22,093	34.5%
East Petersburg Borough	4,450	4,506	1.3%	4,766	4,966	5,119	13.6%
Eden Township	1,856	2,094	12.8%	2,261	2,401	2,516	20.2%
Elizabeth Township	3,833	3,886	1.4%	4,263	4,599	4,901	26.1%
Elizabethtown Borough	11,887	11,545	-2.9%	12,519	13,340	14,027	21.5%
Ephrata Borough	13,213	13,394	1.4%	14,142	14,716	15,150	13.1%
Ephrata Township	8,026	9,400	17.1%	10,773	12,075	13,317	41.7%



Municipality	2000 Census	2010 Census	Population Change 2000-2010 (%)	2020 Projection	2030 Projection	2040 Projection	Projected Population Change 2010-2040 (%)
Fulton Township	2,826	3,074	8.8%	3,318	3,520	3,687	19.9%
Lancaster City	56,348	59,322	5.3%	61,445	62,870	63,773	7.5%
Lancaster Township	13,944	16,149	15.8%	17,735	19,107	20,291	25.6%
Leacock Township	4,878	5,220	7.0%	5,556	5,822	6,031	15.5%
Lititz Borough	9,029	9,369	3.8%	9,950	10,408	10,764	14.9%
Little Britain Township	3,514	4,106	16.8%	4,746	5,347	5,915	44.1%
Manheim Borough	4,784	4,858	1.5%	4,885	4,866	4,818	-0.8%
Manheim Township	33,697	38,133	13.2%	42,094	45,535	48,513	27.2%
Manor Township	16,498	19,612	18.9%	22,167	24,489	26,598	35.6%
Marietta Borough	2,689	2,588	-3.8%	2,577	2,544	2,496	-3.6%
Martic Township	4,990	5,190	4.0%	5,729	6,204	6,621	27.6%
Millersville Borough	7,774	8,168	5.1%	8,376	8,493	8,542	4.6%
Mount Joy Borough	6,765	7,410	9.5%	7,949	8,387	8,742	18.0%
Mount Joy Township	7,644	9,873	29.2%	11,445	12,924	14,319	45.0%
Mountville Borough	2,444	2,802	14.6%	3,207	3,584	3,936	40.5%
New Holland Borough	5,092	5,378	5.6%	5,788	6,124	6,399	19.0%
Paradise Township	4,698	5,131	9.2%	5,477	5,753	5,973	16.4%
Penn Township	7,312	8,789	20.2%	9,716	10,525	11,230	27.8%
Pequea Township	4,358	4,605	5.7%	4,866	5,067	5,219	13.3%
Providence Township	6,651	6,897	3.7%	7,485	7,982	8,402	21.8%
Quarryville Borough	1,994	2,576	29.2%	2,933	3,257	3,552	37.9%
Rapho Township	8,578	10,442	21.7%	11,482	12,381	13,156	26.0%
Sadsbury Township	3,025	3,395	12.2%	3,788	4,141	4,457	31.3%
Salisbury Township	10,012	11,062	10.5%	12,280	13,353	14,297	29.2%
Strasburg Borough	2,800	2,809	0.3%	3,026	3,206	3,355	19.4%
Strasburg Township	4,021	4,182	4.0%	4,479	4,720	4,914	17.5%
Terre Hill Borough	1,237	1,295	4.7%	1,328	1,347	1,354	4.6%
Upper Leacock Township	8,229	8,708	5.8%	9,399	9,971	10,443	19.9%
Warwick Township	15,475	17,783	14.9%	20,860	23,853	26,787	50.6%
West Cocalico Township	6,967	7,280	4.5%	8,047	8,715	9,295	27.7%
West Donegal Township	6,539	8,260	16.3%	9,380	10,399	11,326	37.1%
West Earl Township	6,766	7,868	15.7%	8,583	9,191	9,707	23.4%
West Hempfield Township	15,128	16,153	26.3%	18,440	20,619	22,712	40.6%
West Lampeter Township	13,145	15,209	6.8%	17,909	20,555	23,173	52.4%
<b>Lancaster County</b>	<b>470,658</b>	<b>519,445</b>	<b>10.4%</b>	<b>569,343</b>	<b>613,208</b>	<b>651,982</b>	<b>25.5%</b>

Sources: U.S. Census 2000, 2010, and 2018

According to the 2012-2016 American Community Survey, 15.6 percent of the County’s population speaks a language other than English with 5.8 percent of the population speaking English less than “very well.” While currently a low percentage, future hazard mitigation strategies should consider addressing language barriers to



ensure that all residents can receive emergency instructions. Table 2-4 summarizes race and ethnicity population information for Lancaster County.

**Table 2-4. Race and Ethnicity in Lancaster County**

Race and Ethnicity	2010	% of Population	2016	% of Population
One race	509,244	98%	521,947	97.9%
White	460,171	88.6%	472,127	88.6%
Black or African American	19,035	3.7%	22,015	4.1%
American Indian and Alaska Native	1,195	0.2%	918	0.2%
Asian	9,860	1.9%	10,986	2.1%
Native Hawaiian and Other Pacific Islander	164	0.0%	24	0.0%
Some other race	18,819	3.6%	15,877	3.0%
Two or more races	10,201	2.0%	11,163	2.1%
Foreign born	22,242	4.3%	24,771	4.6%
Speak a language other than English	81,033	15.6%	6,276	4.5%
Hispanic or Latino	44,930	8.6%	52,083	9.8%

Source: U.S. Census Bureau 2010, 2018

Lancaster County has 202,952 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 devastating to the displaced residents.

According to the U.S. Census, approximately 4.6 percent of the County’s residential properties are vacant; most vacancies are due to 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 31.5 percent of the County’s population live in rented homes. 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 2-5 summarizes characteristics of the residential properties in Lancaster County.

**Table 2-5. Housing Characteristics in Lancaster County**

Housing Characteristics	2010	2016
Total housing units	202,952	206,308
Owner-occupied housing units	132,703	134,255
Renter-occupied housing units	60,899	61,916
Vacant housing units	9,350	10,137
Median value (dollars)	\$189,200	\$191,400
Housing units with a mortgage	86,215	85,082
Housing units without a mortgage	48,333	49,173

Source: U.S. Census Bureau 2010; American Fact Finder 2018

In 2016 (the most current data available), the median household income in the County was \$67,871, which was higher than the Commonwealth of Pennsylvania’s estimated median household income (\$54,895). The County’s 2016 estimated per capita income of \$29,829 was lower than the Commonwealth’s 2016 estimated per capita





income of \$30,137. Approximately 7 percent of families' incomes in Lancaster County were below poverty level, and 10.8 percent of its individuals' incomes were below poverty level. Emergency responders may have difficulty connecting with individuals within this economic bracket for several reasons, including less access to the Internet within these communities. Additionally, some low-income families and individuals may not own vehicles, and therefore could be more vulnerable during an evacuation. Table 2-6 summarizes economic characteristics of Lancaster County's population, and population distribution of residents with incomes below the poverty level.

**Table 2-6. Economic Characteristics in Lancaster County**

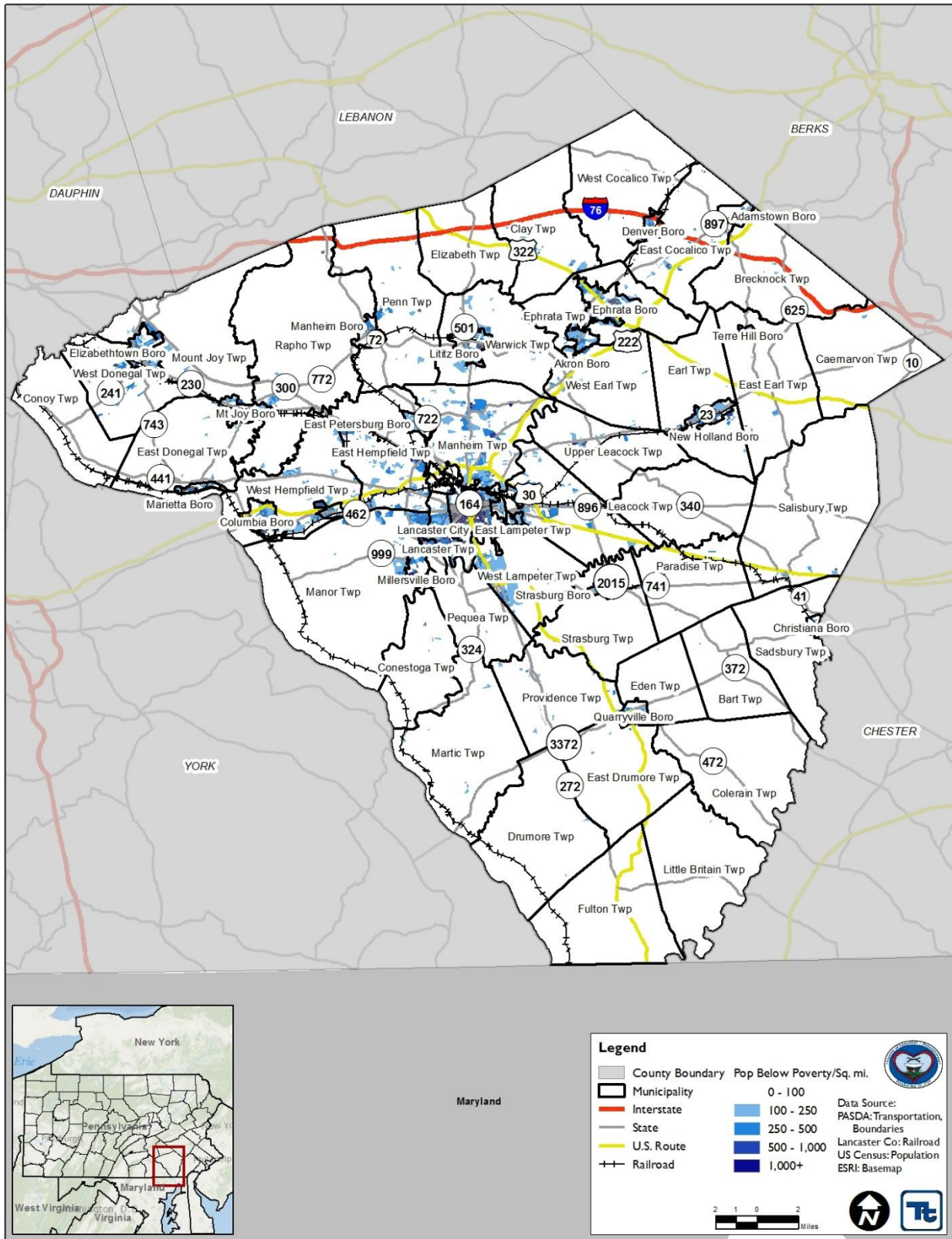
Economic Characteristics	2010 Census	2016 Estimates
Median household income	\$32,699	\$55,322
Median family income	\$41,279	\$67,871
Per capita income	\$17,230	\$29,829
Families with income below the poverty level	6.7%	7%
Individuals with income below the poverty level	9.5%	10.8%

Source: American Fact Finder 2018

Figure 2-5 illustrates population distribution for residents with incomes below the poverty level.



Figure 2-5. Lancaster County Population Below the Poverty Level



Source: U.S. Census Bureau 2010; FEMA 2017





## 2.4 LAND USE AND DEVELOPMENT

Lancaster County is a rural, agricultural community that has seen an increase in development over the last 15 years. It is famous for the cultural heritage of the “Plain Sect” farming community who came to America from Germany in the sixteenth century. The County is listed on World Monument Watch List of the world’s 100 most endangered historical and cultural sites due to development pressures. Transportation systems provide the County with a high level of accessibility to major urban centers, such as the Cities of Harrisburg, Baltimore, and Philadelphia. As a result, the County has experienced a tremendous amount of growth and development stemming outward. Currently, 54.5 percent of the land is agricultural, while only 20 percent is considered to be developed; however, this number continues to grow year after year.

Lancaster County is well known for its agriculture and the County’s extensive and productive agricultural soils are considered among the best non-irrigated farmland in the world. More than 50 percent of the County has soils classified as prime farmland by the U.S. Natural Resources Conservation Service and 75 percent is classified as prime farmland or soils of statewide importance. Half of the County’s land is zoned for agriculture, with 5,657 farms comprising nearly 440,000 acres identified in the 2012 Census of Agriculture (U.S. Department of Agriculture 2012). Lancaster’s agricultural industry has strongly contributed to the County’s cultural identity. The County is known for its Amish farming communities, and the Amish share of Lancaster farms has steadily increased over time (40 percent of farms and nearly 100,000 acres).

Lancaster County is relatively flat (less than 8 percent slopes). The majority of the County’s forested land was cleared in the past to allow for farming, but forested areas can be found in the northern and northeastern parts of the County and along the Susquehanna River. Wooded areas are also found bordering streams and other waterbodies throughout the County. The Lancaster County Conservancy has identified approximately 12,000 acres of important natural habitats that should be preserved as “Natural Gems,” due to the presence of water bodies, wetland, forestland, grassland, geologic features, plants, animals, and adjacency to other preserved tracts.

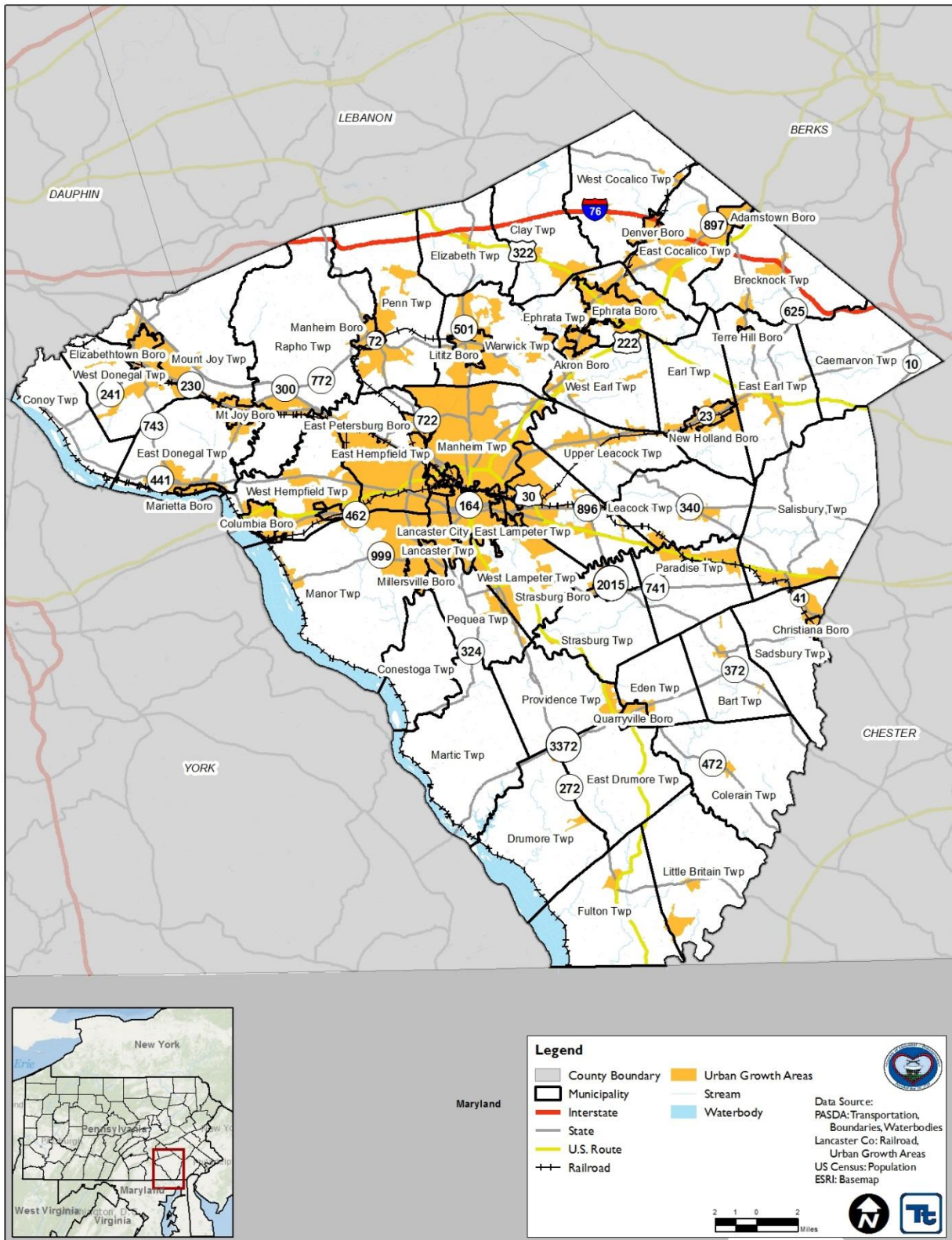
Lancaster County’s existing land use and growth management policies influence and are influenced by the land use and growth policies of neighboring counties. Lancaster is neighbored by six counties: Berks County to the northeast, Chester County to the east, Cecil County (MD) to the south, York County to the west, and Dauphin and Lebanon Counties to the northwest. The transportation corridor consisting of PA 283, U.S. 30, and U.S. 222 has been the focus of development in Lancaster County in the past and future growth is expected to continue to target these areas.

Land use regulations have not been consistent with the County’s Comprehensive Plan’s Growth Management Element, though recent multi-municipal planning efforts have worked to correct this. Most recent development in the County has taken place near major corridors or within designated Urban or Village Growth Areas. While other developments have taken place outside of growth areas, they largely have occurred near existing development. Continued growth is projected for the County with an anticipated 38,000 acres of development by 2030. The County has identified the preservation of farmland as a goal and has committed to preservation through the Agricultural Easement Purchase program administered by the Agricultural Preserve Board, which has protected approximately 50,000 acres throughout the County. Figure 2-6 illustrates Urban Growth Areas in Lancaster County, and Figure 2-7 shows County land use and land cover.





Figure 2-6. Lancaster County Urban Growth Areas

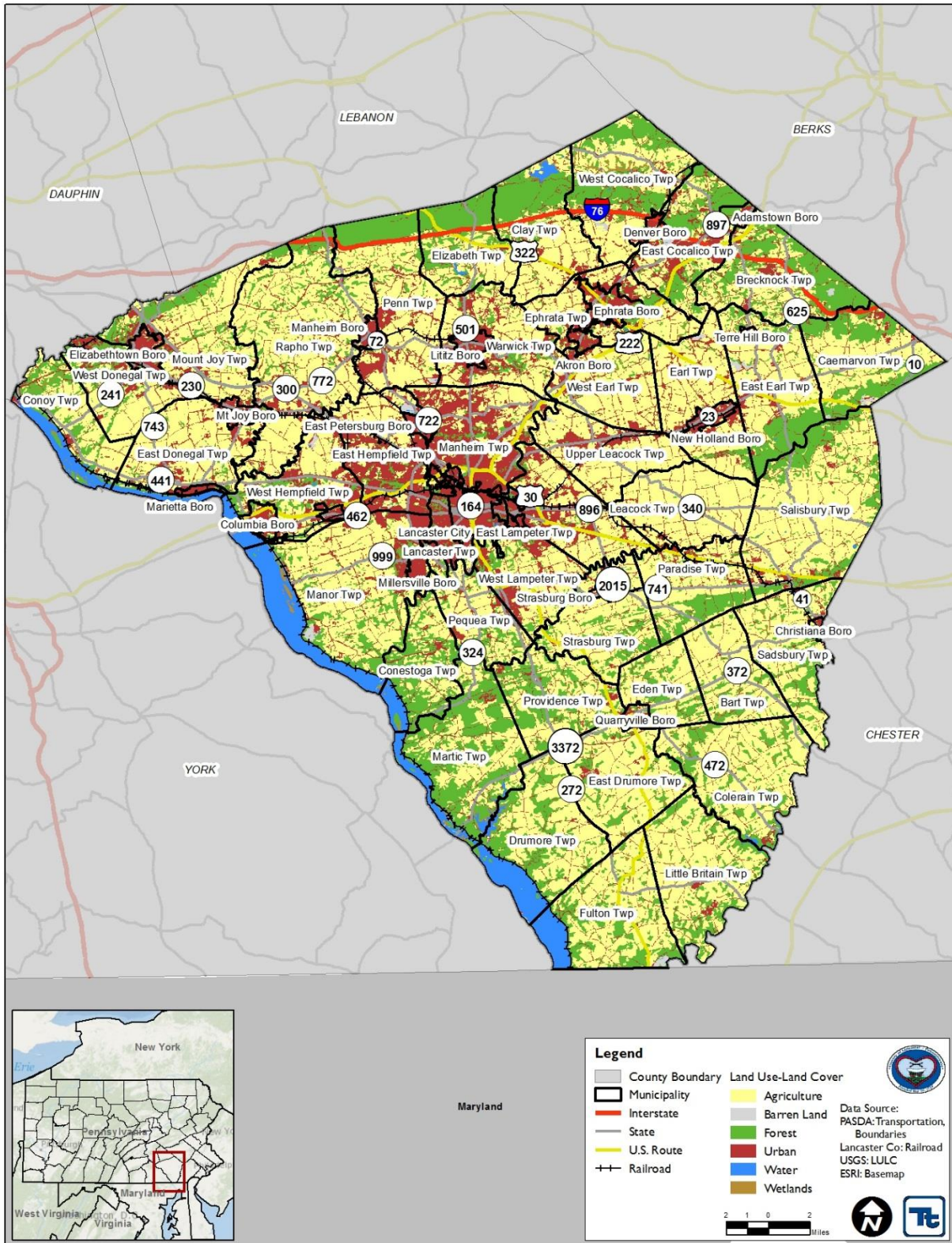


Source: Lancaster County 2016





Figure 2-7. Lancaster County Land Use and Land Cover



Source: U.S. Geological Survey (USGS) 2011







## 2.5 DATA SOURCES AND LIMITATIONS

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

1. Lancaster County Comprehensive Plan (Lancaster County 2016)
2. Center for Rural Pennsylvania. "County Profile." (The Center for Rural Pennsylvania 2018).
3. U.S. Census Bureau. 2010
4. U.S. Census Bureau. "American Factfinder - 2012-2016 American Community Survey Lancaster County".
5. Center for Workforce Information and Analysis. (Center for Workforce Information and Analysis. 2018).

Data sources used to develop the HMP in general are listed in Section 1.4. Data sources used to perform geographic information system (GIS) analysis for the risk assessment are listed in Section 4.1. These sources were key in understanding the current demographic makeup of the community as well as in framing the foundation of the Plan. The sources listed provided the underlying context of the Plan and allowed the Planning Team to understand critical vulnerabilities in the County. Throughout the course of the planning process, the Planning Team continually sought additional data sources to augment the information included in the Plan. The Planning Team made multiple requests for existing jurisdictional documents (e.g., jurisdictional hazard mitigation plans and other relevant information). Despite multiple requests for municipal documents, the response was somewhat 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 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 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 Lancaster County HMP. This section describes the planning process used to update the HMP, with participation from 53 of the County’s 60 municipalities. This section also describes the hazard mitigation Steering Committee, Planning Team, meetings and documentation, public and stakeholder participation, multi-jurisdictional planning, and existing planning mechanisms implemented during the HMP update process. Additional details about the process of updating each section of this HMP appear at the beginnings of those sections.

### 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. Hazard vulnerabilities and the risk assessment are described in Section 4 (Risk Assessment), and the mitigation strategy is described in Section 6 (Mitigation Strategy) of 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 Lancaster County. Opportunities for public participation included a public meeting, distribution of information at municipal meetings, and chances to the 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 Lancaster County, its municipalities, and the Steering Committee. Through this planning process, the County established a comprehensive approach to reduce effects of hazards on the County and its municipalities.

### 3.2 THE PLANNING TEAM

Recognizing the need to manage risk within the County, and to meet the requirements of the DMA 2000, the Lancaster County Emergency Management Agency (LEMA) led the update to the 2014 HMP. Mr. Randall Gockley, Director, 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. Until his retirement from LEMA at the end of the planning process, Mr. Gockley served as chair of the Steering Committee. Upon Mr. Gockley’s retirement, Mr. Philip Colvin served as chair of the Steering Committee. Throughout the planning process, Mr. Benjamin Herskowitz served as the lead planner and point of contact for the planning process. The Steering Committee was comprised of the following individuals:

- Randy Gockley, Director (until his retirement), LEMA
- Philip Colvin, Deputy Director then Director, LEMA
- Benjamin Herskowitz, Radiological Trainer/Planner, LEMA
- David Boucher, Operations and Training Officer, LEMA
- Brenda Pittman, Emergency Medical Services (EMS) and Critical Incident Stress Management (CISM) Coordinator, LEMA
- Tony Subbio, Project Manager, Tetra Tech, Inc. (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
  - Assuring the data and information used in the plan update process is best available
  - Reviewing and updating the hazard mitigation planning goals and objectives
  - Identifying and screening of appropriate mitigation strategies and activities
  - Reviewing and updating plan maintenance procedures
- Reviewing and commenting on plan documents prior to submission to PEMA and FEMA.

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 following organizations were invited to participate on the Planning Team:

<b>Lancaster County Jurisdictions</b>				
• Lancaster County	• Drumore Township	• Elizabethtown Borough	• Millersville Borough	• Strasburg Borough
• Adamstown Borough	• Earl Township	• Ephrata Borough	• Mount Joy Borough	• Strasburg Township
• Akron Borough	• East Cocalico Township	• Ephrata Township	• Mount Joy Township	• Terre Hill Borough
• Bart Township	• East Donegal Township	• Fulton Township	• Mountville Borough	• Upper Leacock Township
• Caernarvon Township	• East Drumore Township	• Lancaster City	• New Holland Borough	• Warwick Township
• Christiana Borough	• East Earl Township	• Leacock Township	• Paradise Township	• West Cocalico Township
• Clay Township	• East Hempfield Township	• Lititz Borough	• Penn Township	• West Donegal Township
• Colerain Township	• East Lampeter Township	• Manheim Borough	• Providence Township	• West Earl Township
• Columbia Borough	• East Petersburg Borough	• Manheim Township	• Rapho Township	• West Hempfield Township
• Conestoga Township	• Eden Township	• Marietta Borough	• Sadsbury Township	• West Lampeter Township



- Denver Borough
- Elizabeth Township
- Martic Township
- Salisbury Township

**Educational Institutions**

- Cocalico School District
- Elizabethtown Area School District
- Lancaster County Career & Technical School
- Penn Manor School District
- Elizabethtown College
- Columbia Borough School District
- Hempfield School District
- Lancaster County Public Safety Training Center
- Pequea Valley School District
- Millersville University
- Conestoga Valley School District
- Lampeter-Strasburg School District
- Lancaster Mennonite School
- Solanco School District
- Eastern Lancaster County School District
- Lancaster Country Day School
- Lancaster-Lebanon Intermediate Unit 13
- Warwick School District

**Hospitals**

- Lancaster General Hospital-Penn Medicine
- UPMC Pinnacle Lancaster
- UPMC Pinnacle - Lititz
- WellSpan Ephrata Community Hospital

**Fire Departments**

- Adamstown Fire Department
- Durlach & Mount Airy Fire Department
- Lancaster Airport Fire Department
- New Holland Fire Department
- Southern Manheim Twp Fire Department
- Akron Fire Department
- East Petersburg Fire Department
- Lancaster City Fire Department
- Paradise Fire Department
- Stevens Fire Department
- Bainbridge Fire Department
- Eden Fire Department
- Lancaster Twp Fire Department
- Penryn Fire Department
- Strasburg Fire Department
- Bareville Fire Department
- Elizabethtown Fire Department
- Lincoln Fire Department
- Quarryville Fire Department
- Upper Leacock Fire Department
- Bart Fire Department
- Ephrata Fire Department
- Lititz Fire Department
- Rawlinsville Fire Department
- Weaverland Valley Fire Department
- Bird-In-Hand Fire Department
- Farmersville Fire Department
- Manheim Fire Department
- Reamstown Fire Department
- West Earl Fire Department
- Blue Rock Fire Department
- Fivepointville Fire Department
- Marietta Fire Department
- Refton Fire Department
- West Hempfield Fire Department
- Bowmansville Fire Department
- Gap Fire Department
- Martindale Fire Department
- Reinholds Fire Department
- West Willow Fire Department
- Brickerville Fire Department
- Gordonville Fire Department
- Mastersonville Fire Department
- Rheems Fire Department
- White Horse Fire Department
- Brunnerville Fire Department
- Hempfield Fire Department
- Maytown Fire Department
- Robert Fulton Fire Department
- Willow Street Fire Department
- Caernarvon Fire Department
- Intercourse Fire Department
- Mount Joy Fire Department
- Rohrerstown Fire Department
- Witmer Fire Department
- Christiana Fire Department
- Kinzer Fire Department
- Mountville Fire Department
- Ronks Fire Department
- Columbia Borough Fire Department
- Lafayette Fire Department
- Mt Joy Twp Forest Fire Crew
- Rothsville Fire Department
- Conestoga Fire Department
- Lampeter Fire Department
- Neffsville Fire Department
- Schoeneck Fire Department
- Denver Fire Department
- Lancaster County Hazardous Materials Response Team
- New Danville Fire Department
- Smokestown Fire Department



**Police Departments**

- Akron Borough Police Department
- Ephrata Police Department
- Manheim Borough Police Department
- New Holland Police Department
- Strasburg Borough Police Department
- Christiana Borough Police Department
- Elizabethtown Borough Police Department
- Manheim Township Police
- Northern Lancaster County Regional Police Department
- Susquehanna Regional Police Department
- Columbia Borough Police Department
- Franklin & Marshall Public Safety
- Manheim Township Police Substation
- Northwest Regional Police Department
- West Earl Township Police Department
- East Cocalico Township Police Department
- Lancaster County Parks
- Manor Township Police Department
- Pennsylvania Fish Commission
- West Hempfield Township Police Department
- East Earl Township Police Department
- Lancaster County Sheriff
- Millersville Borough Police Department
- Pennsylvania State Police
- West Lampeter Township Police Department
- East Hempfield Township Police Department
- Lancaster Police Department
- Millersville University Police Department
- Quarryville Borough Police Department
- East Lampeter Township Police Department
- Lititz Borough Police Department
- Mount Joy Borough Police Department
- Southern Regional Police Department

**Emergency Medical Services (EMS) Agencies**

- Christiana EMS
- Fivepointville EMS
- Manheim Township EMS
- Reinholds EMS
- Warwick EMS
- Columbia QRS
- Gordonville EMS
- New Holland EMS
- Rothsville EMS
- White Horse EMS
- Ephrata Community Hospital EMS
- Lancaster EMS
- Northwest EMS
- Susquehanna Valley EMS
- Ephrata EMS
- Leola EMS
- Reamstown EMS
- Wakefield EMS

**Retirement, Personal Care, and Nursing Homes**

- Brethren Village
- Garden Spot Village
- Lancashire Hall
- Mennonite Home
- United Zion Retirement Community
- Calvary Fellowship Homes
- Gardens at Lititz
- Lancaster Care and Rehabilitation Center
- Moravian Manor
- Zerbe Sisters Nursing Center
- Conestoga View
- Gardens at Stevens
- Landis Homes
- Mount Hope Nazarene
- Elizabethtown Nursing and Rehabilitation
- Harrison Senior Living in Christiana
- Manorcare Health Services: Lancaster
- Pleasant View Retirement Community
- Ephrata Manor
- Homestead Village
- Maple Farm
- Quarryville Presbyterian Retirement Community
- Fairmount Homes
- Lakeside at Willow Valley
- Masonic Village at Elizabethtown
- Susquehanna Valley Nursing and Rehabilitation

**Neighboring Jurisdictions**

- Berks County EMA
- Chester County Planning
- Lebanon County Planning
- York County Planning
- Harford County, Maryland EMA
- Berks County Planning
- Dauphin County Department of Public Safety
- Tri-County Regional Planning Commission
- Cecil County, Maryland EMA
- Harford County, Maryland Planning



- Chester County EMA
- Lebanon County EMA
- York County EMA
- Cecil County, Maryland Planning

**Other Stakeholders**

- Salvation Army
- Pennsylvania Emergency Management Agency

For a complete list of individual invitees, participants, attendance at meetings, completion of worksheets, or submission of comments, please refer to Appendices C through E.

The Planning Team acknowledged that important steps in developing a comprehensive HMP were identifying hazards that specifically affect Lancaster 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 to narrow the focus to natural disasters only.

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, and hazard profiling, and risk assessment
- Assisting with the review and update of mitigation planning goals and objectives
- Assisting with the review of progress of past mitigation strategy
- 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 Lancaster County Steering Committee and Planning Team as part of the process of updating the Lancaster County HMP. In addition, LEMA incorporated discussions about the HMP update in its quarterly emergency management coordinator training conducted in November 2017, February 2018, and August 2018.

**Table 3-1. Public and Planning Meetings**

Date	Description of Meeting
June 30, 2017	Kickoff meeting with the Steering Committee
August 9, 2017	Kickoff Meeting with Planning Team members, including five-year plan review and plan update process, evaluation of identified hazards, capability assessment, and mitigation strategy review.
August 17, 2017	Meeting with Emergency Management Coordinators, including evaluation of hazards and risks, problem areas, and mitigation actions completed



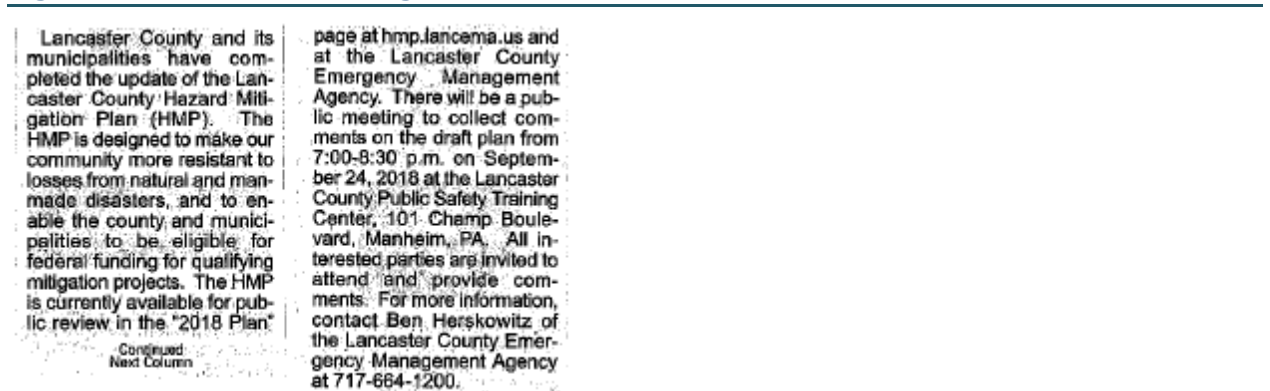
Date	Description of Meeting
February 6, 2018	Planning Team Meeting to review the results of the risk assessment and the capabilities assessment to that point. The Planning Team members identified problem areas and issues throughout the County for each hazard.
March 20, 2018	First Mitigation Solutions Workshop to review mitigation goals, objectives, actions and current plan status with the Planning Team.
May 4, 2018	Second Mitigation Solutions Workshop to review mitigation goals, objectives, actions and current plan status with the Planning Team.
May 7, 2018	Seminar to discuss the National Flood Insurance Program (NFIP), the cost of flood insurance, and the Community Rating System (CRS) Program.
May 29, 2018	Planning Team Meeting to discuss the mitigation goals, objectives, and actions being included in the updated HMP.
May 29 – June 29, 2018	Direct outreach and teleconference discussions with municipalities, to garner as much participation in the planning process as possible.
September 24, 2018	Public HMP Draft Review Meeting to receive comments on the draft HMP.
January 16, 2019	HMP adoption by County Commissioners.

The Steering Committee followed up each meeting with meeting notes that documented all agenda topics, decisions, and action items identified. The meeting minutes were posted to the project website. Documentation from all meetings is located in Appendix C.

Lancaster County residents were informed of the planning process through various sources, including newspaper-announced public notices and announcements on the Lancaster County HMP project website (<http://hmp.lancema.us/>).

The Draft Review Meeting was advertised as a public meeting (see Figure 3-1). No members of the general public attended. Any subsequent supporting documentation provided by County residents will be included in Appendix E (Public and Stakeholder Participation).

**Figure 3-1. Draft Review Meeting Public Notice**



### 3.4 PUBLIC AND STAKEHOLDER PARTICIPATION

To maximize effectiveness of the HMP, the Planning Team fostered continual public and stakeholder engagement. Input was encouraged and collected through a variety of methods. Three worksheets/surveys—the Hazard/Risk Identification Survey, Capabilities Assessment Survey, and Mitigation Strategy 5-Year Plan Review Worksheet (Mitigation Review Worksheet)—were given to representatives from each municipality in Lancaster County. Of the County and 60 municipalities surveyed in Lancaster County, 54 jurisdictions (the



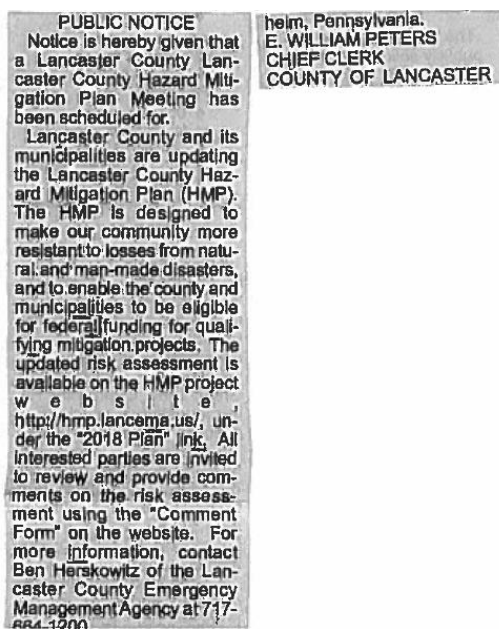


County and 53 municipalities) provided information so that their input could be reviewed and incorporated into the updated HMP.

The following entities with vested interest in development of the updated HMP were given the opportunity to participate in the planning process by attending a Planning Team or public meeting, or by offering comments on the project website: local, state, and federal agencies; neighboring jurisdictions (i.e., Berks, Chester, Dauphin, Lebanon, and York Counties in Pennsylvania; Cecil and Harford Counties in Maryland); community leaders; educators; healthcare facilities; and other relevant private and nonprofit groups. Invitations to participate in meetings were sent to those stakeholders. Appendix E includes a copy of the Planning Team meeting invitation list and sample copies of invitation letters sent. Meeting invitations were also sent to all municipalities including elected officials and Emergency Management Coordinators. Additionally, direct outreach by phone or one-on-one meetings was conducted with municipalities who were unable to attend other meetings or who had questions about worksheets, participation requirements, the planning process, or mitigation project selection. 45 municipalities in Lancaster County had representatives attending at least one meeting; the other 8 participating municipalities were contacted individually.

An administrative issue prevented the Risk Assessment Review Meeting from being publicly advertised, but a public notice was issued to invite residents to review the results of the risk assessment and provide feedback. That notice is shown in Figure 3-2.

Figure 3-2. Risk Assessment Public Notice



Source: LNP Media Group 2018

Through public notices published in the local newspapers, the groups listed in Section 3.2 and the general public were invited to visit the project website, review the draft County HMP update, and send comments to LEMA. In addition, a general public meeting was held during the planning process, as listed in Table 3-1. Preceding the public meeting was a public notice inviting the general public to attend. Copies of the public notices and other forms of public and stakeholder outreach are presented in Appendix E.

Throughout the course of the entire planning process, one member of the general public and the following stakeholder organizations participated:

- Brethren Village
- Hempfield School District
- Mennonite Home Communities





- Donegal School District
- Exelon
- Fairmount Homes
- Harrison House of Christiana
- Heart of Lancaster Regional Medical Center
- Homestead Village
- Lancaster General Health
- Lancaster Regional Medical Center
- Landis Homes
- Maple Farm
- Millersville University Center for Disaster Research and Education
- Mount Hope Nazarene Retirement Community
- Pennsylvania Emergency Management Agency
- Strasburg Borough Police Department
- WellSpan Ephrata

Section 3.5 of this HMP, Multi-Jurisdictional Planning, includes Table 3-2, showing overall municipal participation in the planning process.

### **3.5 MULTI-JURISDICTIONAL PLANNING**

Lancaster County took a multi-jurisdictional approach to preparing the HMP, so that the HMP would apply to the County and all participating municipalities. The County was able to provide resources (e.g., data, geographic information system [GIS], etc.) to which the municipalities may not have had access. However, Lancaster County depended on municipal buy-in because the municipalities have the legal authority to enforce compliance with land use planning and development directives. Lancaster County undertook an intensive effort to involve all 60 municipalities in the update process.

Each municipality was given the opportunity to participate in this process. Municipal officials and representatives were invited to attend Planning Team and public meetings, were provided worksheets to update the hazards of concern capabilities and mitigation strategy, and were asked to review and prioritize the mitigation actions. Municipal participation culminated in formal adoption of the HMP; copies of municipal adoption resolutions are in Appendix F. Table 3-2 indicates the ways each municipality participated in the planning process. In some cases, a municipality was unable to attend a Planning Team meeting; therefore, an individual follow-up meeting with each municipality was held by Lancaster County Steering Committee representatives to cover the meeting material and provide municipal support on the topics presented.



Table 3-2. Participation Matrix

Jurisdiction	Meetings						Contacted Individually	Worksheets			2019 Plan Adoption Date
	Planning Team Kick-Off Meeting	EMC Training	Risk Assessment Meeting	Mitigation Strategy Workshops	Mitigation Strategy Review Meeting	HMP Draft Review Meeting		Risk Assessment Survey Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Lancaster County	x	x	x	x	x	x	x	x	x	x	01/16/19
Adamstown Borough				x			x				TBD
Akron Borough											TBD
Bart Township					x	x		x	x	x	TBD
Brecknock Township											TBD
Caernarvon Township	x		x	x				x	x	x	TBD
Christiana Borough	x							x	x	x	TBD
Clay Township							x				TBD
Colerain Township								x	x	x	TBD
Columbia Borough	x	x	x		x	x	x	x	x	x	TBD
Conestoga Township			x				x				TBD
Conoy Township											TBD
Denver Borough	x		x				x	x	x	x	TBD
Drumore Township		x						x	x	x	TBD
Earl Township	x						x	x			TBD
East Cocalico Township			x					x	x	x	TBD
East Donegal Township	x							x	x	x	TBD
East Drumore Township				x			x			x	TBD
East Earl Township	x	x	x	x	x	x		x	x	x	TBD
East Hempfield Township	x			x			x	x	x	x	TBD
East Lampeter Township	x		x		x		x	x	x	x	TBD
East Petersburg Borough	x			x			x	x	x	x	TBD
Eden Township	x					x		x	x	x	TBD
Elizabeth Township								x	x	x	TBD
Elizabethtown Borough	x	x						x	x		TBD
Ephrata Borough	x				x	x	x	x	x	x	TBD
Ephrata Township					x		x	x	x	x	TBD
Fulton Township	x				x	x		x	x	x	TBD



Jurisdiction	Meetings						Contacted Individually	Worksheets			2019 Plan Adoption Date
	Planning Team Kick-Off Meeting	EMC Training	Risk Assessment Meeting	Mitigation Strategy Workshops	Mitigation Strategy Review Meeting	HMP Draft Review Meeting		Risk Assessment Survey Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
Lancaster City							x	x	x	x	TBD
Lancaster Township											TBD
Leacock Township			x					x	x	x	TBD
Lititz Borough	x				x	x		x	x	x	TBD
Little Britain Township											TBD
Manheim Borough		x					x	x	x	x	TBD
Manheim Township							x				TBD
Manor Township											TBD
Marietta Borough			x					x	x		TBD
Martic Township								x	x	x	TBD
Millersville Borough	x		x				x	x	x	x	TBD
Mount Joy Borough		x						x			TBD
Mount Joy Township		x	x		x			x	x	x	TBD
Mountville Borough	x						x	x			TBD
New Holland Borough							x		x	x	TBD
Paradise Township			x					x	x	x	TBD
Penn Township	x	x	x	x	x		x	x	x	x	TBD
Pequea Township											TBD
Providence Township								x	x	x	TBD
Quarryville Borough											TBD
Rapho Township	x	x		x	x	x	x	x	x	x	TBD
Sadsbury Township	x		x				x	x			TBD
Salisbury Township	x							x	x	x	TBD
Strasburg Borough	x		x		x			x	x	x	TBD
Strasburg Township	x		x		x			x	x	x	TBD
Terre Hill Borough	x	x	x	x	x	x		x	x	x	TBD
Upper Leacock Township			x					x	x	x	TBD
Warwick Township	x				x	x		x	x	x	TBD
West Cocalico Township	x		x	x				x	x	x	01/07/19
West Donegal Township		x						x			TBD



Jurisdiction	Meetings						Contacted Individually	Worksheets			2019 Plan Adoption Date
	Planning Team Kick-Off Meeting	EMC Training	Risk Assessment Meeting	Mitigation Strategy Workshops	Mitigation Strategy Review Meeting	HMP Draft Review Meeting		Risk Assessment Survey Received	Capabilities Assessment Survey Received	Mitigation Review Worksheet Received	
West Earl Township			x					x	x	x	TBD
West Hempfield Township	x		x					x			TBD
West Lampeter Township	x		x	x	x		x		x	x	TBD

Notes:  
 EMC = Emergency Management Coordinator  
 TBD = To be determined after plan is approved-pending adoption by FEMA Region III.



## SECTION 4 RISK ASSESSMENT

### 4.1 UPDATE PROCESS AND PARTICIPATION SUMMARY

In accordance with the FEMA Local Mitigation Planning Handbook, risk is the potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets. Lancaster County's risk assessment is organized into the following sections:

- 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 vulnerability.
- Section 4.4 summarizes the risk assessment methodology, ranking results, potential losses, and future development and vulnerability.

The Steering Committee and Planning Team evaluated the 2014 HMP hazards of concern by examining the historic events that have taken place in the County since the last plan update and reviewing the Commonwealth's Hazard Mitigation Plan. In addition, the Steering Committee and Planning Team completed the risk assessment worksheet (Evaluation of Identified Hazards and Risk Worksheet). The worksheet listed hazards profiled in the 2014 HMP and requested that participants identify whether the frequency of occurrence, magnitude of impact, and/or geographic extent of each hazard increased, decreased, or did not change since the preparation of the 2014 HMP. The worksheet also provided the opportunity to assess hazards not profiled in the HMP to determine if those hazards should be included as part of the update. Responses from the worksheets were reviewed by the Steering Committee to identify a list of hazards to profile in the 2019 HMP, including four additional hazards of concern. The new hazards of concern are hailstorms, pandemic (with focus on the Avian Flu), invasive species, and utility interruption. Each hazard profile also includes an additional subsection that discusses the effect of climate change on vulnerability. Refer to copies of the completed worksheets in Appendix D.





## 4.2 HAZARD IDENTIFICATION

### 4.2.1 Disaster Declarations

In reviewing and updating Lancaster County’s hazards of concern, the Steering Committee and Planning Team reviewed additional information and historical records from a wide range of sources. The following section discusses the Presidential Disaster and Emergency Declarations, Gubernatorial Disaster Declarations or Proclamations, and Small Business Administration Disaster Declarations that have affected Lancaster County.

Presidential Disaster and Emergency Declarations are issued when it has been determined that state and local governments need assistance in responding to a disaster event. Since 1955, declarations have been issued for various hazard events including hurricanes or tropical storms, severe winter storms, and flooding. A unique Presidential Emergency Declaration, Emergency Declaration 3235, was issued in September 2005. Through this declaration, President George W. Bush declared a state of emergency existed for the Commonwealth of Pennsylvania and ordered federal aid to supplement Commonwealth and local response efforts to help people evacuate from their homes due to Hurricane Katrina. A summary of declarations affecting the County is provided in the tables below.

Table 4.2-1 lists Presidential Disaster and Emergency Declarations issued between 1972 through October 2017 that have affected Lancaster County. Additional declarations beyond October 2017 can be found on the Federal Emergency Management Agency (FEMA) website at: <https://www.fema.gov/disasters>.

**Table 4.2-1. Presidential Disaster and Emergency Declarations affecting Lancaster County**

Declaration Number	Date	Event
DR-4267	January 2016	Severe Winter Storm and Snowstorm
EM-3367	February 2014	Severe Winter Storm
EM-3356	October 2012	Hurricane Sandy
DR-4030	September 2011	Remnants of Tropical Storm Lee
DR-1898	April 2010	Severe Winter Storm
EM-3180	February 2007	Severe Winter Storm
DR-1649	June 2006	Severe Storms, Flooding, and Mudslides
EM-3235	September 2005	Hurricane Katrina
DR-1294	September 1999	Hurricane Floyd
DR-1093	January 1996	Flooding
DR-1085	January 1996	Blizzard
DR-1015	March 1994	Winter Storm, Severe Storm
EM-3105	March 1993	Blizzard
DR-523	October 1976	Severe Storms, Flooding
DR-485	September 1975	Severe Storms, Heavy Rains, Flooding
DR-400	July 1973	Severe Storms, Flooding
DR-340	June 1972	Flood (Agnes)

In addition to these Presidentially-declared events, 25 events warranted Gubernatorial Disaster Declarations or Proclamations. Table 4.2-2 lists Gubernatorial Disaster Declarations or Proclamations that have been issued for Lancaster County between 1958 and 2017, according to PEMA (PEMA 2017).



**Table 4.2-2. Gubernatorial Disaster Declarations or Proclamations affecting Lancaster County**

Date	Event
January 2016	Proclamation of Disaster Emergency – Severe Winter Weather
June 2015	Proclamation of Disaster Emergency – High Winds, Severe Thunderstorms, Heavy Rains, Tornadoes, and Flooding
January 2015	Proclamation of Disaster Emergency – Severe Winter Weather
February 2014	Proclamation of Emergency – Severe Winter Weather
January 2014	Proclamation of Emergency – Regulations – Severe Cold
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
April 2007	Severe Storm
April 2007	Proclamation of Emergency - Severe Winter Storm
February 2007	Proclamation of Emergency - Severe Winter Storm
February 2007	Proclamation of Emergency - Regulations
September 2006	Proclamation of Emergency - Tropical Depression Ernesto
September 2005	Proclamation of Emergency - Hurricane Katrina
February 2002	Drought and Water Shortage
July 1999	Drought
February 1978	Blizzard
January 1978	Heavy Snow
February 1974	Truckers’ Strike
February 1972	Heavy Snow
January 1966	Heavy Snow
February 1958	Heavy Snow

Lancaster County has also received Small Business Administration Disaster Assistance for a number of disaster events. A Small Business Administration Disaster Declaration qualifies communities for access to affordable, timely, and accessible financial assistance. Table 4.2-3 lists Small Business Administration Disaster Declarations issued for Lancaster County between 1989 and 2017 (SBA 2017).

**Table 4.2-3. Small Business Administration Disaster Declarations affecting Lancaster County**

Date	Event
April 2016	Frost and Freeze
January 2016	Severe Winter Storm and Snowstorm
February 2014	Severe Winter Storms
April 2012	Drought and Excessive Heat
September-October 2011	Tropical Storm Lee



Date	Event
August-September 2011	Excessive Rain, Flooding, and Flash Flooding
August 2011	Hurricane Irene
April-October 2011	Drought and Excessive Heat
May-August 2010	Drought and Excessive Heat
May 2010	Storms with Hail
February 2010	Severe Winter Storm and Snowstorms
July 2009	Fire
January 2009	Fire
June-September 2008	Drought
June 2007	Drought, Excessive Heat
January-September 2007	Drought
June-July 2006	Severe Storms, Flooding, and Mudslides
May 2004	Heavy Rain, High Winds, and Flooding
July 1991	Drought
September 1989	Flood

### 4.2.2 Summary of Hazards

As part of the plan update process, the Steering Committee and Planning Team reviewed the hazards of concern detailed in the 2014 version of the plan as well as those identified in the State HMP. They also considered the history of hazard events occurring in Lancaster County, as well as events occurring after the completion of the 2014 version of the plan. This review of historical events included an evaluation of all emergency and disaster declarations in the Commonwealth, with a focus on those in which Lancaster County was designated for federal assistance.

Further, all jurisdictions participating in the plan update process were provided a *Hazard Identification/Evaluation of Risk* worksheet to help identify the hazards—natural and non-natural—that each community believed posed significant risk to Lancaster County, including any that may not have been considered in either the 2014 version of the plan or the State HMP. Completed worksheets submitted by the municipalities are included in Appendix D. Following review of the 2014 hazards list and completion of the *Hazard Identification/Evaluation of Risk* worksheet, additional hazards were considered in need of a risk assessment. The Steering Committee and Planning Team decided to keep all 2014 hazards of concern and add the following hazards:

1. Hailstorms
2. Invasive species
3. Pandemic disease (with focus on Avian Flu)
4. Utility interruption.



Based on all available information and input from the municipalities, the Steering Committee and Planning Team selected the following natural and non-natural hazards for consideration in this plan:

**Natural Hazards**

- Drought
- Earthquake
- Flood, Flash Flood, Ice Jam
- Hailstorms
- Invasive Species
- Pandemic
- Radon Exposure
- Subsidence and Sinkholes
- Tornado and Windstorm
- Wildfire
- Winter Storm

**Non-Natural Hazards**

- Dam Failure
- Environmental Hazards
- Nuclear Incidents
- Transportation Accidents
- Utility Interruption

These hazards have been profiled individually in Section 4.3 of this plan.



### **4.3 HAZARD PROFILES**

The following sections profile and assess vulnerability for each hazard of concern. For each hazard, the profile includes: the hazard description; its location and extent; range of magnitude, past occurrence, future occurrence, and vulnerability assessment. The vulnerability assessment for each hazard includes: an overview of vulnerability and data and methodology used; the impact to life, health and safety; impact to general building stock and critical facilities; impact to the economy; impact to the environment; impact to future growth and development; and effect of climate change on vulnerability.





### 4.3.1 Drought

This section provides a profile and vulnerability assessment of the drought hazard in Lancaster County. Drought is a period characterized by long durations of below-normal precipitation. Drought conditions occur in virtually all climatic zones, yet characteristics of drought vary significantly from one region to another, relative to normal precipitation within respective regions. Drought 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 (National Drought Mitigation Center ([NDMC] 2017).

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.

#### 4.3.1.1 Location and Extent

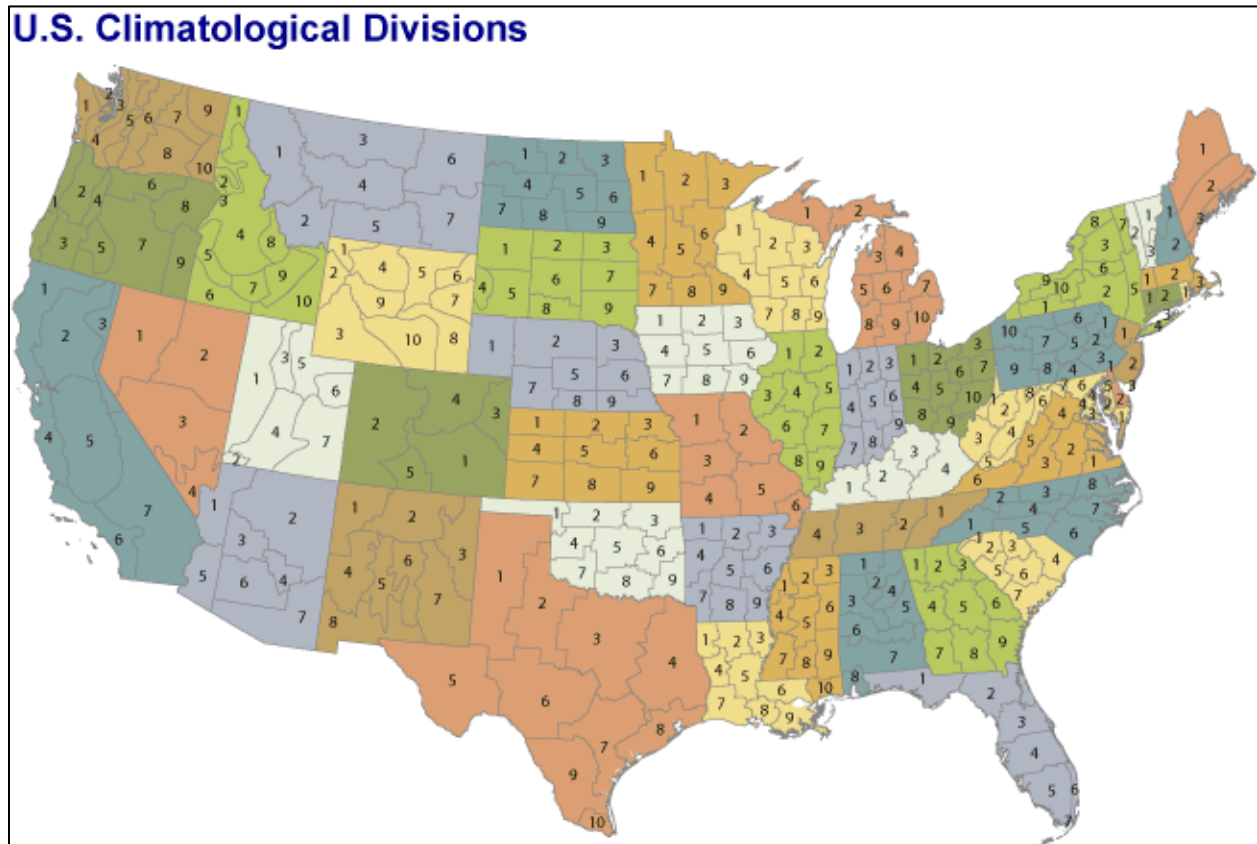
Droughts are regional in scope and may affect the entirety of Lancaster County rather than only individual municipalities within the County. Droughts may also concurrently affect counties near Lancaster County, or even the entire Commonwealth. Generally, areas along waterways will reveal drought conditions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

Climate divisions are regions within a state that are climatically homogenous. The National Oceanic and Atmospheric Administration (NOAA) has divided the United States into 359 climate divisions. The boundaries of these divisions typically coincide with County boundaries, except in the western United States where they are based largely on drainage basins (NWS 2005).



According to NOAA, Pennsylvania includes 10 climate divisions: Pocono Mountains, East Central Mountains, Southeastern Piedmont, Lower Susquehanna, Middle Susquehanna, Upper Susquehanna, Central Mountains, South Central Mountains, Southwest Plateau, and Northwest Plateau Climate Division (National Climatic Data Center [NCDC] 2012). Figure 4.3.1-1 shows the climate divisions throughout the United States, and Figure 4.3.1-2 shows the climate divisions of Pennsylvania. Lancaster County is within the Southeastern Piedmont climate division.

Figure 4.3.1-1. Climate Divisions in the United States



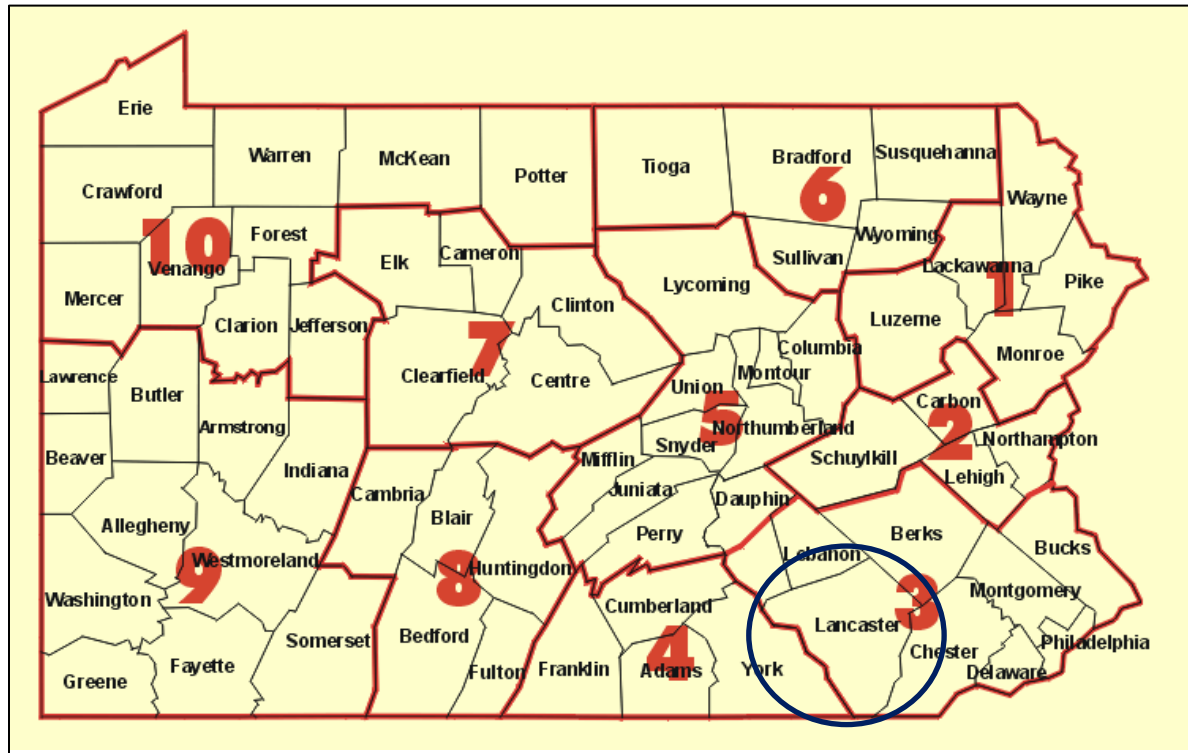
Source: NCDC n.d.

Note: Climate division names vary from state to state. The climate divisions for Pennsylvania are:

- 1 = Pocono Mountains; 2 = East Central Mountains; 3 = Southeastern Piedmont; 4 = Lower Susquehanna; 5 = Middle Susquehanna; 6 = Upper Susquehanna; 7 = Central Mountains; 8 = South Central Mountains; 9 = Southwest Plateau; 10 = Northwest Plateau



Figure 4.3.1-2 Climate Divisions of Pennsylvania



Source: NWS 2005

Note: Highlight added.

The climate divisions for Pennsylvania are:

- 1 = Pocono Mountains; 2 = East Central Mountains; 3 = Southeastern Piedmont; 4 = Lower Susquehanna; 5 = Middle Susquehanna; 6 = Upper Susquehanna; 7 = Central Mountains; 8 = South Central Mountains; 9 = Southwest Plateau; 10 = Northwest Plateau

Particularly at locations where citizens rely on wells for drinking water, water supplies are vulnerable to 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. Lancaster 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 Lancaster County was 13.35 million gallons (Mgal) per day in 2010, serving roughly 148,520 residents for a total of roughly 130 gallons per person (dependent on well water) per day (USGS 2014).

Table 4.3.1-1 lists the number of reported domestic wells within each municipality of Lancaster County. The well data were obtained from the Pennsylvania Groundwater Information System (PaGWIS). PaGWIS is maintained by PA DCNR and 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 dataset of domestic wells available.



**Table 4.3.1-1. Domestic Wells in Lancaster County**

Municipality	Number of Reported Domestic Wells	Municipality	Number of Reported Domestic Wells
Adamstown Borough	17	Lititz Borough	10
Akron Borough	7	Little Britain Township	257
Bart Township	222	Manheim Borough	21
Brecknock Township	466	Manheim Township	538
Caernarvon Township	313	Manor Township	484
Christiana Borough	0	Marietta Borough	7
Clay Township	281	Martic Township	442
Colerain Township	326	Millersville Borough	1
Columbia Borough	13	Mountville Borough	61
Conestoga Township	280	Mt. Joy Borough	14
Conoy Township	184	Mt. Joy Township	1137
Denver Borough	15	New Holland Borough	86
Drumore Township	189	Paradise Township	387
Earl Township	223	Penn Township	541
East Cocalico Township	282	Pequea Township	310
East Donegal Township	150	Providence Township	452
East Drumore Township	310	Quarryville Borough	16
East Earl Township	401	Rapho Township	769
East Hempfield Township	327	Sadsbury Township	265
East Lampeter Township	437	Salisbury Township	734
East Petersburg Borough	22	Strasburg Borough	6
Eden Township	178	Strasburg Township	352
Elizabeth Township	289	Terre Hill Borough	0
Elizabethtown Borough	31	Upper Leacock Township	240
Ephrata Borough	37	Warwick Township	767
Ephrata Township	318	West Cocalico Township	427
Fulton Township	285	West Donegal Township	439
Lancaster City	185	West Earl Township	145
Lancaster Township	64	West Hempfield Township	361
Leacock Township	233	West Lampeter Township	261

Source: PA DCNR 2017a





In addition to domestic wells in the County, residents may also receive their water from municipal water providers. According to 2010 data from Pennsylvania Department of Environmental Protection’s (PADEP) Public Drinking Water System, approximately 57 percent of Lancaster County resident receive water from municipal water providers. The City of Lancaster is the largest public water provider and serves 11 municipalities in the central portion of the County (Lancaster County 2012). Additional municipal water providers in Ephrata Area Join Authority and Columbia Water Company.

Jurisdictions that are designated for agricultural use are particularly vulnerable to drought. Agriculture is the predominant land use in the County, representing 59 percent of land (Lancaster County 2012). In Lancaster County, the following municipalities have large portions zoned for agricultural use: Mount Joy Township, Rapho Township, Penn Township, East Donegal Township, West Donegal Township, Conoy Township, Manor Township, Drumore Township, Fulton Township, Little Britain, East Drumore, Colerain Township, Bart Township, Sadsbury Township, Eden Township, Strasburg Township, Paradise Township, Salisbury Township, Leacock Township, Upper Leacock Township, West Earl Township, East Earl Township, Warwick Township, Clay Township, and West Cocalico Township. Areas designated for agricultural use are illustrated in Figure 2-5 in Section 2.

#### 4.3.1.2 Range of Magnitude

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

PADEP and Pennsylvania Emergency Management Agency (PEMA) manage water supply droughts according to the following four conditions of drought, as defined in the Commonwealth of Pennsylvania 2013 Standard Hazard Mitigation Plan (PA HMP):

- **Drought Watch**: A period to alert government agencies, public water suppliers, water users, and the public regarding potential for future drought-related problems. 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 2013).

Pennsylvania uses five parameters to assess drought conditions: precipitation deficits, stream flows, reservoir storage levels, groundwater levels, and a measure of soil moisture. These are described in detail below.

- **Precipitation Deficits:** As rainfall provides the basis for both groundwater and surface water resources, precipitation deficits are the earliest indicators of a potential drought. The National Weather Service (NWS) records “normal” monthly precipitation data for each county in Pennsylvania. These figures are generated from long-term monthly and decennial averages of precipitation, and are updated at the end of each decade based on the most recent 30 years. Monthly totals with less than normal values represent precipitation deficits, which are then converted to percentages of the normal values. Table 4.3.1-2 lists the drought conditions (defined in the PA HMP and noted above) that are indicated by various precipitation deficit percentages (PEMA 2013).

**Table 4.3.1-2. Precipitation Deficit Drought Indicators for Pennsylvania**

Duration of Deficit Accumulation (months)	Drought Watch (deficit as 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 2013

Table 4.3.1-3 lists normal monthly and annual precipitation from 1981 to 2010 (the most current three-decade data available) at the two NOAA weather stations in Lancaster County. Data from the NOAA weather stations are available through the NCDC, which compiles monthly and annual normal total



precipitation (inches) data retrieved from both NWS Cooperative Network (COOP) and Principal Observation (First-Order) locations throughout the United States.

**Table 4.3.1-3. Normal Monthly and Annual Precipitation (total in inches) from 1981 to 2010 at NOAA Weather Stations in Lancaster County**

Station Name	January	February	March	April	May	June	July	August	September	October	November	December	ANNUAL
Lancaster Airport	2.55	2.45	3.35	3.60	4.00	3.82	4.44	3.42	4.26	3.55	3.47	3.10	42.01
Lebanon 2 W	2.96	2.67	3.34	3.68	4.10	4.15	4.56	3.64	3.93	3.49	3.49	3.34	43.35

Source: Arguez et al 2010

- **Stream Flows:** Stream flows, which typically lag up to 2 months behind normal precipitation amounts in signaling a drought, offer the second earliest indication of drought conditions. PADEP uses 73 U.S. Geological Survey (USGS)-maintained stream gauges throughout the Commonwealth as its drought monitoring network, computing 30-day average stream flow values for each stream gauge based on the entire period of record for each gauge. For example, the Susquehanna River gauge at Marietta has data records as far back as October 1931 from which the long-term, 30-day average, or normal, flows are now determined. Drought status is determined from stream flows based on exceedances rather than percentages. The various stages of drought watch, warning, and emergency conditions are indicated, respectively, by 75 percent, 90 percent, and 95 percent exceedances of 30-day average flows (PEMA 2013). Detailed descriptions of these data collection methods appear in the PA HMP.
- **Reservoir Storage Levels:** Water levels in several large public water supply reservoirs are another indicator that PADEP uses for drought monitoring. Depending on total quantity of storage and length of the refill period for the various reservoirs, PADEP uses varying percentages of storage drawdown to indicate the three drought stages for each reservoir (PEMA 2013).
- **Groundwater Levels:** Groundwater levels can be an indicator of a developing drought, although low readings may lag up to 3 months behind drought-indicative precipitation readings. This lag occurs because storage of nearly 80 trillion gallons of groundwater throughout the Commonwealth disguises precipitation deficits for many months before significant lack of groundwater recharge becomes noticeable (PEMA 2013).

USGS also maintains groundwater monitoring wells in each county throughout the Commonwealth. Groundwater measurements taken from these wells at exceedances of 75, 90, and 95 percent are used to indicate drought watch, warning, and emergency statuses, respectively. Within the USGS well network, the 30-day average depth-to-groundwater readings are analyzed in relation to long-term, 30-day averages based on the period of record for each county well (PEMA 2013).

- **Soil Moisture:** NOAA’s Palmer Drought Severity Index (PDSI) provides soil moisture information for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather. The index tool is frequently used to indicate availability of irrigation water supplies, reservoir levels, range conditions, amount of stock water, and forest fire potential. Although notably ineffective for monitoring short-term drought, the PDSI is effective for determining long-term droughts and as such is most frequently used to delineate disaster areas (CPC 2005).



Table 4.3.1-4 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 precipitation (NDMC 2013).

**Table 4.3.1-4. Palmer Drought Severity Index (PDSI) Classifications**

Severity Category	PDSI Value	Drought Status
Extremely wet	4.0 or more	None
Very wet	3.0 to 3.99	None
Moderately wet	2.0 to 2.99	None
Slightly wet	1.0 to 1.99	None
Incipient wet spell	0.5 to 0.99	None
Near normal	0.49 to -0.49	None
Incipient dry spell	-0.5 to -0.99	None
Mild drought	-1.0 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; PEMA 2013

Availability and management of water supply are discussed in the 2009 Pennsylvania State Water Plan (PADEP 2009b), a joint effort by the Statewide Water Resources Committee and PADEP. In 2009, the PADEP Secretary approved an updated State Water Plan to guide management of Pennsylvania’s water resources over a 15-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 as well as 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 damages from extreme drought and flooding conditions (PADEP 2009b).

#### 4.3.1.3 Past Occurrence

Historical information has been drawn from many sources regarding previous occurrences and losses associated with drought events throughout Pennsylvania and Lancaster 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 NCDC storm events database, Lancaster County underwent four drought events between January 1, 1950, and October 19, 2017—October 1997, December 1998, July 1999, and August 1999. No Commonwealth-wide crop or property losses were reported because of the droughts; statewide losses would have included damages in other counties.

Since 1930, the Commonwealth of Pennsylvania has undergone 10 significant droughts. Since 1955, the Commonwealth has undergone 12 drought events that resulted in a Governor’s proclamation or a Federal Emergency Management Agency (FEMA)-declared disaster or emergency. Lancaster County was included in one of these events, and full details are available in PEMA’s Pennsylvania Disaster History list. In addition to these events, between 1980 and 2013, PADEP indicated that Lancaster County has undergone 23 drought watch declarations, 16 drought warning declarations, and 10 drought emergency declarations (PEMA 2013).

According to FEMA, between 1954 and 2017, Pennsylvania underwent one drought-related disaster (DR) or emergency (EM) classified as one or a combination of the following disaster types: drought or water shortage.





Because these disaster types generally cover a wide region of the Commonwealth, this single disaster may have impacted many counties. However, not all counties were included in the disaster declaration. FEMA, PEMA, and other sources indicate that Lancaster County has not been declared a disaster area as a result of a drought-related event (FEMA 2017).

Based on all sources researched, drought events between 1895 and 2017 that have affected Lancaster County are identified in Table 4.3.1-5. However, not all sources have been identified or researched, and therefore Table 4.3.1-5 may not include all events that have occurred throughout the County.

**Table 4.3.1-5. Past Occurrences of Drought Events from 1895 to 2017**

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts / PDSI Value
November 1980 – April 1982	Emergency	N/A	N/A	Not listed
April – October 1985	Watch	N/A	N/A	Not listed
July – December 1988	Watch	N/A	N/A	Not listed
July – December 1991	Emergency	N/A	N/A	Not listed
October 1991- May 1992	Warning	N/A	N/A	Not listed
September 1992 – January 1993	Watch	N/A	N/A	Not listed
September – November 1995	Warning	N/A	N/A	Not listed
November – December 1995	Watch	N/A	N/A	Not listed
July – October 1997	Watch	N/A	N/A	Not listed
October 1997 – January 1998	Warning	N/A	N/A	Not listed
January – February 1998	Watch	N/A	N/A	Not listed
December 3 – 14, 1998	Watch	N/A	N/A	Not listed
December 14, 1998 – January 1999	Warning	N/A	N/A	Not listed
March – June 1999	Watch	N/A	N/A	Not listed
June – July 1999	Warning	N/A	N/A	Not listed
July – September 1999	Emergency	N/A	N/A	Not listed
September 1999 – May 2000	Watch	N/A	N/A	Not listed
August – November 2001	Watch	N/A	N/A	Not listed
November 2001 – February 2002	Warning	N/A	N/A	Not listed
February – November 2002	Emergency	N/A	N/A	Not listed
November – December 2002	Warning	N/A	N/A	Not listed
December 2002 – January 2003	Watch	N/A	N/A	Not listed
April – May 2006	Watch	N/A	N/A	Not listed
October 2007 – January 2008	Watch	N/A	N/A	Not listed
September – November 2010	Watch	N/A	N/A	Not listed
August – September 2011	Watch	N/A	N/A	Not listed
July - August 2012	Watch	N/A	N/A	Not listed
March – July 2015	Watch	N/A	N/A	Not listed
August 2016	Watch	N/A	N/A	Not listed
November 2016 – May 2017	Watch	N/A	N/A	Not listed

Sources: NRCC 2012, PEMA 2013, NCDC 2017, PADEP 2017b.

Notes:

- FEMA Federal Emergency Management Agency
- N/A Not applicable
- NCDC National Climatic Data Center
- NRCC Northeast Regional Climate Center
- PADEP Pennsylvania Department of Environmental Protection
- PDSI Palmer Drought Severity Index
- PEMA Pennsylvania Emergency Management Agency



Table 4.3.1-6 lists the crop loss insurance payments on claims from Lancaster County caused by drought events since 1948.

**Table 4.3.1-6. Crop Loss Insurance Claims Due to Drought, 1948 to 2016**

Crop Year	Total Claims	Crop Year	Total Claims
1948 – 1989	\$561,674	2003	\$9,012
1990	\$0	2004	\$0
1991	\$147,402	2005	\$36,988
1992	\$517,770	2006	\$40,433
1993	\$53,637	2007	\$128,600
1994	\$165	2008	\$90,697
1995	\$0	2009	\$0
1996	\$0	2010	\$221,341
1997	\$15,587	2011	\$1,105,948
1998	\$2,203	2012	\$965,512
1999	\$490,320	2013	\$42,142
2000	\$563,879	2014	\$14,260
2001	\$0	2015	\$14,347
2002	\$4,418,537	2016	\$60,368

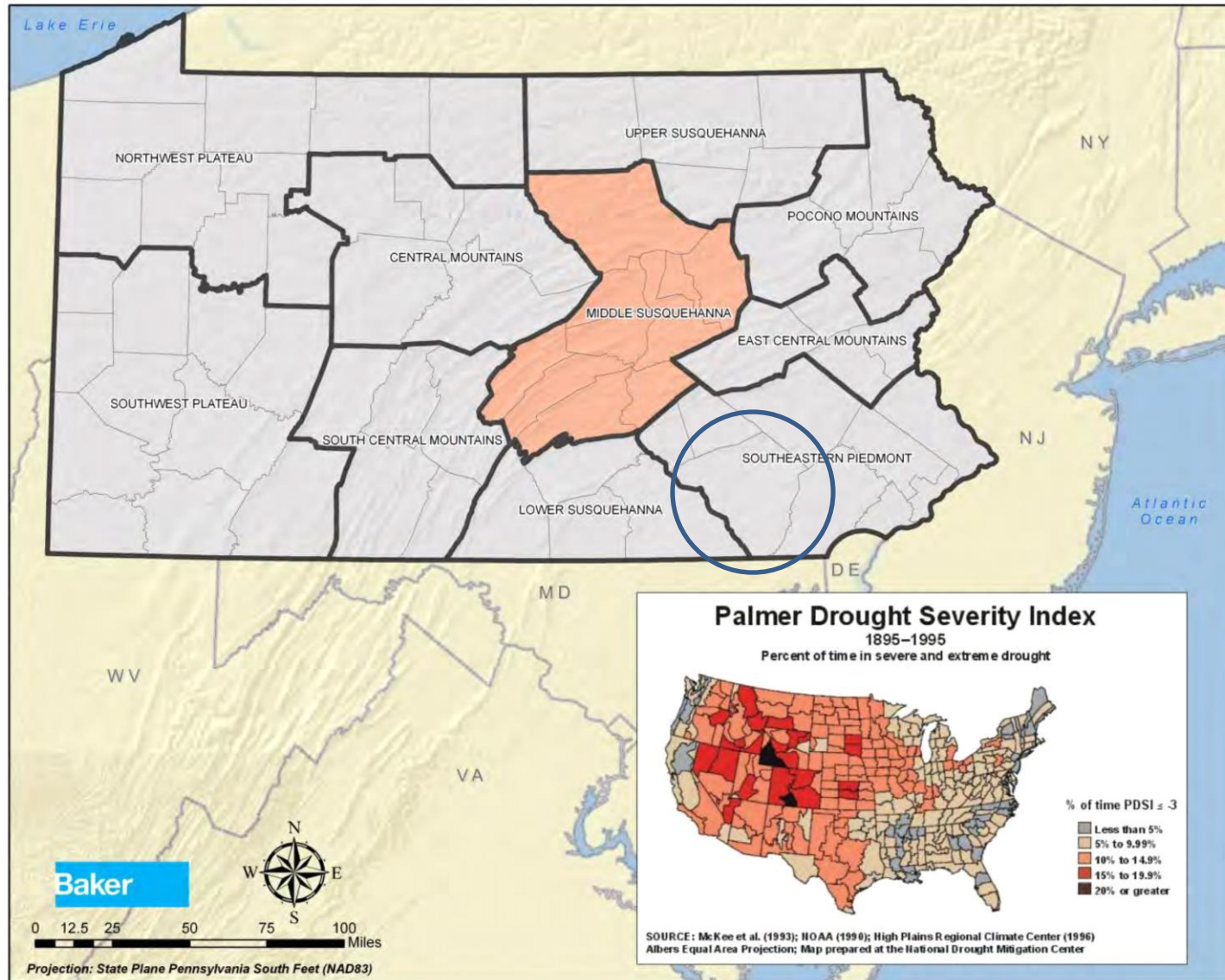
Source: U.S. Department of Agriculture (USDA) 2017a

#### 4.3.1.4 Future Occurrence

Frequency of droughts is difficult to forecast. Based on national annual data from 1895 to 1995, Lancaster County underwent severe or extreme drought conditions less than 5 percent of the time (illustrated on Figure 4.3.1-3). Based on the drought conditions listed in Table 4.3.1-5, future occurrences of drought events are considered *likely*, as defined by the Risk Factor Methodology probability criteria (described in Section 4.4).



Figure 4.3.1-3. Palmer Drought Severity Index for Pennsylvania (1895 to 1995)



Source: PEMA 2013 (highlight added)





### 4.3.1.5 Vulnerability Assessment

To understand risk, a community must evaluate assets exposed and vulnerable within the identified hazard area. For the drought hazard, all of Lancaster 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. This section evaluates and estimates potential impacts of the drought hazard on Lancaster County in the following subsections:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impacts on (1) life, health, and safety; (2) general building stock; (3) critical facilities; (4) economy; and (5) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist in understanding this hazard over time.

#### Overview of Vulnerability

Lancaster County is vulnerable to drought. Assets at particular risk include any open land or structures along the wildland/urban interface (WUI) that could become vulnerable to the wildfire hazard caused by extended periods of low rain and high heat, usually associated with drought. In addition, water supply resources could be impacted by extended periods of low rain. Finally, vulnerable populations could be particularly susceptible to the drought hazard and cascading impacts because of age, health conditions, and limited ability to mobilize to shelter, cooling, and medical resources.

#### Data and Methodology

At the time this plan was updated, insufficient data were available to model long-term potential impacts of a drought on Lancaster County. Over time, additional data will be collected to allow better analysis of this hazard. Preliminary assessments based on available data are provided below.

#### 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 a 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 distribution of impacts and disaster relief. The infirm, young, and elderly are particularly susceptible to drought and extreme temperatures, sometimes associated with drought conditions, due to their age, health conditions, and limited ability to mobilize to shelters, cooling, and medical resources. Impacts on the economy and environment may have social implications as well (New York State Disaster Preparedness Commission [NYSDPC] 2011). 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. Section 4.3.10 of this HMP addresses the wildfire hazard in Lancaster County.

#### Impact on the Economy

A prolonged drought can exert serious direct and indirect economic impacts on a community or across the County. A summary of impacts on the economy is presented in Table 4.3.1-7.



**Table 4.3.1-7. Impacts on the Economy**

Losses to Agricultural Producers	Losses to Livestock Producers	Losses of Timber Production
Annual and perennial crop losses	Reduced productivity of rangeland	Wildland fires
Damage to crop quality	Reduced milk production	Tree disease
Income loss for farmers due to reduced crop yields	Forced reduction of foundation stock	Insect infestation
Reduced productivity of cropland (wind erosion, long-term loss of organic matter, etc.)	High cost/unavailability of water for livestock	Impaired productivity of forest land
Insect infestation	Cost of new or supplemental water resource development (wells, dams, pipelines)	Direct loss of trees, especially young ones
Plant disease	High cost/unavailability of feed for livestock	<b>Losses to Transportation Industry</b>
Wildlife damage to crops	Increased feed transportation costs	Loss from impaired navigability of streams, rivers, and canals
Increased irrigation costs	High livestock mortality rates	<b>Decline in Food Production/Disrupted Food Supply</b>
Cost of new or supplemental water resource development (wells, dams, pipelines)	Disruption of reproduction cycles (delayed breeding, more miscarriages)	Increase in food prices
<b>Losses of Fishery Production</b>	Decreased stock weights	Increased importation of food (higher costs)
Damage to fish habitat	Increased predation	<b>Losses to Water Suppliers</b>
Loss of fish and other aquatic organisms due to decreased flows	Grass fires	Revenue shortfalls and/or windfall profits
<b>Losses to Recreation and Tourism Industry</b>	<b>Energy-Related Effects</b>	Cost of water transport or transfer
Loss to manufacturers and sellers of recreational equipment	Increased energy demand and reduced supply because of drought-related power curtailments	Cost of new or supplemental water resource development
Losses related to curtailed activities: hunting and fishing, bird watching, boating, etc.	Costs to energy industry and consumers associated with substituting more expensive fuels (oil) for hydroelectric power	

Source: NYSDPC 2011

Loss estimates are based on lost agricultural revenues statewide. Table 4.3.1-8 below enumerates the County’s farmland acreage exposure to the drought hazard as well as the annual market value of all agricultural products sold, as documented in the 2012 USDA Census of Agriculture. If the County would lose its agricultural yield due to drought, total losses could amount to nearly \$1.4 billion. Table 4.3.1-9 details the potential losses associated with County livestock by providing livestock totals for the County and their associated market value. Livestock, poultry, and associated products have a potential loss value of more than \$1.2 billion (USDA 2012).

**Table 4.3.1-8. Estimated County Losses Relating to Agricultural Production**

Impacted Farmland Acreage	Market Value of All Agricultural Products
439,481	\$1,474,954,000

Source: USDA 2012





Table 4.3.1-9. Estimated County Losses Relating to Agricultural Production

Livestock and Poultry	Inventory	Market Value of All Livestock, Poultry, and Their Products
Layers	10,651,369	<b>\$1,213,918,000</b>
Cattle and Calves	276,729	
Hogs and Pigs	359,505	
Sheep and Lambs	338	
<b>Total</b>	<b>11,287,941</b>	

Source: USDA 2012

Note: Market value of livestock and poultry is only provided by total value and not available by category.

Impact on the Environment

As summarized in the PA HMP (2013), 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; 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
- Damage to plant communities – loss of biodiversity; loss of trees from urban landscapes and wooded conservation areas
- Increased number and severity of fires
- Reduced soil quality
- Air quality effects, such as dust and pollutants
- Loss of quality in landscape through loss in plants and plant diversity
- Increase in nitrate levels, which can negatively affect health of pregnant women and children

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 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 effects of future climate change on human health, society, and the environment (U.S. Environmental Protection Agency [EPA] 2006).

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 June 2009 Pennsylvania Climate Impact Assessment’s main findings indicated that Pennsylvania is very likely to undergo increased temperatures in the 21st century. Increases in temperature will likely lead to increased evapotranspiration, and thus an increase in soil-moisture-related droughts throughout late spring and early fall. Pennsylvania’s precipitation climate is projected to become more extreme in the future, with longer dry periods and greater intensity of precipitation. Most models project an increase in the maximum number of consecutive dry days in a year (Shortle et al. 2009).

Future improvements in modeling smaller-scale climatic processes can be expected and will lead to improved understanding of how the changing climate will alter temperature, precipitation, storm frequency, and intensity in Pennsylvania. Understanding this information can help provide better indications of future drought events (Shortle et al. 2009).



### 4.3.2 Earthquake

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 1997). 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 1997).

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. 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 that 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 2012).

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 (Stanford 2003).

The National Earthquake Hazard Reduction Program (NEHRP) developed five soil classifications (A to E) distinguished by soil shear-wave velocity that alters severity of an earthquake; each classification is listed in Table 4.3.2-1. 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.



Table 4.3.2-1. NEHRP Soil Classifications

Soil Classification	Description
A	Hard rock
B	Rock
C	Very dense soil and soft rock
D	Stiff soils
E	Soft soils

Source: Federal Emergency Management Agency (FEMA) 2013

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

### 4.3.2.1 Location and Extent

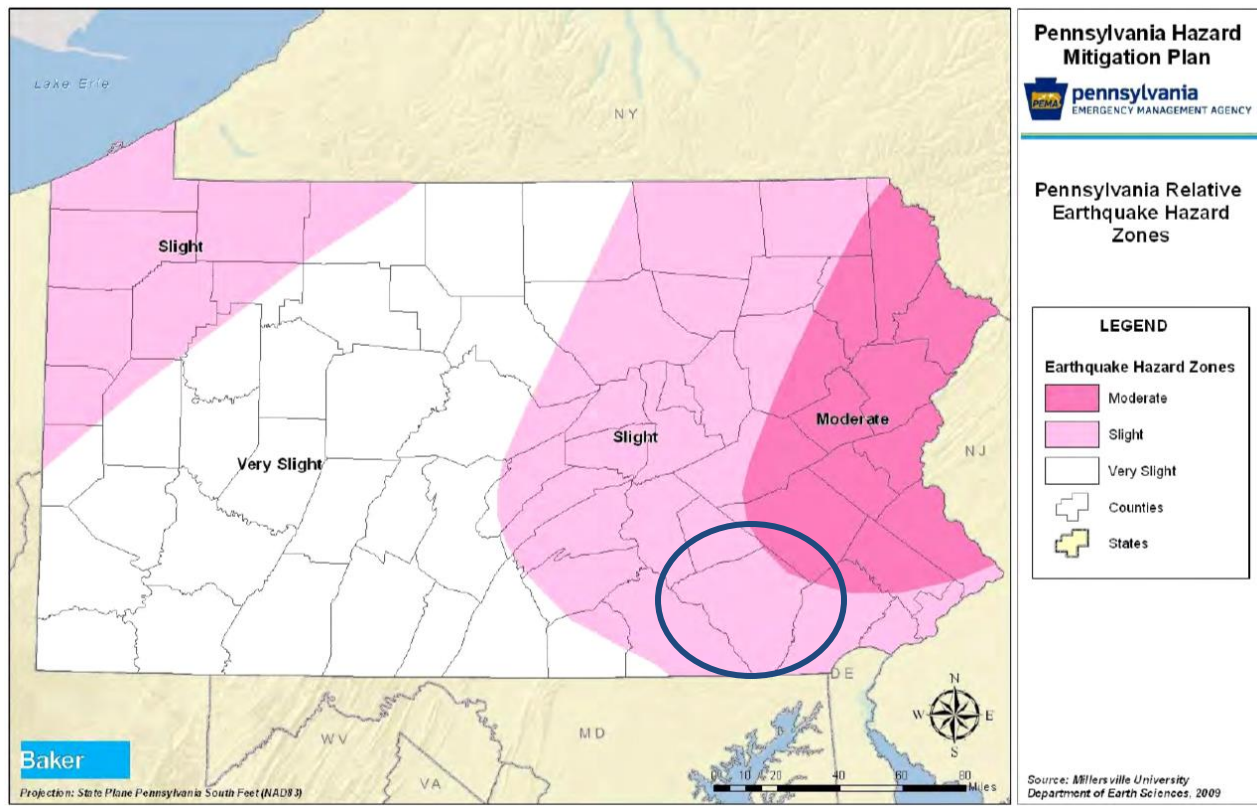
Focal depth and geographic position of the epicenter of an earthquake commonly determine its location. Focal depth of an earthquake is the depth from the Earth’s surface to the region where an earthquake’s energy originates (the focus or hypocenter). The epicenter of an earthquake is the point on the 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.

According to the Pennsylvania Bureau of Topographic and Geologic Survey, events that occur in the Commonwealth involve very small impact areas (less than 100 km in diameter). The most seismically active region in the Commonwealth is in southeastern Pennsylvania in the area of Lancaster County (Pennsylvania Emergency Management Agency [PEMA] 2013). Areas of Pennsylvania, including Lancaster County, may be subject to the effects of earthquakes with epicenters outside the Commonwealth.

Pennsylvania has three earthquake hazard area zones: very slight, slight, and moderate (shown on Figure 4.3.2-1) (PEMA 2013). Lancaster County is predominately within the “slight zone” with a small area of “moderate zone” along the northeastern border of the County.



Figure 4.3.2-1. Pennsylvania Earthquake Hazard Zones



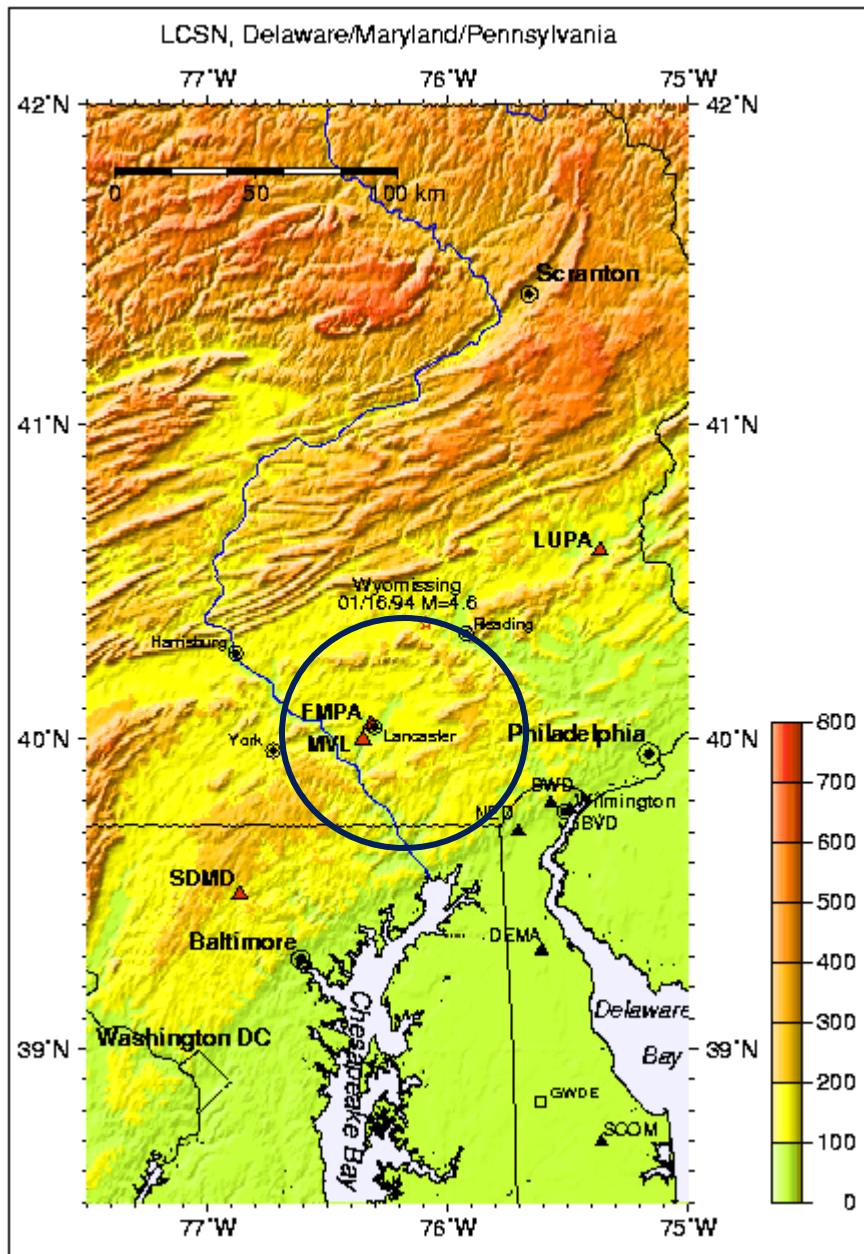
Source: PEMA 2013

Note: Lancaster County is within the blue oval on the map.

The Lamont-Doherty Cooperative Seismographic Network (LCSN) monitors earthquakes that occur primarily in the northeastern United States. Goals of the project are to compile a complete earthquake catalog for this region, assess earthquake hazards, and study causes of earthquakes in the region. LCSN operates 40 seismographic stations in the following seven states: Connecticut, Delaware, Maryland, New Jersey, New York, Pennsylvania, and Vermont. Figure 4.3.2-2 shows locations of seismographic stations in eastern Pennsylvania. The figure shows two stations, Franklin & Marshall College and Millersville University. The network is composed of broadband and short-period seismographic stations (LCSN 2012).



Figure 4.3.2-2. Lamont-Doherty Seismic Stations Locations in Eastern Pennsylvania



Source: LCSN 2012

Note: Lancaster County is within the oval on the map.

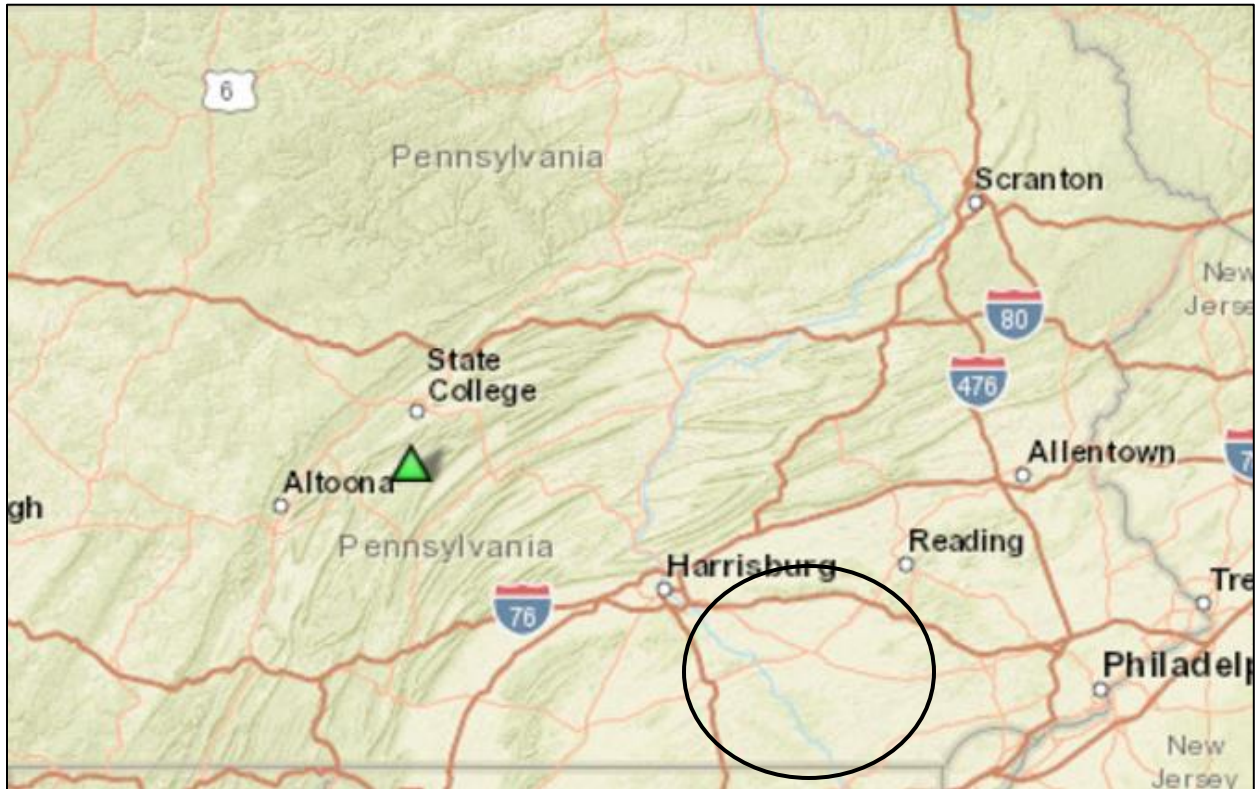
In addition to the Lamont-Doherty Seismic Stations, USGS operates a global network of seismic stations to monitor seismic activity. While no seismic stations are within Lancaster County, nearby stations are in State College, Pennsylvania. Figure 4.3.2-3 shows their locations.







Figure 4.3.2-3. USGS Seismic Stations



Source: USGS 2017

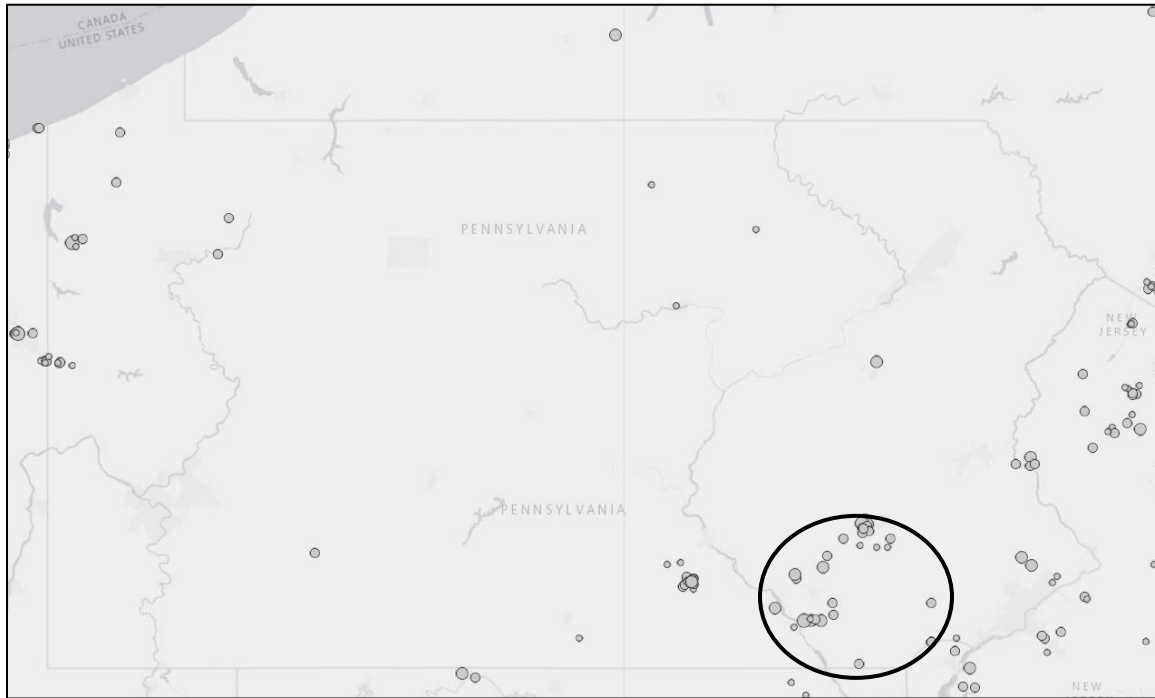
Note: Seismic station locations are indicated by green triangles, and Lancaster County is within the black oval.

The USGS provides the website *Did You Feel It?* (<http://earthquake.usgs.gov/earthquakes/dyfi/>) for citizens to report earthquake experiences and to share information regarding the earthquake and its effects. The website is intended to gather citizens' experiences during an earthquake and incorporate the information into detailed maps for illustrating shaking intensity and damage assessments (USGS 2017).

Earthquakes above a magnitude 5.0 can cause damage near their epicenters, and larger-magnitude earthquakes can cause damage over larger, wider areas. Earthquakes in Pennsylvania appear to be centered in the southeastern portion and northwestern corner of the Commonwealth. Figure 4.3.2-4 illustrates earthquake activity in Pennsylvania from 1950 to 2016, with Lancaster County circled in black. A discussion of previous occurrences of earthquakes in Lancaster County appears in the Previous Occurrence section (Section 4.3.2.3) of this profile.



Figure 4.3.2-4. Earthquake Epicenters in Pennsylvania, 1950 – 2016



Source: USGS 2017

Note: The black circle indicates the approximate location of Lancaster County.

### 4.3.2.2 Range of Magnitude

Seismic waves are vibrations from earthquakes that travel through the Earth and are recorded on instruments called seismographs. The magnitude or extent of an earthquake is a given value of the earthquake size, or amplitude of the seismic waves, as measured by a seismograph. The Richter magnitude scale (Richter scale) was developed in 1932 as a mathematical device to compare sizes of earthquakes. The Richter scale is the most widely known scale that measures magnitude of earthquakes. It has no upper limit and is not used to express damage. An earthquake in a densely populated area that results in many deaths and considerable damage may have the same magnitude and shock in a remote area that did not undergo any damage. Table 4.3.2-2 lists Richter scale magnitudes and corresponding earthquake effects associated with each magnitude. Based on historical data of earthquakes with a recorded intensity, little damage is expected from earthquake events. However, since the worst earthquake recorded in Pennsylvania was a magnitude 5.2, a worst-case scenario for this hazard would be if an earthquake of similar magnitude occurred in Lancaster County or near the border in an adjacent county, causing mild damage in populated areas.

Table 4.3.2-2. Richter Scale Magnitudes

Richter Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph
2.5 to 5.4	Often felt, but causes only minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can destroy communities near the epicenter

Source: PEMA 2013





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 expresses 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 4.3.2-3. Earthquakes that occur in Pennsylvania 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 Lancaster County.

**Table 4.3.2-3. Modified Mercalli Intensity Scale with Associated Impacts**

Scale	Intensity	Description Of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	<4.2
II	Feeble	Some people feel it	
III	Slight	Felt by people resting; feels like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	<5.4
VII	Very Strong	Mild alarm; walls crack; plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures; poorly constructed buildings are damaged	<6.9
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	
X	Disastrous	Ground cracks profusely; many buildings are destroyed; liquefaction and landslides are widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes, and cables are destroyed; general triggering of other hazards occurs	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>8.1

Source: PEMA 2013

Seismic hazards are often expressed in terms of Peak Ground Acceleration (PGA) and Spectral Acceleration (SA). USGS defines PGA and SA as the following: “PGA is what is experienced by a particle on the ground. SA is approximately what is experienced by a building, as modeled by a particle mass on a massless vertical rod having the same natural period of vibration as the building” (USGS 2012). Both PGA and SA can be measured in g (the acceleration caused by gravity) or expressed as a percent acceleration force of gravity (percent g). For example, at 100 percent g PGA (equivalent to 1.0 g) during an earthquake (an extremely strong ground motion), objects accelerate sideways at the same rate as when they drop from a ceiling. At 10 percent g PGA, ground acceleration is 10 percent that of gravity (New Jersey Office of Emergency Management [NJOEM] 2011). PGA and SA hazard maps provide insight into location-specific vulnerabilities (New York State Disaster Preparedness Commission [NYS DPC] 2011).

PGA is a common earthquake measurement that indicates three factors: (1) geographic area affected, (2) probability of an earthquake at each level of severity, and (3) strength of ground movement (severity) expressed in percent g. In other words, PGA expresses the severity of an earthquake and is a measure of how hard the earth shakes (or accelerates) in a given geographic area (NYS DPC 2011). Damage levels from an earthquake vary with intensity of ground shaking and with seismic capacity of structures, as noted in Table 4.3.2-4.



Table 4.3.2-4. 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 causes higher levels of damage in many buildings, even those designed to resist seismic forces.

Source: NJOEM 2011

Note: % g Peak Ground Acceleration

National maps of earthquake shaking hazards have been produced since 1948. These maps provide information essential for creating and updating 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, 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 and others 2001).

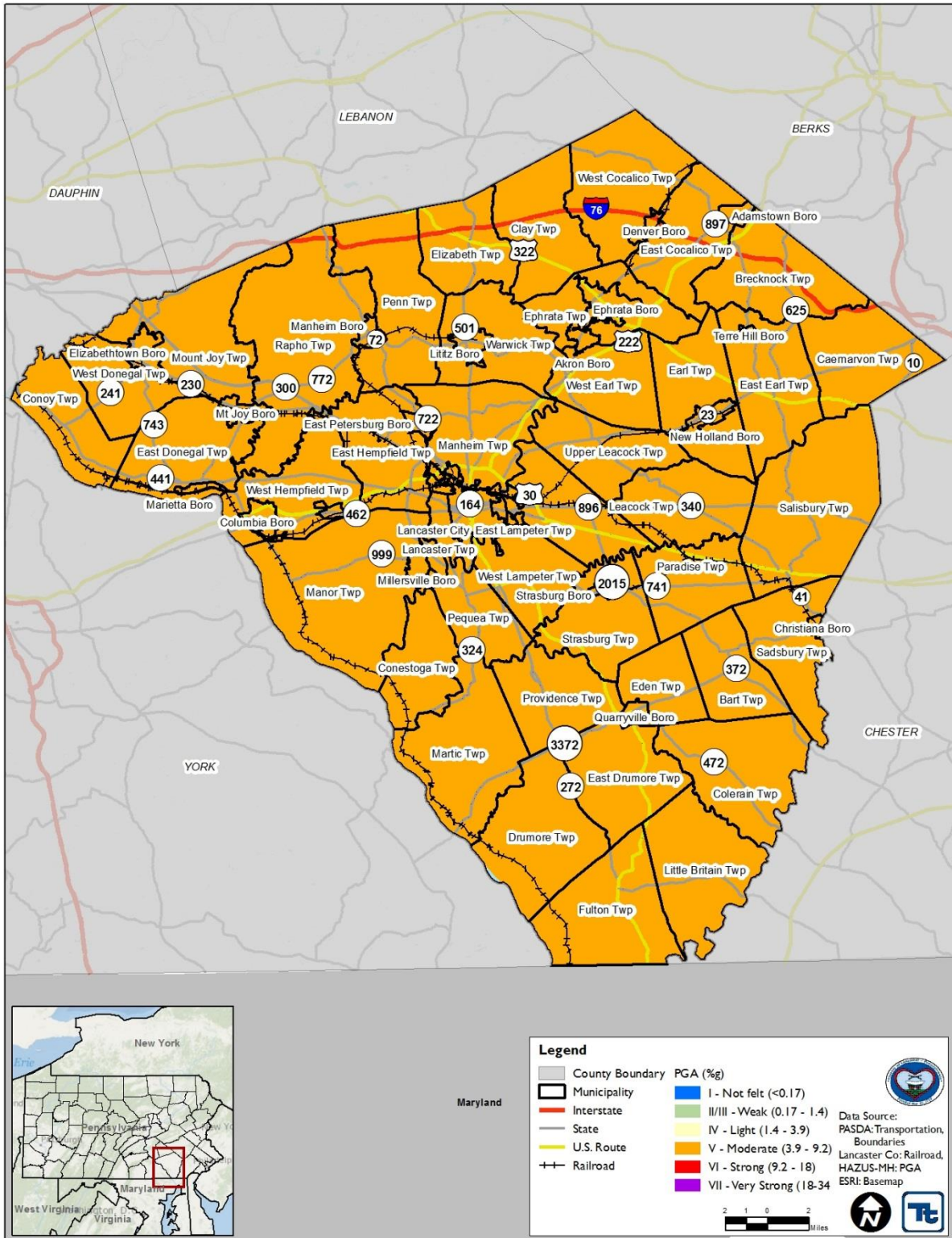
To analyze the earthquake hazard in Lancaster County, a probabilistic assessment was conducted for the 500-year mean return period (MRP) in Hazards U.S.–Multi-Hazard (HAZUS-MH) 3.2. A HAZUS analysis evaluates statistical likelihood that a specific event will occur and the consequences of that event. A 500-year MRP event is an earthquake with a 0.2-percent chance that the mapped ground motion levels (PGA) will be exceeded in any given year.

Figure 4.3.2-5 illustrates the geographic distribution of PGA (percent g) across Lancaster County for each event. Potential losses estimated by HAZUS-MH for the MRP and the associated PGA are discussed in the Vulnerability Assessment section (Section 4.3.2.5) of this profile.





Figure 4.3.2-5. Peak Ground Acceleration Modified Mercalli Scale in Lancaster County for a 500-Year MRP Earthquake Event



Source: HAZUS-MH 3.2  
 Note: The Peak Ground Acceleration for the 500-year MRP is 4.1-4.8%g.



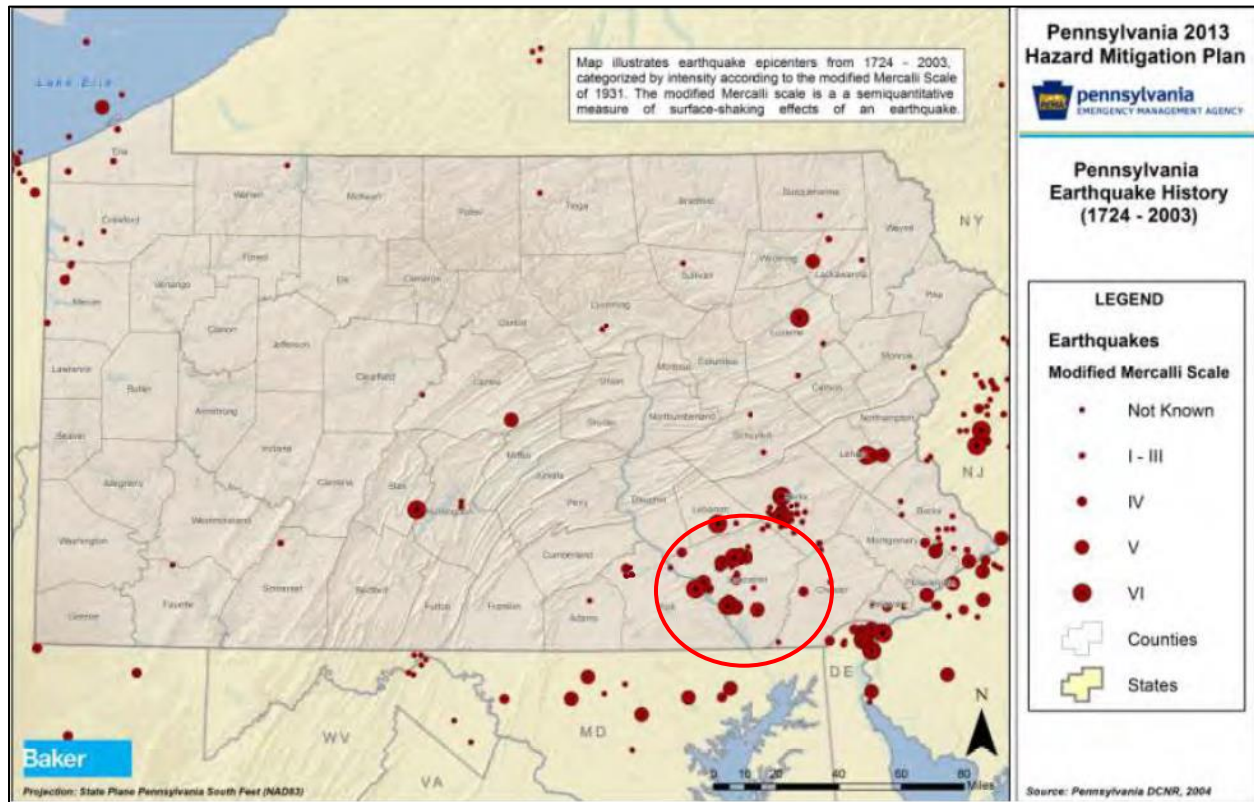




### 4.3.2.3 Past Occurrence

The historical record of earthquakes goes back approximately 200 years. In Pennsylvania, about 48 earthquakes have caused light damage since the Colonial period. Nearly half of these events had out-of-state epicenters (PEMA 2013). Figure 4.3.2-6 is a map of earthquake epicenters in Pennsylvania from 1724 to 2003. No damages were reported in Lancaster County.

Figure 4.3.2-6. Earthquake Epicenters in Pennsylvania



Source: PEMA 2013

Note: Lancaster County is within the red circle.

According to the USGS, there have been 14 earthquake epicenters, 9 with a magnitude over 2.5 on the Richter scale, recorded in Lancaster County between 1724 and September 27, 2016. The lowest magnitude was a 0.8 magnitude earthquake on July 22, 2011, and the largest magnitude was a 4.2 magnitude earthquake on April 23, 1984 (USGS 2017). PEMA’s Pennsylvania Disaster History list includes no significant earthquake events in Pennsylvania, and no Federal Emergency Management Agency (FEMA) major disaster (DR)/emergency declarations (EM) have occurred for significant earthquake events in Pennsylvania (FEMA 2017). Additionally, according to the USGS “Did You Feel It,” Lancaster County residents reported having felt two recent earthquakes in 2017: a 2.3 magnitude earthquake that occurred in Lancaster County and a 1.8 magnitude earthquake that occurred in York County (USGS 2017).

Historically, large earthquakes in eastern North America have occurred in three regions: (1) Mississippi Valley near the Town of New Madrid, Missouri; (2) St. Lawrence Valley region of Quebec, Canada; and (3) Charleston, South Carolina. In February 1925, one of the region’s largest earthquakes on record occurred (magnitude near 7.0) with its epicenter in a region of Quebec. If a similar-magnitude earthquake would occur in the western part of the Quebec region, some moderate damage might be expected in one or more counties of Pennsylvania’s northern tier. An earthquake with an estimated magnitude of about 7.5 occurred on August 31, 1886, in



Charleston, South Carolina. The earthquake was felt in most of Pennsylvania. Since then, an earthquake with a magnitude of 5.8 occurred in Louisa County, Virginia; it was felt throughout Pennsylvania, causing evacuations, minor damage, and emergency infrastructure inspections (PEMA 2013).

Other earthquakes have occurred in east coast areas, including eastern Massachusetts, southeastern New York, and northern New Jersey. Moderate earthquakes occurred in southeastern New York and northern New Jersey and were felt in eastern Pennsylvania. If an earthquake of magnitude 6.0 or greater would occur in that area, damage would likely result in easternmost counties of Pennsylvania, including Lancaster County.

#### 4.3.2.4 Future Occurrence

Earthquakes cannot be predicted and could occur any time of the day or year. Major earthquakes are infrequent in the State and 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 Lancaster County is low.

According to the USGS earthquake catalog, between 1950 and 2016, there have been 14 earthquakes with epicenters in Lancaster 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).

#### 4.3.2.5 Vulnerability Assessment

To understand risk, a community must evaluate which assets are exposed or vulnerable in the identified hazard area. The entire County has been identified as exposed to the earthquake hazard. Therefore, all assets in Lancaster County (population, structures, critical facilities, and lifelines) described in the County Profile (Section 2), are vulnerable. The following section provides an evaluation and estimation of the potential impact of the earthquake hazard on Lancaster County, including the following:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, safety, and health of residents; (2) general building stock; (3) critical facilities; (4) economy; (5) environment; and (6) future growth and development
- Effect of climate change on vulnerability
- Further data collections that will assist understanding of this hazard over time

#### Overview of Vulnerability

Earthquakes usually occur without warning and can be felt in areas at great distance from their point of origin. Extent of damage depends on density of population, as well as building and infrastructure construction in the area shaken by the quake. Some areas may be more vulnerable than others based on soil type, age of buildings, and building codes in place. Compounding potential for damage is that, historically, Building Officials Code Administration (BOCA) in the northeastern United States was developed to address local concerns including heavy snow loads and wind; seismic requirements for design criteria are not as stringent compared to the West Coast's reliance on the more seismically focused Uniform Building Code. Thus, a smaller earthquake in the northeastern United States can cause more structural damage than it would in the western part of the United States.

The entire population and general building stock inventory of the County are at risk for damage or loss from impacts of an earthquake. Potential losses associated with earth shaking were calculated for Lancaster County for the 500-year MRP event. A summary of the data used and methodology applied for this assessment appears



below, followed by impacts on population, existing structures, critical facilities, and the economy within Lancaster County.

### Data and Methodology

A probabilistic assessment was conducted for the 500-year MRP in HAZUS-MH 3.2 to analyze the earthquake hazard and provide a range of loss estimates for Lancaster County. The probabilistic method uses historical earthquake information from historical earthquakes and inferred faults, locations, and magnitudes, and computes probable ground-shaking levels that may be experienced during a recurrence period by Census tract. According to the New York City Area Consortium for Earthquake Loss Mitigation (NYCEM), probabilistic estimates are best for urban planning, land use, zoning, and seismic building code regulations (NYCEM 2003). The default assumption is a magnitude-7.0 earthquake for all return periods.

In addition to the probabilistic scenario cited, an annualized loss run was conducted in HAZUS 3.2 to estimate annualized general building stock dollar losses within Lancaster County. The annualized loss methodology combines estimated losses associated with ground shaking for each return period, which are based on values from the USGS seismic probabilistic curves. Annualized losses are useful for mitigation planning because they provide a baseline that can be used to compare (1) the risk of one hazard across multiple jurisdictions, and (2) the degree of risk of all hazards for each participating jurisdiction.

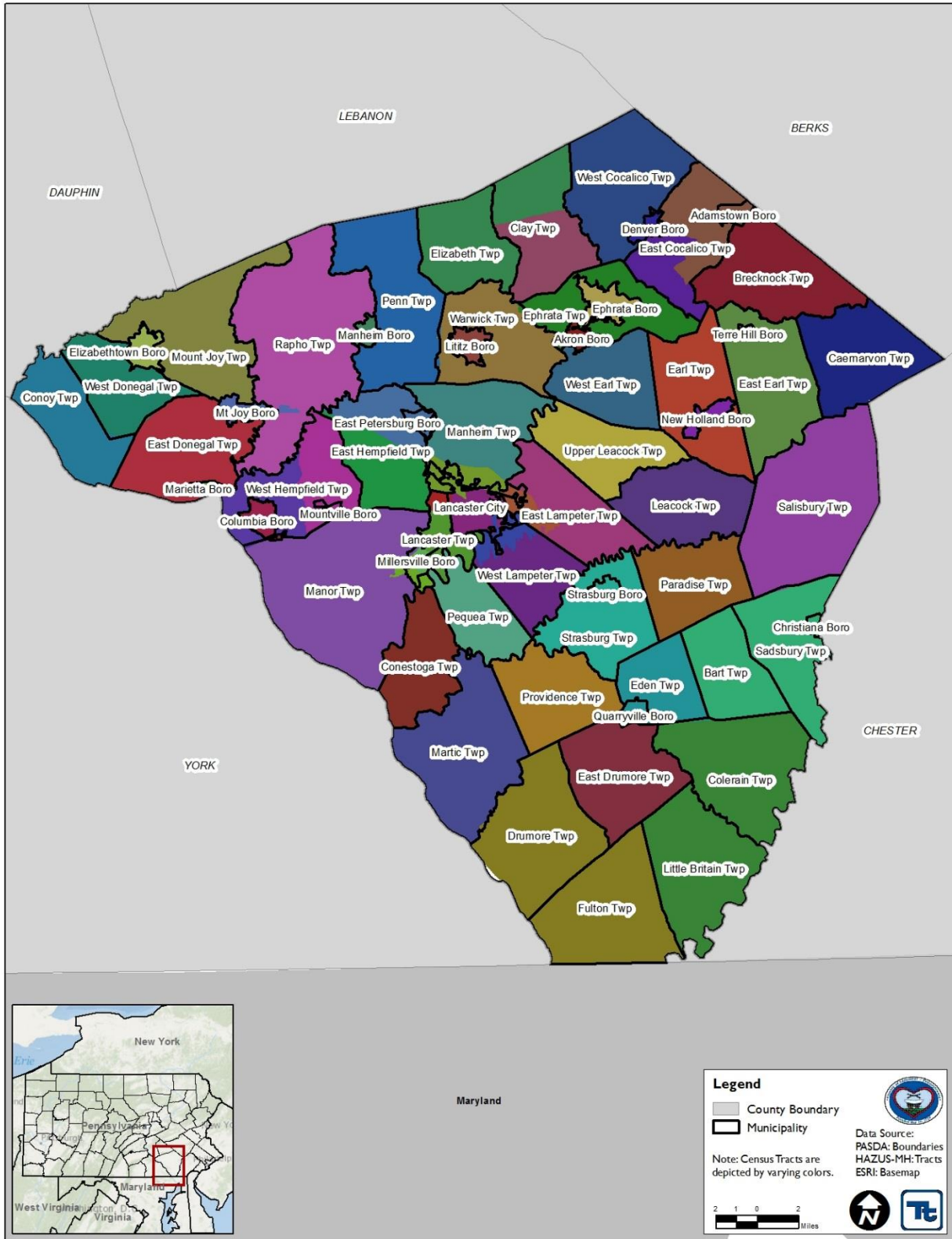
As noted in the HAZUS-MH Earthquake User Manual, “Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the approximations and simplifications 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 a factor of 2 or more.” However, HAZUS potential loss estimates are acceptable for the purposes of this Hazard Mitigation Plan (HMP).

The occupancy classes available in HAZUS-MH 3.2 were condensed into the following categories to facilitate the analysis and presentation of results: residential, commercial, industrial, agricultural, religious, government, and educational. Residential loss estimates address both multi-family and single-family dwellings. Impacts on critical facilities and utilities were also evaluated.

HAZUS-MH 3.2 generates results at the Census-tract level. Boundaries of the U.S. Census tracts are not always coincident with municipal boundaries in Lancaster County. Results in subsequent tables are presented for the U.S. Census tracts, with the associated municipalities listed for each tract. Figure 4.3.2-7 below shows spatial relationships between U.S. Census tracts and municipal boundaries.



Figure 4.3.2-7. HAZUS-MH Census Tracts in Lancaster County



Source: HAZUS-MH 3.2







### Impact on Life, Health, and Safety

Overall, the entire population of Lancaster County is exposed to the earthquake hazard event. According to the 2010 U.S. Census, Lancaster County had a population of 519,445 people. The impact of earthquakes on life, health, and safety depends on the severity of the event. Risks to public safety and loss of life from an earthquake in Lancaster 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 quake.

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 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.

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. Table 4.3.2-5 summarizes the estimated sheltering needs for Lancaster County.

**Table 4.3.2-5. Summary of Estimated Sheltering Needs for Lancaster County**

Scenario	Displaced Households	Persons Seeking Short-Term Shelter
500-Year Earthquake	44	27

Source: HAZUS-MH 3.2

Structural building damage correlates strongly to the number of injuries and casualties from an earthquake event (NYCEM 2003). 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 deal 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 4.3.2-6 summarizes estimated number of injuries, hospitalizations, and casualties as a result of the 500-year MRP event.

**Table 4.3.2-6. Estimated Number of Injuries, Hospitalizations, and Casualties from the 500-Year MRP Earthquake Event**

Level of Severity	Time of Day		
	2:00 a.m.	2:00 p.m.	5:00 p.m.
Injuries	28	22	20
Hospitalization	4	3	2
Casualties	1	0	0

Source: HAZUS-MH 3.2

### Impact on General Building Stock

After consideration of the population exposed to the earthquake hazard, an evaluation of value of general building stock exposed to and damaged by the 500-year MRP earthquake event occurred. In addition, annualized







losses were calculated by use of HAZUS-MH 3.2. The entire study area’s general building stock is considered at risk and exposed to this hazard.

The HAZUS-MH 3.2 model estimates value of exposed building stock and loss (in terms of damage to exposed stock). The County Profile section of this HMP (Section 2) presents statistics on replacement values of general building stock (structure and contents).

A probabilistic model was run to estimate annualized dollar losses within Lancaster County by application of HAZUS-MH 3.2. Annualized losses are useful for mitigation planning because they provide a baseline that can be used to compare (1) risk of one hazard across multiple jurisdictions, and (2) degree of risk of all hazards within each participating jurisdiction. Notably, annualized loss does not predict losses in any particular year. Estimated earthquake annualized losses are approximately \$880K per year (building and contents) within the County.

According to NYCEM, where earthquake risks and mitigation were evaluated in the New York, New Jersey, and Connecticut region, most damage and loss caused by an earthquake would directly or indirectly result from ground shaking (NYCEM 2003). NYCEM found a strong correlation between PGA and damage a building might undergo. The HAZUS-MH model is based on the best available earthquake science and aligns with these statements. HAZUS-MH 3.0 methodology and model were used to analyze the earthquake hazard for the general building stock within Lancaster County. Figure 4.3.2-5 earlier in this profile illustrates the geographic distribution of PGA (*g*) across the County for the 500-year MRP event.

In addition, according to NYCEM (NYCEM 2003), a building’s construction determines how well it can withstand the force of an earthquake. The NYCEM report indicates that 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-MH 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-MH analysis.

Potential building damage was evaluated by HAZUS-MH 3.2 across the following damage categories: none, slight, moderate, extensive, and complete. Table 4.3.2-7 provides definitions of these categories of damage for a light wood-framed building; definitions for other building types are included in the HAZUS-MH technical manual documentation. General building stock damage for these damage categories by occupancy class on a countywide basis is summarized for the 500-year event in Table 4.3.2-8.



**Table 4.3.2-7. 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.
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 2015a

**Table 4.3.2-8. Estimated Buildings Damaged by General Occupancy for 500-year MRP Earthquake Event**

Category	Average Damage State				
	500-Year MRP				
	None	Slight	Moderate	Extensive	Complete
Residential	167,269 (88.1%)	3,581 (1.89%)	1,118 (<1%)	131 (<1%)	12 (<1%)
Commercial	10,379 (5.5%)	277 (<1%)	85 (<1%)	10 (<1%)	1 (<1%)
Industrial	3,739 (2.0%)	93 (<1%)	29 (<1%)	3 (<1%)	0 (0%)
Education, Government, Religious, and Agricultural	2,981 (1.6%)	73 (<1%)	23 (<1%)	2 (<1%)	0 (0%)

Source: HAZUS-MH 3.2

Table 4.3.2-9 summarizes estimated building value (buildings and contents) for the 500-year MRP earthquake event. Damage loss estimates include structural and non-structural damage to buildings and loss of contents.



**Table 4.3.2-9. Estimated Building Value (Building and Contents) Damaged by the Annualized, 500-Year MRP Earthquake Event**

Municipality	Total Replacement Cost Value (Building and Contents)	Estimated Total Damages*		Percent of Total Building and Contents		Estimated Residential Damage	Estimated Commercial Damage
		Annualized Loss	500-Year	Annualized Loss	500-Year	500-Year	500-Year
Akron (B)	\$620,869,000	\$6,069	\$393,436	<1%	<1%	\$304,082	\$57,851
Brecknock (T)	\$998,227,000	\$9,788	\$677,230	<1%	<1%	\$552,322	\$64,108
Caernarvon (T)	\$622,129,000	\$6,605	\$440,135	<1%	<1%	\$320,036	\$66,756
Clay (T)	\$738,275,000	\$7,083	\$476,591	<1%	<1%	\$352,233	\$68,875
Colerain (T)-Little Britain (T)	\$918,063,000	\$9,191	\$608,251	<1%	<1%	\$515,847	\$49,523
Columbia (B)	\$1,749,495,000	\$15,135	\$927,643	<1%	<1%	\$624,899	\$213,029
Conestoga (T)	\$541,954,000	\$5,168	\$339,666	<1%	<1%	\$293,558	\$24,255
Conway (T)	\$434,872,000	\$3,213	\$229,874	<1%	<1%	\$199,125	\$14,892
Denver (B)	\$688,940,000	\$6,413	\$424,611	<1%	<1%	\$310,702	\$47,918
Drumore (T)-Fulton (T)	\$766,866,000	\$7,276	\$468,631	<1%	<1%	\$351,370	\$39,832
Earl (T)	\$1,817,500,000	\$19,327	\$1,140,387	<1%	<1%	\$488,095	\$425,397
Earl (T)-New Holland (B)	\$972,312,000	\$10,197	\$634,790	<1%	<1%	\$409,951	\$145,608
East Cocalico (T)	\$929,667,000	\$9,329	\$580,320	<1%	<1%	\$337,983	\$116,244
East Cocalico (T)-Adamstown (B)	\$1,314,298,000	\$12,471	\$820,241	<1%	<1%	\$585,572	\$72,158
East Donegal (T)	\$1,240,941,000	\$10,090	\$690,248	<1%	<1%	\$557,756	\$75,871
East Drumore (T)	\$713,496,000	\$7,496	\$461,842	<1%	<1%	\$340,514	\$65,009
East Earl (T)-Terrie Hill (B)	\$1,282,789,000	\$13,410	\$861,443	<1%	<1%	\$571,291	\$149,459
East Hempfield (T)	\$5,393,297,000	\$50,972	\$3,094,029	<1%	<1%	\$2,011,301	\$595,240
East Hempfield (T)-East Petersburg (B)	\$1,247,929,000	\$11,680	\$728,947	<1%	<1%	\$470,053	\$160,792
East Hempfield (T)-Mountville (B)	\$2,342,954,000	\$21,364	\$1,363,579	<1%	<1%	\$1,036,748	\$181,385
East Lampeter (T)	\$2,690,759,000	\$28,480	\$1,647,800	<1%	<1%	\$871,975	\$496,212
Eden (T)-Quarryville (B)	\$735,142,000	\$7,756	\$476,369	<1%	<1%	\$328,740	\$89,594
Elizabeth (T)-Clay (T)	\$780,615,000	\$6,697	\$449,345	<1%	<1%	\$337,348	\$39,213
Elizabethtown (B)	\$1,800,576,000	\$13,976	\$924,044	<1%	<1%	\$724,337	\$98,163
Ephrata (B)	\$2,476,959,000	\$24,139	\$1,482,318	<1%	<1%	\$856,655	\$366,284





SECTION 4.3.2: RISK ASSESSMENT – EARTHQUAKE

Municipality	Total Replacement Cost Value (Building and Contents)	Estimated Total Damages*		Percent of Total Building and Contents		Estimated Residential Damage	Estimated Commercial Damage
		Annualized Loss	500-Year	Annualized Loss	500-Year	500-Year	500-Year
Ephrata (T)	\$1,729,113,000	\$17,509	\$1,095,221	<1%	<1%	\$726,785	\$202,378
Lancaster (C)	\$8,262,772,000	\$83,131	\$4,994,672	<1%	<1%	\$3,331,923	\$1,040,954
Lancaster (C)-East Lampeter (T)	\$1,059,579,000	\$10,786	\$660,421	<1%	<1%	\$430,760	\$143,583
Lancaster (C)-Manheim (T)	\$3,758,702,000	\$38,579	\$2,108,781	<1%	<1%	\$705,589	\$804,321
Lancaster (C)-West Lampeter (T)	\$619,340,000	\$6,132	\$403,027	<1%	<1%	\$332,549	\$41,470
Lancaster (T)	\$612,026,000	\$5,731	\$383,961	<1%	<1%	\$325,288	\$27,423
Lancaster (T)-Millersville (B)	\$1,727,034,000	\$16,558	\$1,053,180	<1%	<1%	\$900,391	\$111,362
Leacock (T)	\$775,791,000	\$8,344	\$505,843	<1%	<1%	\$312,680	\$109,783
Lititz (B)	\$2,117,828,000	\$20,348	\$1,253,033	<1%	<1%	\$772,341	\$153,758
Manheim (B)	\$894,777,000	\$7,986	\$496,253	<1%	<1%	\$313,452	\$94,987
Manheim (T)	\$6,360,807,000	\$61,756	\$3,947,490	<1%	<1%	\$2,910,687	\$756,050
Manor (T)	\$3,174,998,000	\$30,065	\$1,889,152	<1%	<1%	\$1,378,175	\$282,983
Manor (T)-Millersville (B)	\$709,329,000	\$7,083	\$446,814	<1%	<1%	\$394,077	\$35,836
Marietta (B)	\$381,645,000	\$3,189	\$198,194	<1%	<1%	\$131,630	\$27,153
Martic (T)	\$627,819,000	\$6,103	\$404,484	<1%	<1%	\$334,495	\$31,961
Millersville (B)	\$451,769,000	\$4,949	\$298,582	<1%	<1%	\$243,562	\$20,870
Mount Joy (B)-Rapho (T)	\$1,429,747,000	\$12,184	\$782,324	<1%	<1%	\$546,619	\$142,224
Mount Joy (T)	\$1,663,039,000	\$13,129	\$891,630	<1%	<1%	\$665,105	\$146,561
Paradise (T)	\$751,377,000	\$8,121	\$505,958	<1%	<1%	\$352,332	\$94,964
Penn (T)	\$1,728,870,000	\$15,408	\$990,726	<1%	<1%	\$699,552	\$193,157
Pequea (T)	\$703,142,000	\$6,920	\$438,770	<1%	<1%	\$339,943	\$40,861
Providence (T)	\$809,633,000	\$8,542	\$539,966	<1%	<1%	\$426,726	\$52,543
Rapho (T)	\$1,796,999,000	\$15,168	\$1,009,134	<1%	<1%	\$779,714	\$106,776
Sadsbury (T)-Christiana (B)-Bart (T)	\$934,056,000	\$9,982	\$644,810	<1%	<1%	\$513,816	\$63,132
Salisbury (T)	\$1,280,883,000	\$13,895	\$911,086	<1%	<1%	\$701,412	\$108,981
Strasburg (T)-Strasburg (B)	\$1,194,870,000	\$12,374	\$758,504	<1%	<1%	\$528,669	\$179,134
Upper Leacock (T)	\$1,707,208,000	\$17,667	\$1,046,057	<1%	<1%	\$594,367	\$188,801





Municipality	Total Replacement Cost Value (Building and Contents)	Estimated Total Damages*		Percent of Total Building and Contents		Estimated Residential Damage	Estimated Commercial Damage
		Annualized Loss	500-Year	Annualized Loss	500-Year	500-Year	500-Year
Warwick (T)	\$3,253,969,000	\$30,312	\$1,962,240	<1%	<1%	\$1,444,625	\$314,293
West Cocalico (T)	\$1,032,223,000	\$9,179	\$637,398	<1%	<1%	\$497,673	\$49,072
West Donegal (T)	\$1,435,727,000	\$11,006	\$758,438	<1%	<1%	\$639,635	\$70,203
West Earl (T)	\$1,368,975,000	\$14,011	\$863,694	<1%	<1%	\$555,086	\$160,108
West Hempfield (T)	\$767,294,000	\$6,700	\$442,083	<1%	<1%	\$363,689	\$47,340
West Lampeter (T)	\$2,398,229,000	\$24,354	\$1,483,940	<1%	<1%	\$1,098,164	\$232,961
<b>Lancaster County</b>	<b>\$91,338,494,000</b>	<b>\$880,519</b>	<b>\$55,147,632</b>	<b>&lt;1%</b>	<b>&lt;1%</b>	<b>\$38,044,004</b>	<b>\$9,799,650</b>

Source: HAZUS-MH 3.2

Notes:

Total amount is sum of damages for all occupancy classes (residential, commercial, industrial, agricultural, educational, religious, and government).

As stated at the beginning of the vulnerability analysis, HAZUS-MH 3.2 generates results at the Census-tract level. Boundaries of Census tracts are not always coincident with municipal boundaries in Lancaster County. Results in the table are for Census tracts, with associated municipalities listed for each tract. See Figure 4.3.2-7 for a visual breakdown of Census tracts.





An estimated \$55 million in damages would occur to buildings in the County during a 500-year earthquake event. This takes into account structural damage, non-structural damage, and loss of contents, representing less than 1 percent of total replacement value for general building stock in Lancaster County (total replacement value within the County would exceed \$91 billion). Earthquakes can cause secondary hazard events such as fires. According to the HAZUS-MH earthquake model, no fires are anticipated as a result of the 500-Year MRP event.

### 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 Lancaster County are considered exposed and vulnerable to the earthquake hazard. The Critical Facilities subsection of this HMP in Section 2 (County Profile) discusses the inventory of critical facilities in Lancaster County.

HAZUS-MH 3.2 estimates the probability that critical facilities may sustain damage as a result of the 500-year MRP earthquake event. Additionally, HAZUS-MH estimates percent functionality of each facility days after the event. Table 4.3.2-10 (500-year MRP earthquake event) lists percent probabilities that critical facilities and utilities would sustain damages within the damage categories (column headings), and list percent functionalities after different numbers of days following those events (column headings).

**Table 4.3.2-10. Estimated Damage to and Loss of Functionality of Critical Facilities and Utilities in Lancaster County for the 500-Year MRP Earthquake Event**

Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
<b>Critical Facilities</b>									
Medical	97	2	<1	<1	0	97	99	100	100
Police	97	2-2.5	<1	<1	0	97	99	100	100
Fire	97	2-2.5	<1	<1	0	97	99	100	100
EOC	97	2-2.5	<1	<1	0	97	99	100	100
School	97	2-2.5	<1	<1	0	97	99	100	100
<b>Utilities</b>									
Potable	99	<1	<1	0	0	99-100	100	100	100
Wastewater	99	<1	<1	0	0	99	100	100	100
Electric	99	<1	<1	0	0	99-100	100	100	100
Communication	99	<1	<1	0	0	100	100	100	100

Source: HAZUS-MH 3.2

Notes: EOC Emergency Operations Center

### Impact on Economy

Earthquakes also impact the economy, causing loss of business function, damage to inventory, relocation costs, wage loss, and rental loss during repair or replacement of buildings. A HAZUS-MH analysis estimated total economic loss associated with each earthquake scenario, including building- and lifeline-related losses (such as transportation and utility losses) based on available inventory (facility or geographic information system [GIS] point data only). Direct building losses are estimated costs to repair or replace damages to buildings. These losses are reported in the Impact on General Building Stock section presented earlier. Lifeline-related losses include costs of direct repair to transportation and utility systems and are reported in terms of probability of





reaching or exceeding a specified level of damage caused by a given level of ground motion. Additionally, economic loss includes business interruption losses associated with inability to operate a business as a result of damage sustained during the earthquake as well as temporary living expenses for those displaced. These losses are discussed below.

For a 500-year event, HAZUS-MH 3.2 estimates that the County would incur approximately \$21.7 million in income losses (wage, rental, relocation, and capital-related losses) in addition to structural, non-structural, and content building stock losses (\$55.4 million).

The HAZUS-MH analysis did not take into account damage to roadway segments. However, these features assumedly would undergo damage as a result of ground failure, and an earthquake event thus would interrupt regional transportation and distribution of materials. According to HAZUS-MH Earthquake User Manual, losses to the community resulting from damages to lifelines could be much greater than costs of repair (FEMA 2015a).

Earthquake events can significantly damage road bridges; this is important because they often provide the only access to certain neighborhoods. Because softer soils can generally follow floodplain boundaries, bridges that cross watercourses should be considered vulnerable. A key factor in degree of vulnerability is age of a facility, which helps indicate the standards the facility was built to achieve.

HAZUS-MH Earthquake User’s Manual also estimates volume of debris that may be generated as a result of an earthquake event to enable the study region to prepare and rapidly and efficiently manage debris removal and disposal. Debris estimates are divided into two categories: (1) reinforced concrete and steel that require special equipment to break up before transport, and (2) brick, wood, and other debris that can be loaded directly onto trucks with bulldozers (FEMA 2015a).

Table 4.3.2-11 summarizes the estimated debris generated by the four earthquake scenarios in HAZUS-MH 4.0.

**Table 4.3.2-11. Estimated Debris Generated by 500-year MRP Earthquake Event**

Municipality	Debris Type	
	Brick/Wood (tons)	Concrete/ Steel (tons)
Eastern Bear Lake	264.8	61.0
Lemhi	424.9	91.8
Squaw Creek	280.4	70.6
Borah Peak	311.0	73.2

Source: HAZUS-MH 4.0

### 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 or toxic material containments

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



### Future Growth and Development

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As discussed in Section 2.4 of this HMP, areas targeted for future growth and development have been identified across the County. Human exposure and vulnerability to earthquake impacts in newly developed areas are anticipated to be similar to those current within the County. Current 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.

### Effect of Climate Change on Vulnerability

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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 2004).

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.

### Additional Data and Next Steps

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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-MH to further refine the County's vulnerability assessment.

A HAZUS-MH earthquake analysis was conducted for Lancaster County by use of the default model data. Additional data needed to further refine and enhance the County's vulnerability assessment includes identifications of unreinforced masonry critical facilities and privately-owned buildings (i.e., residences) via local knowledge and/or pictometry/orthophotos. Use of soil type data can also lead to more accurate estimates of potential losses to the County. These buildings may not withstand earthquakes of certain magnitudes and plans to provide emergency response/recovery efforts for these properties can be established. Further mitigation actions include training of County and municipal personnel to provide post-hazard event rapid visual damage assessments, increase of County and local debris management and logistic capabilities, and revised regulations to prevent additional construction of non-reinforced masonry buildings.



### 4.3.3 Flood, Flash Flood, Ice Jam

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This section provides a profile and vulnerability assessment of the flood hazard in Lancaster 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 State's municipalities have been designated as flood-prone areas. Both seasonal and flash floods have been causes of millions of dollars in annual property damages, loss of lives, and disruption of economic activities (Pennsylvania Emergency Management Agency [PEMA] 2013).

The Federal Emergency Management Agency's (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 2015a).

Most floods fall into three categories: riverine, coastal, and shallow (FEMA 2015a). 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 Lancaster County. These types of floods are further discussed below.

#### Riverine Floods

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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 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 2015a, Illinois Association for Floodplain and Stormwater Management 2006).

#### Flash Floods

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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) (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 (Pennsylvania Emergency Management Agency [PEMA] 2013). Time elapsed 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 flood waters (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 inability of the soil to absorb additional precipitation (FEMA 2008).



### Ice Jam Floods

An ice jam is an accumulation of ice that acts as a natural dam and restricts 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 (Northeast States Emergency Consortium [NESEC] Date Unknown, U.S. Army Corps of Engineers [USACE] 2002).

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 a heavy rainfall, snowmelt, or warmer temperatures (USACE 2002).

### Dam Failure Floods

A dam is an artificial barrier that can impound water, wastewater, or any liquid-borne material for the purpose of storage or control of water (FEMA 2010). Dams are man-made structures built across a stream or river that impound water and reduce flow downstream (FEMA 2003). They are built for purposes of power production, agriculture, water supply, recreation, and flood protection. Dam failure is any malfunction or abnormality outside of the design that adversely affects a dam's primary function of impounding water (FEMA 2015b). Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed capacity of the dam (inadequate spillway capacity)
- Prolonged periods of rainfall and flooding
- Deliberate acts of sabotage (terrorism)
- Structural failure of materials used in dam construction
- Movement and/or failure of the foundation supporting the dam
- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate or negligent operation, maintenance, and upkeep
- Failure of upstream dams on the same waterway
- Earthquake (liquefaction/landslides) (FEMA 2015b)

Flooding can occur when a dam fails or breaks, producing effects similar to flash floods. Areas most susceptible to effects of floods are low-lying areas near water or downstream from a dam (FEMA 2015b).

Flooding caused by dam failure is addressed in Section 4.3.12 of this plan.

#### 4.3.3.1 Location and Extent

Flooding in Pennsylvania is typically associated with abnormally high and intense rainfall amounts. It can also be caused by sudden snowmelt, landslides, or dam failures. In Pennsylvania, flooding usually occurs in the summer; however, flooding has occurred 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 2013). Floodplain maps of each Lancaster County jurisdiction are available







at the end of this profile. These maps show locations of both the 1 percent chance annual floodplain and the 0.2 percent chance annual floodplain.

Lancaster County’s greatest flooding threat is along the Susquehanna River corridor. Other major waterways within the County include the Chiques Creek, the Conestoga River, the Pequea Creek, and the Octoraro Creek.

Most municipalities in Lancaster County have flood-prone areas because they are located along streams, creeks, or lakes. In addition, community development of the floodplain has resulted in frequent flooding. For inland areas, excess water from snowmelt or rainfall accumulates and overflows onto stream banks and adjacent floodplains. Both New Holland Borough and Terre Hill Borough do not participate in the National Flood Insurance Program (NFIP) and do not have mapped floodplains.

Table 4.3.3-1 lists total land areas within the 1 percent and 0.2 percent annual chance flood zones calculated via a spatial analysis referencing the 2017 Digital Flood Insurance Rate Map (DFIRM).

**Table 4.3.3-1. Total Land Areas in the 1 percent and 0.2 percent Annual Chance Flood Zones (Acres)**

Municipality	NFIP- Participating Community	Total Area (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
Adamstown Borough	Yes	910.2	58.8	6.5%	62	6.8%
Akron Borough	Yes	774.5	14.5	1.9%	18.9	2.4%
Bart Township	Yes	10,502.8	434.6	4.1%	445.2	4.2%
Brecknock Township	Yes	15,836.3	929.2	5.9%	931.6	5.9%
Caernarvon Township	Yes	14,682.2	711.3	4.8%	712.2	4.9%
Christiana Borough	Yes	333.5	58.8	17.6%	63.4	19.0%
Clay Township	Yes	14,569.5	1,059.4	7.3%	1,062.80	7.3%
Colerain Township	Yes	18,729.7	1,332.5	7.1%	1,338.80	7.1%
Columbia Borough	Yes	1,503.5	115.9	7.7%	142.1	9.5%
Conestoga Township	Yes	10,560.2	1,589.6	15.1%	1,677.30	15.9%
Conoy Township	Yes	11,624.6	3,216.0	27.7%	3,377.70	29.1%
Denver Borough	Yes	839.6	126.5	15.1%	150.2	17.9%
Drumore Township	Yes	18,773.2	3,907.7	20.8%	3,914.80	20.9%
Earl Township	Yes	14,092.5	895.3	6.4%	974.3	6.9%
East Cocalico Township	Yes	13,169.9	789.1	6.0%	887.8	6.7%
East Donegal Township	Yes	15,118.4	2,320.3	15.3%	2,507.60	16.6%
East Drumore Township	Yes	14,761.2	481.6	3.3%	483.1	3.3%
East Earl Township	Yes	15,801.6	776.2	4.9%	899	5.7%
East Hempfield Township	Yes	13,558.1	743.2	5.5%	848.3	6.3%
East Lampeter Township	Yes	12,725.1	912.7	7.2%	1,060.10	8.3%
East Petersburg Borough	Yes	741.3	11.1	1.5%	14.8	2.0%
Eden Township	Yes	7,998.1	190.8	2.4%	192.6	2.4%
Elizabeth Township	Yes	11,329.0	702.1	6.2%	702.1	6.2%



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

**Table 4.3.3-1. Total Land Areas in the 1 percent and 0.2 percent Annual Chance Flood Zones (Acres)**

Municipality	NFIP- Participating Community	Total Area (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
Elizabethtown Borough	Yes	1,715.7	68.4	4.0%	73.7	4.3%
Ephrata Borough	Yes	2,273.7	174.6	7.7%	249.2	11.0%
Ephrata Township	Yes	10,409.7	819.2	7.9%	959.5	9.2%
Fulton Township	Yes	18,736.8	3,053.8	16.3%	3,053.80	16.3%
Lancaster City	Yes	4,698.7	360.9	7.7%	453	9.6%
Lancaster Township	Yes	3,904.6	468.1	12.0%	576.3	14.8%
Leacock Township	Yes	13,231.5	653.2	4.9%	673.9	5.1%
Lititz Borough	Yes	1,477.3	111.2	7.5%	119.7	8.1%
Little Britain Township	Yes	17,599.0	931.5	5.3%	944.5	5.4%
Manheim Borough	Yes	890.4	219.6	24.7%	286.4	32.2%
Manheim Township	Yes	15,404.0	860.8	5.6%	1,083.60	7.0%
Manor Township	Yes	30,776.2	7,237.1	23.5%	7,378.50	24.0%
Marietta Borough	Yes	483.4	183.3	37.9%	251.7	52.1%
Martic Township	Yes	20,804.2	2,931.0	14.1%	3,024.20	14.5%
Millersville Borough	Yes	1,227.7	13.3	1.1%	15.2	1.2%
Mount Joy Borough	Yes	17,914.4	45.7	<1%	46	<1%
Mount Joy Township	Yes	482.9	766.7	158.8%	897.1	185.8%
Mountville Borough	Yes	1,389.5	4.3	<1%	5	<1%
New Holland Borough	No	1,276.8	-	-	-	-
Paradise Township	Yes	11,923.3	580.5	4.9%	596.5	5.0%
Penn Township	Yes	18,930.9	797.3	4.2%	834.4	4.4%
Pequea Township	Yes	8,746.3	519.5	5.9%	586.1	6.7%
Providence Township	Yes	12,823.1	517.2	4.0%	540.8	4.2%
Quarryville Borough	Yes	832.9	45.8	5.5%	50.1	6.0%
Rapho Township	Yes	30,759.8	1,560.8	5.1%	1,669.70	5.4%
Sadsbury Township	Yes	12,715.2	629.4	4.9%	640.3	5.0%
Salisbury Township	Yes	26,851.5	1,636.7	6.1%	1,640.30	6.1%
Strasburg Borough	Yes	610.0	1.1	<1%	1.1	<1%
Strasburg Township	Yes	12,868.3	775.1	6.0%	797.2	6.2%
Terre Hill Borough	No	292.6	-	-	-	-
Upper Leacock Township	Yes	11,704.3	663.9	5.7%	750.4	6.4%
Warwick Township	Yes	12,949.1	729.5	5.6%	813.7	6.3%
West Cocalico Township	Yes	17,609.7	1,204.0	6.8%	1,219.90	6.9%
West Donegal Township	Yes	10,112.7	332.9	3.3%	366.1	3.6%
West Earl Township	Yes	11,425.1	1,179.5	10.3%	1,531.50	13.4%





**Table 4.3.3-1. Total Land Areas in the 1 percent and 0.2 percent Annual Chance Flood Zones (Acres)**

Municipality	NFIP- Participating Community	Total Area (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
West Hempfield Township	Yes	13,388.1	1,778.8	13.3%	1,877.50	14.0%
West Lampeter Township	Yes	10,626.4	576.8	5.4%	651.4	6.1%
<b>Lancaster County</b>	-	<b>628,801.2</b>	<b>53,808.8</b>	<b>8.6%</b>	<b>57,124.90</b>	<b>9.1%</b>

Source: FEMA 2000

Note: Areas listed include areas of inland waterways

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 that provide for improved management of stormwater impacts associated with development of land. In 2013, Lancaster County developed and implemented “Blueprints – An Integrated Water Resources Plan for Lancaster County,” which is the water resource element to the County’s Comprehensive Plan that promotes watershed-based planning and management. The plan also serves as the County’s stormwater management plan in accordance to Act 167. The main five goals of the plan are as follows:

- Provide water, sewer, and stormwater infrastructure to accommodate 85% of future growth in Urban Growth Areas
- Deliver essential infrastructure services to both urban and rural settlements in a cost effective manner.
- Reduce the number of miles of impaired streams.
- Institutionalize Integrated Water Resources management in Lancaster County.
- Increase the use of green infrastructure in water resources management.

Figure 4.3.3-1 shows PADEP-designated watersheds with critical facilities in Lancaster County.

The 2016 FEMA Flood Insurance Study (FIS) for Lancaster County also documents the major flooding problems in the County. According to the report, flooding is not a widespread problem for the County; this may be attributable to the physical features of the watersheds and stream channels. In addition, local residents have limited development in low-lying stream banks and floodplains (FEMA 2016).

The following are specific problem areas in the County that were identified through municipal surveys for “Blueprints,” or identified by municipal emergency management coordinators:

- Akron Borough – Heritage development along Cocalico Creek
  - Minor property damage, infiltration into sewer system
- Brecknock Township – Critical stream and street flooding, soil wash off, and stormwater pollution in every storm
  - Areas of major stream flooding (crops and properties under water)
  - Areas of flooded roads which require "High Water" and "Road Closed" signs in every storm
  - Areas of soil wash off and stream pollution mostly as a result of farming practices
- Columbia Borough – drainage problem at 10<sup>th</sup> Street and Ridge Avenue
- Conestoga Township – Critical street flooding; damage to private and public property in every storm
  - Orchard Hills Development (Supervisors have approved work to correct problem)
  - Kendig Road at Elm Street, low spot in the road floods



- Denver Borough
  - Basement flooding, vehicle and road surface deterioration on the 300 and 400 blocks of Locust Street occurs more than 10 times a year due to lack of underground drainage
  - Basement flooding, vehicle and road surface deterioration on the North 3<sup>rd</sup> and Main Street occurs more than once a year due to lack of underground drainage
  - Little Cocalico Creek and Ridge Road – stream flooding, soil washoff, bridge opening
  - Intersections of Smokestown, Miller, and Reinholds road at confluence of Little Cocalico Creek and Fry's Run – stream flooding, bridge opening
  - Fry's Run at Dogwood Drive – stream flooding, bridge opening
  - Fry's Run at White Oak Road – stream flooding, street flooding, bridge opening
  - Fry's Run at Smokestown Road – stream flooding, street flooding, bridge opening
  - Stony Run at Hill Road – street flooding, bridge opening
  - Cocalico Creek in vicinity of West Church Street – stream flooding
  - Stony Run at Bunker Hill Road – street flooding, bridge opening
  - Stony Run at West Church Street – street flooding, bridge opening
  - Cocalico Creek at Cocalico Creek Road – stream flooding
  - Haldemans Mobile Home Park (Justin Circle and Wabash Road) – stream flooding
- Earl Township
  - Cabin Road near Township line – flooding more than once a year due to overflowing stream banks
  - Rt. 322, West of Martindale Road – flooding more than once a year due to overflowing stream banks.
- East Earl Township – critical stream and street flooding, soil wash off and stormwater pollution in major events
  - Areas of roadway flooding
  - Conestoga Bridge Road, Iron Bridge Road, and Quarry Road, caused by flooding of the Conestoga River
  - Roadway flooding on Pa. Route 897 caused by runoff from Welsh Mountain and farm fields.
- East Lampeter Township – critical stream and street flooding, and stormwater pollution problems more than once a year – insufficient stormwater capacity
  - Millcross Road; Eastwood Village; Pitney Road; Greenfield Road at railroad underpass
- Ephrata Borough
  - Nissley Acres (Niss, Bellevue, and James Avenues) flooding occurs during major events, caused by too large an increase in uncontrolled runoff and uncontrolled runoff from upstream municipalities
  - 600 Block of W. Main Street – occurs during major events, caused by undersized drainage system and lack of maintenance of drainage ways
  - Walnut Street East – occurs during more than 10 times per year, caused by undersized drainage system (problem is being corrected)
- Ephrata Township – Moderate stream and street flooding and soil wash off problems
  - Frysville Road/Newswanger Road intersection – flooding from small stream more than once per year. Caused by drainage system that is too small and needs to be replaced



- Frysville Road/Fry's Road, flooding from two small streams and Muddy Creek in major flood events
- Lancaster City – minor street flooding and stormwater pollution
  - North Plum Street at railroad underpass; Wabank Road 70' West of Hershey Avenue; New Holland Avenue at railroad overpass (East of Ross Street); Chesapeake and Broad Streets
- Lititz Borough – problems with stream and street flooding during heavy storms more than once a year
  - Lititz Springs Parks; Lititz Run
- Manheim Borough – the area around the Chiques Creek and Little Chiques Creek
- Manheim Township – Butter Road and River Road are both vulnerable to flooding from the Conestoga River
- Millersville Borough – moderate stream and street flooding; soil wash off problems
  - Oak Ridge Drive – street flooding more than once per year
  - Barbara Street at East College Avenue – street flooding and soil washoff more than once per year
  - Creek Drive – stream flooding in major events
- Mount Joy Borough – erosion of soil and flooding of roadways:
  - Outfall pipe from Stauffer Court and erosion of the rear yard it discharges to, and the banks of the Little Chiques Creek – insufficient stormwater capacity
  - Low drainage area from Amtrak with insufficient capacity to carry flow under Route 230 – insufficient stormwater capacity
  - Release of water from underground drainage system to the surface – insufficient stormwater capacity
- Penn Township – Critical stream and street flooding in certain areas; damage to private and public property, property damage, and loss of vital services
  - Stiegel Valley Road and White Oak Road intersection, and along White Oak Road south of Hamaker Road – insufficient stormwater capacity
  - Fruitville Pike and Main Street (PA 72) intersection – obstructions in the system
- Rapho Township – stream and street flooding caused by obstructions within the waterways
- Upper Leacock Township – critical stream and street flooding, soil wash off, and stormwater pollution problems more than once a year
  - Road closures – Snake Rill Road at Conestoga River; Mondale Road at Conestoga River; Creek Hill and Hartman Station Roads (soil wash off)
- Warwick Township – stream flooding more than once a year
  - Lititz Run Road culvert – flooding across cartway
  - Millport Road Bridge – flooding across cartway
- West Cocalico Township
  - Confluence of Cocalico Creek and Hickory Road – flooding occurs more than 10 times per year, caused by undersized drainage system, obstructions in system, and lack of maintenance of drainage ways; road is too low in relation to the pipe under the road
  - Confluence of Cocalico Creek and bridge over Pineview Drive – flooding occurs during major events, caused by undersized drainage system; bridge approach is low
  - Confluence of Trout Run Creek and Hackman Road – flooding occurs during major events, caused by too large an increase in uncontrolled runoff – dangerous in major events
  - Sportsman Road and Cocalico Creek

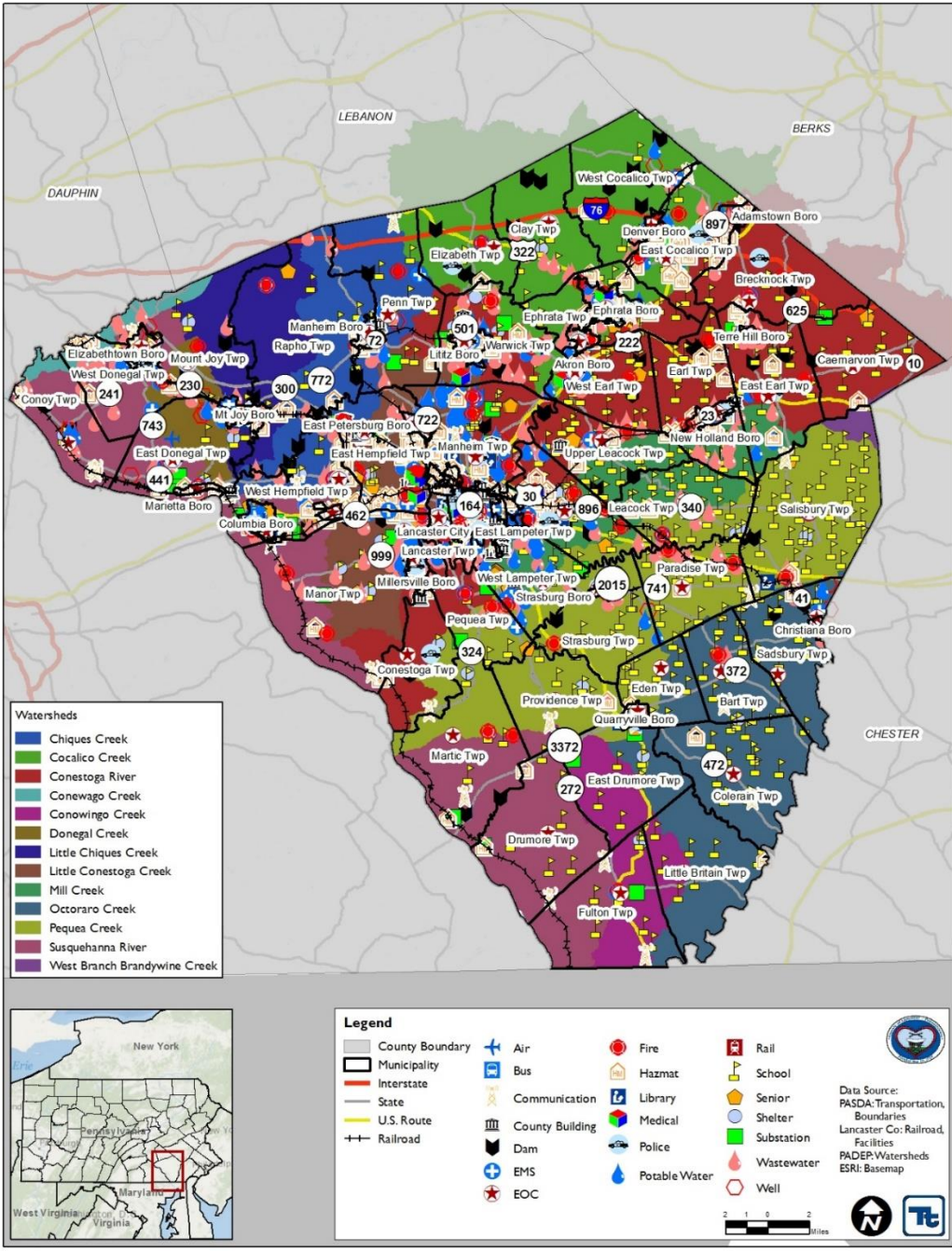




**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

- West Earl Township – Critical stream and street flooding, and soil wash off problems more than once a year; results in loss of life, loss of vital services, private and public property damage
  - Cabin Road; North Farmersville Road; Turtle Road (100 Block); South State Street, Talmage; South Fairmount and Saw mill Roads; South Farmersville Road; Sheaffer’s School Road
- West Lampeter Township
  - West side of Lampeter Road between Wiker and Plymouth Avenue – major flooding more than once a year

**Figure 4.3.3-1. PADEP-Designated Watersheds with Critical Facilities**





Source: PADEP

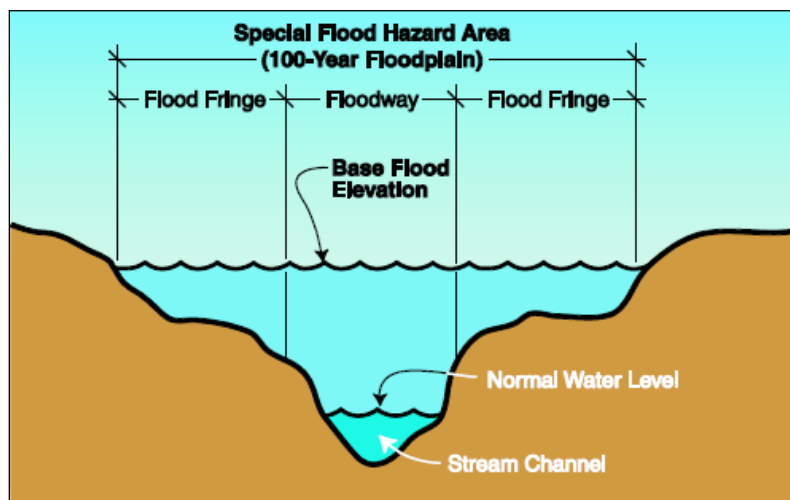
### FEMA Regulatory Flood Zones

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 use of 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 2003, 2005, 2008). Lancaster County's FIRMs can be accessed online via the FEMA Flood Map Service Center (<https://msc.fema.gov/portal>).

The land area covered by flood waters of the base flood is the SFHA on a FIRM. 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 likely depths that will occur.

The 1 percent annual chance flood is referred to as the base flood. As defined by NFIP, the BFE on a FIRM is the elevation of a base flood event, or a flood that has a 1 percent chance of occurring in any given year. The BFE describes the exact elevation of the water that will result from a given discharge level, which is one of the most important factors used in estimating potential damage within a given area. A structure within a 1 percent annual chance floodplain has a 26 percent chance of undergoing flood damage during the term of a 30-year mortgage. The 1 percent annual chance flood is a regulatory standard used by federal agencies and most states to administer floodplain management programs. The 1 percent annual chance flood is used by NFIP as the basis for insurance requirements nationwide. FIRMs also depict 0.2 percent annual chance flood designations (FEMA 2016). Figure 4.3.3-2 depicts the SFHA, the BFE, the flood fringe, and the floodway areas of a floodplain for the 1 percent annual chance flood.

Figure 4.3.3-2. Floodplain Illustration





Source: PEMA 2013

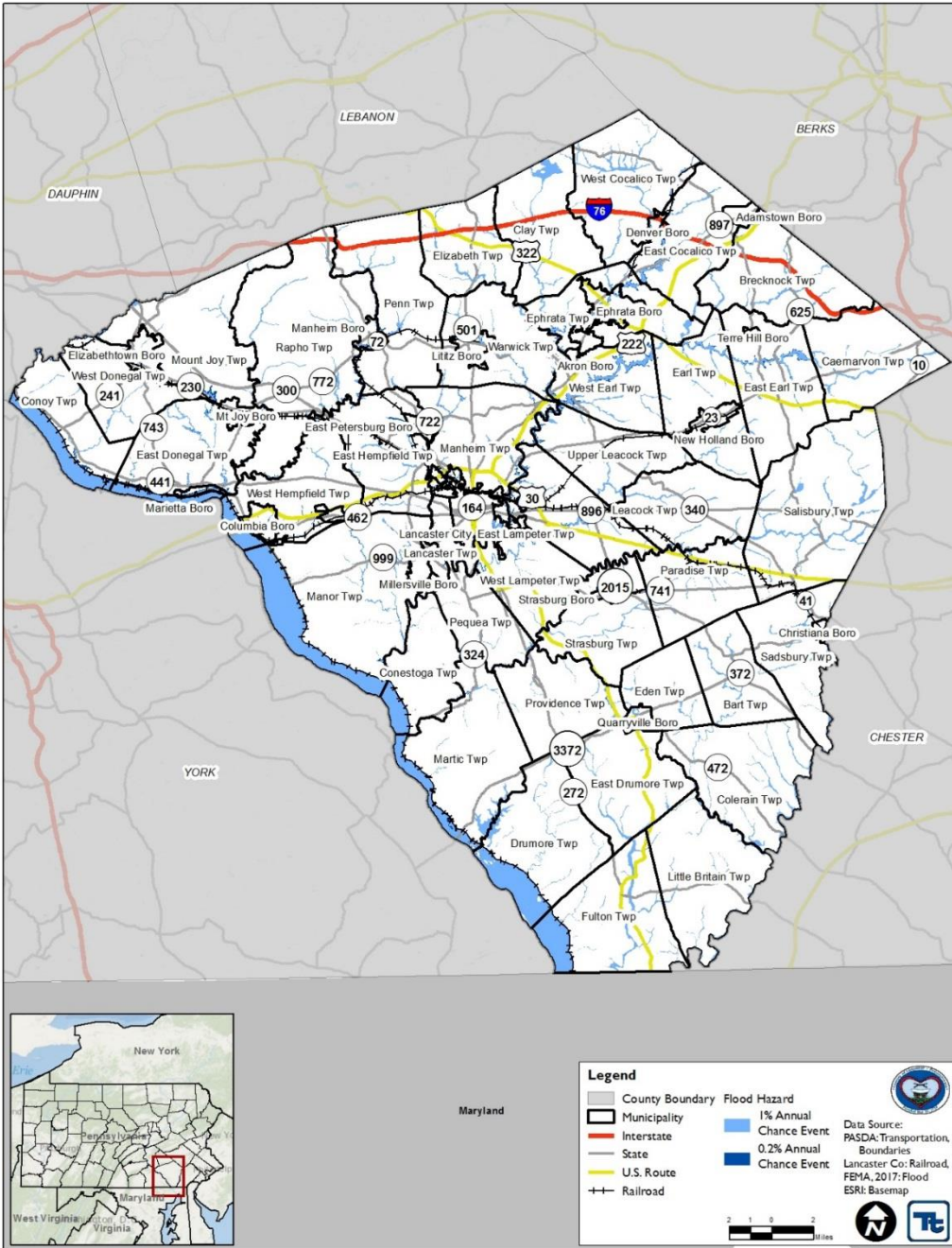
The SFHA serves as the primary regulatory boundary used by FEMA and Pennsylvania. Digitized Flood Insurance Rate Maps (DFIRM), FIRMs, and other flood hazard information can be referenced to identify the expected spatial extent of flooding from a 1 percent annual chance event and 0.2 percent annual chance event.

At the time this plan was written, the March 2017 DFIRMs were considered the best available and were used for the risk analysis. Figure 4.3.3-3 illustrates NFIP flood zones in Lancaster County. Maps of each municipality's flood zones are shown at the end of this profile.





Figure 4.3.3-3. NFIP Floodplains in Lancaster County



Source: FEMA 2017

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 FIRM and DFIRMs, FEMA also provides FIS of entire counties and individual jurisdictions. These studies aid in 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 2016). The countywide FIS for Lancaster County was last completed in 2016, 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 19,000 records from across the United States. According to the USACE-CRREL, Lancaster County underwent or may have been impacted by 27 historical ice jam incidents between 1780 and 2017 (USACE 2017a). Ice jams have formed along the Susquehanna River, Conestoga River, Little Conestoga Creek, Pequea Creek, and Little Chiques Creek. Historical events are further mentioned in the “Previous Occurrences” section of this hazard profile.

### **4.3.3.2 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 2013).

Several factors determine severity of floods, including intensity and duration, topography, ground cover, and rate of snowmelt. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. 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 2013).

Rainfall in Pennsylvania is about average for the eastern United States. Amounts of precipitation can be divided into the following six categories:

- Very light rain – precipitation rate of <0.01 inch per hour
- Light rain – precipitation rate between 0.01 inch and 0.04 inch per hour
- Moderate rain – precipitation rate between 0.04 inch and 0.16 inch per hour
- Heavy rain – precipitation rate between 0.16 inch and 0.63 inch per hour
- Very heavy rain – precipitation rate between 0.63 inch and 2 inches per hour
- Extreme rain – precipitation rate greater than 2 inches per hour (PEMA 2013)

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, soil acts as a sponge. When the land is saturated or frozen, infiltration into the ground slows, and any more water that accumulates must flow as runoff (Harris 2008).

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:

- 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 (NWS 2011).

Historically, the most severe flood incident occurred in June 1972 as a result of heavy rainfall from Hurricane Agnes. The Susquehanna River measured a record 1,020,000 cfs in Harrisburg, which was characterized as a 450-year return period event, while the Conestoga Creek measured a record 88,300 cfs, which was characterized as a 1,300 year return period event (FEMA 2016). Flooding from the storm resulted in 11 deaths and millions of dollars in property loss. Statewide, there were 48 deaths and \$2.8 billion in economic losses. Recently, the most significant flood event occurred as a result of Tropical Storm Lee in 2011. The County experienced record rainfall – 10 to 15 inches – and flooding was exacerbated due to saturated soils from Hurricane Irene the previous week (NWS 2012).

### 4.3.3.3 Past Occurrence

Lancaster 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.

A gauge at Marietta (MRTP1) monitors hydrologic conditions on the Susquehanna River. A gauge at Mount Joy (MJYP1) monitors conditions on the Little Chiques Creek. Two gauges at Lancaster (LNCP1) and Conestoga (CNSP1) monitor conditions on the Conestoga River. Two gauges at Paradise (PRDP1) and Martic Forge (MFGP1) monitor conditions on the Pequea Creek. The NWS uses flood categories as forecast points that describe the severity of flood impacts in the river/stream reach. Table 4.3.3-2 summarizes the flood categories in feet at each of these gauges. Table 4.3.3-3 summarizes the top historic crests at these locations.

**Table 4.3.3-2. Flood Categories at the Marietta (MRTP1), Lancaster (LNCP1), Paradise (PRDP1), and Mount Joy (MJYP1) Gages**

Flood Category	Flood Category Definition	Marietta (in feet)	Lancaster (in feet)	Paradise (in feet)	Mount Joy (in feet)
Major Flood Stage	Life-threatening and extensive inundation of structures and roads; significant evacuations are expected at this stage.	54	15	16	-
Moderate Flood Stage	Inundation of buildings usually begins at this stage; roads are likely to be closed and some areas cut off (evacuations may be necessary).	52	13	14	-
Flood Stage	Gage 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.	49	11	12	10
Action Stage	Level where the NWS needs to take some type of mitigation action in preparation for possible significant hydrologic activity.	44	9	10	8

Source: NWS 2017



**Table 4.3.3-3. Historic Crests at the Marietta (MRTP1), Lancaster (LNCP1), Conestoga (CNSP1), and Martic Forge (MFGP1) Gages**

Marietta		Lancaster		Conestoga		Martic Forge	
Feet	Date	Feet	Date	Feet	Date	Feet	Date
64.54	06/23/1972	27.90	06/23/1972	15.81	10/09/2005	17.10	10/09/2005
60.73	03/19/1936	21.30	09/08/2011	13.03	10/30/2012		
58.30	06/02/1889	18.14	01/25/1978	11.39	10/12/2013		
58.16	09/09/2011	17.80	10/09/2005	10.21	05/01/2014		
56.80	01/21/1996	17.52	08/24/1933				
56.27	09/19/2004	16.70	09/09/1987				
55.73	09/27/1975	16.39	09/17/1999				
54.90	05/29/1946	15.30	05/06/1989				
54.03	03/12/1964	14.70	06/28/2006				
53.49	02/16/1984	14.27	10/30/2012				

Source: NWS 2017

According to the National Oceanic and Atmospheric Administration’s National Climatic Data Center (NOAA NCDC) storm event database, Lancaster County experienced 103 flood events between January 1, 1950 and June 30, 2017 (the date range of data availability). These events resulted in four fatalities and over \$7.4 million in property damages.

Between 1954 and 2017, the Commonwealth of Pennsylvania underwent 52 FEMA-declared, flood-related disaster declarations (DR) or emergencies classified as one or a combination of the following disaster types: severe storms, mudslides, flash flooding, tropical storms, tropical depressions, high winds, and rains. Typically, these disasters covered a wide region of the State; therefore, they may have impacted many counties. However, not all counties were included in the disaster declarations (FEMA 2017). Lancaster County was included in nine of the declarations, as listed in Table 4.3.3-4.

Based on all sources researched, known flooding events resulting in property damages that have affected Lancaster County and its municipalities since June 1972 are listed in Table 4.3.3-4. Four deaths but no injuries caused by flooding have been recorded in Lancaster County. With flood documentation for the Commonwealth of Pennsylvania so extensive, not all sources have been identified or researched. Therefore, Table 4.3.3-4 may not include all events that have occurred throughout the County.



Table 4.3.3-4. Flooding Events between 1972 and 2017 in Lancaster County

Date of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses/Impacts
June 21, 1972	Hurricane Agnes	Countywide	DR-340	Yes	\$7.5 million in property damages.
July 17, 1973	Severe Storms, Flooding	Countywide	DR-400	Yes	No records were available.
September 26, 1975	Severe Storms, Heavy Rains, Flooding	Countywide	DR-485	Yes	No records were available.
October 20, 1976	Severe Storms, Flooding	Countywide	DR-523	Yes	No records were available.
July 14, 1994	Flash flooding	Northern Portion	N/A	N/A	Torrential downpours dropped between 3.0 and 5.8 (in Reamstown) inches of rain across northern Lancaster County. This resulted in the flash flooding of the Little Chiques Creek near Mount Joy, the Chiques Creek near Auction Road and the Little Conestoga. Eight roads in Penn Township had to be closed due to flooding. Many incidents of flash flooding were reported.
July 31, 1994	Heavy Rain, Flash Flooding	Southeast Portion	N/A	N/A	An estimated 6.00 inches of rain fell during thunderstorms in Lewis. This resulted in widespread flash flooding in southeast Lancaster County, especially in Colerain Township. Four families were made homeless because of the flooding. Three roads were washed out and a mobile home was lifted and carried 75 feet by flood waters.
July 17, 1995	Heavy Rain, Flooding	Western Portion	N/A	N/A	Thunderstorms dropped copious amounts of rain during the evening of the 17th. In Mountville 3.5 inches of rain fell within 90 minutes. In Millersville Borough and Manor Township, storm totals of between 4 and 5 inches fell within two hours. Two bridges were washed out in Manor Township. Scores of homes suffered basement flooding. No injuries were reported but damage was estimated to be around \$800,000.
July 21, 1995	Heavy Rain, Flooding	Central Portion	N/A	N/A	Thunderstorms with heavy rain dropped 1.9 inches of rain in Lancaster. This forced the closure of 10 roadways around the City and initiated the pumping of water out of City basements. Charlestown Road near Ironstone Ridge Road was partially washed away.
July 28, 1995	Heavy Rain, Flooding	Northwest Portion	N/A	N/A	Thunderstorms with heavy rain produced stream and flash flooding in northwest parts of Lancaster County. Widespread flooding was reported in Rapho Township. The intersection of Pennsylvania State Route 72 and the Fruitville Pike was closed due to flooding. Heavy rains forced the Little Chiques and Chiques Creek over their banks at many locations.
October 21, 1995	Heavy Rain, Flooding	Countywide	N/A	N/A	Basements were flooded along with roads and small streams across the County. About 30 roads closed, mainly across the northwest part of the County. Little Chiques Creek and Chiques Creek were above flood stage.



Date of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses/Impacts
January 19 – February 1, 1996	Flooding	Countywide	DR-1093	Yes	No details were available.
June 13, 1998	Heavy Rain, Flooding	Manheim	N/A	N/A	Route 72 flooded with a foot of water. Street flooding also stalled vehicles in Lancaster.
September 16, 1999	Hurricane Floyd	Countywide	DR-1294	Yes	Hurricane Floyd moved inland across North Carolina before sunrise on Thursday, September 16th, accelerated northward over eastern Virginia during the morning, crossed eastern Maryland by Thursday afternoon, and reached Long Island by evening. Hurricane Floyd dropped much rain on many states, including Pennsylvania. Middle and Lower Susquehanna regions endured 24-hour rainfall amounts between 5 and 10 inches, flooding roads, streams, basements, and the like. Hardest hit in the region was Lancaster County. Many water rescues took place throughout the County as people drove around barricades and became stranded. Major damage was incurred on the northeast side of Lancaster City, with several neighborhoods having to be evacuated. Estimated property damage was \$1.6 million.
June 25, 2000	Heavy Rain, Flooding	Countywide	N/A	N/A	Heavy rains struck many parts of Lancaster County, causing flooding of many areas. Hardest hit were northern sections of the County. 5 to 6 inches of rain fell late Sunday afternoon and evening in Lititz, the community hardest hit by flooding. Many vehicle water rescues took place due to fast-rising water levels. East Petersburg reported 6 inches of rain. Damage was estimated to be \$4 million, including \$2 million in inventory loss at a furniture business.
June 22, 2001	Heavy Rain, Flooding	Gap	N/A	N/A	Heavy rain fell across Lancaster County during the late afternoon and evening of June 22. A measurement of 4 inches of rain was recorded in the town of Gap, while 5.5 inches was measured in White Horse. A 10-mile stretch of State Route 30 was closed due to flooding, along with 35 other roads in the County. A 1,000-gallon tank of propane broke loose from its moorings in the town of Gap and floated down the Pequea Creek.
August 12, 2001	Heavy Rain, Flooding	Lancaster	N/A	N/A	Heavy rain from thunderstorms caused flooding in Lancaster County. Route 30, between Route 896 and the town of Gap, was closed. Lancaster. Pequea and Mill Creeks rose out of their banks. Rains from thunderstorms from earlier in the evening had already swollen streams. This flooding caused the closing of several roads, as well as closing a tavern and hotel in Lancaster. Several water rescues also took place.



Date of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses/Impacts
June 20, 2003	Heavy Rain, Flooding	Countywide	N/A	N/A	Heavy rain started minor flooding across Lancaster County during the early afternoon of Friday, June 21. By mid-evening, significant flooding began. Over a dozen roads were closed across the County. The most severe flooding took place along the Conestoga River in Earl, East Earl, West Earl, Strasburg, East Lampeter, Manheim, Warwick, and Lancaster Townships. Four water rescues took place. One fatality occurred when a motorist attempted to drive across a flooded bridge and was swept away into the Conestoga River in West Earl Township.
September 15, 2003	Heavy Rain, Flooding	Countywide	N/A	N/A	Heavy rainfall caused flooding across eastern portions of Lancaster County. Earlier rainfall left area streams and creeks above their banks. Flooding continued along Pequea Creek near Paradise where stages reached 16 feet, well above the 12-foot flood level. A mobile home park was evacuated.
September 23, 2003	Heavy Rain, Flash Flooding	Lancaster	N/A	N/A	Heavy rain caused flash flooding throughout Lancaster County. Numerous roads were closed due to rapidly rising water. At least 10 water rescues were performed throughout the morning of the 23rd.
December 11, 2003	Heavy Rain, Flooding	Countywide	N/A	N/A	Heavy rainfall, combined with snowmelt, led to flooding adjacent to Conestoga Creek, resulting in road closures.
February 6, 2004	Flooding	Countywide	N/A	N/A	IFLOWS gauges exceeded flood stage on Chiques Creek near Manheim, Little Chiques Creek near Mount Joy, Pequea Creek near Paradise, and Mill Creek at Smoketown. An ice jam also formed on Little Chiques Creek in Rapho Township, causing road flooding.
June 15, 2004	Heavy Rain, Flooding	Countywide	N/A	N/A	Heavy rain caused flooding in Lancaster County during the evening of June 15. Near Quarryville, two roads were washed out: Route 222 (Robert Fulton Highway) and Hayberger Road. In Bartville, widespread flooding was reported in Bart and Colerain Townships.
July 14, 2004	Heavy Rain, Flash Flooding	Countywide	N/A	N/A	Heavy rain caused flash flooding across northeast Lancaster County during the late afternoon and evening of July 14. Ten water rescues were performed throughout the northern portion of Lancaster County, with extensive road and stream flooding. Flooding occurred at many locations along the Conestoga River.
July 27, 2004	Heavy Rain, Flooding	Countywide	N/A	N/A	A series of thunderstorms with heavy rain caused flooding in Lancaster County. Flooded roads and water rescues began at 6:50 p.m. EST, followed by stream flooding. Problems first began about 7 miles south of the City of Lancaster, but quickly spread throughout the County. Route 322 was closed at Hinkletown, with numerous secondary roads closed due to flooding. Flooding was most extensive from Lancaster City east to the Chester County line.
August 2, 2004	Heavy Rain, Flash Flooding	Manheim	N/A	N/A	Heavy rain caused flash flooding. Dozens of roads were flooded and several water rescues had to be performed in the Mount Joy and Manheim areas of Lancaster County.





Date of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses/Impacts
September 17, 2004	Hurricane Ivan	Countywide	DR-1557	No	The remnants of Hurricane Ivan moved north along the Appalachians during Friday, September 17, and interacted with an approaching cold front, leading to a large swath of excessive rainfall across Central Pennsylvania as the system weakened to a tropical depression. Rainfall amounts of 3 to 6 inches were common and many locations received over 8 inches in a 12-hour period. In all, 32 of 47 river forecast points exceeded flood stage levels in Central Pennsylvania. Preliminary flood damage estimates exceeded \$50 million from this storm.
October 7-8, 2005	Heavy Rain, Flooding	Countywide	N/A	N/A	Heavy rain, up to 12+ inches in some locations, caused devastating flooding across Lancaster County. Heavy rain began during the evening of October 7, with significant flooding beginning in the morning hours of the 8th. A total of 34 water rescues were performed. \$1 million in property damages were reported.
June 26, 2006	Heavy Rain, Flash Flooding	Lancaster	DR-1649	Yes	Heavy rain caused flash flooding throughout Lancaster County. Numerous roads were closed throughout the County, with over 50 homes reporting basement flooding. One home had a basement wall collapse from the flood waters. In addition, 18 water rescues were performed.
August 28, 2011	Hurricane Irene	Churchtown	N/A	N/A	Hurricane Irene moved north-northeast along the Mid-Atlantic coast from North Carolina to Long Island, New York. The tropical system produced extensive flooding and strong damaging winds.
September 8, 2011	Tropical Storm Lee	Countywide	DR-4030 EM-3340	Yes	Heavy rainfall from the remnants of Tropical Storm Lee produced widespread flooding, flash flooding, and river flooding mainly near and to the east of the Susquehanna Valley from September 4 to 10. Many motorists were stranded in their vehicles, requiring rescue. 189 water rescues were performed. 20 homes were condemned in Ephrata Borough and Township, including an apartment building. The southern end of Manheim Borough was flooded. Hundreds of roads were closed throughout the County. Three people were killed, 32 structures were destroyed, 395 suffered major damage, and 1,339 suffered minor damage. Public facilities suffered over \$800,000 in damages.
January 31, 2013	Heavy Rain, Flood	Countywide	N/A	N/A	Heavy rainfall between 2 and 3 inches combined with cold season hydrological effects produced widespread poor-drainage and small stream flooding across Adams, York and Lancaster counties. Numerous roads were closed and several water rescues were reported. Minor flood stages were exceed on the Swatara Creek at Harper Tavern and the Conestoga River at Lancaster.
August 13, 2013	Heavy Rain, Flood, Flash Flood	Countywide	N/A	N/A	Delayed runoff from heavy rain and flash flooding from early in the morning continued areal flooding problems and road closures through the afternoon. A water rescue was conducted in Warwick Township at Cocalico/Rothsville Road. Heavy training thunderstorms produced areas of flash flooding during the early morning hours. Several homes had flooded basements. A water rescue was conducted in Sadsbury Township at Noble/Lower Valley Road due to a vehicle stuck in standing water.



Date of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses/Impacts
October 10, 2013	Heavy Rain, Flood	Countywide	N/A	N/A	Excessive rainfall of 5-10 inches over a 2-day period resulted in widespread significant flooding. Road closures included but were not limited to Franklin Drive/Blue Lane; Landis Mill bridge at Blue Jay Drive; North Plum and East Liberty Street underpass; Fruitville Pike near RT 72 in Penn Township and numerous other rural roads across the County. The Chiques Creek near Manheim came out of its banks and flooded nearby roads. Minor river flooding occurred on the Conestoga at Lancaster with a crest of 11.20 feet.
April 30, 2014	Heavy Rain, Flood	Countywide	N/A	N/A	Heavy rains across southeastern Pennsylvania resulted in flooding and road closures across Lancaster County. Several small creeks and streams overflowed their banks and inundated surrounding areas. The Conestoga River crested just above flood stage (11.63 feet on May 1) and caused minor flooding in low-lying areas. In Sadsbury Township, fire fighters rescued a man from his car on Noble Road near Creek Road around 6 p.m. Water was about 18 inches deep. Noble Road was closed from Creek Road to Lower Valley Road because of high water. Several cars were abandoned on nearby Brick Mill Road. The portion of Sadsbury Township that borders Chester County was hit really hard according to local emergency management officials.
May 1, 2014	Heavy Rain, Flood	Countywide	N/A	N/A	The Conestoga River at Lancaster reached minor flood stage during the predawn hours and crested at 11.63 feet at 1100 AM EDT. The river fell below flood stage by the early afternoon.
July 14, 2014	Heavy Rain, Flash Flood	Eden Heights, Manheim Township	N/A	N/A	Heavy rain produced flash flooding in the Lancaster areas of Eden Heights and Rossmere. Flood waters impacted homes on Carlton Drive/Rockford Lane and closed a section of the Lititz Pike at Keller Avenue.
July 15, 2015	Heavy Rain, Flood, Flash Flood	Earl Township; Bareville, Hinkletown, New Holland	N/A	N/A	Heavy rain produced flash flooding in Earl Township. Locations that experienced flooding included Bareville, Hinkletown and New Holland. Flood waters closed several secondary roads in the affected areas.
September 5, 2014	Heavy Rain, Flash Flood	Washington Boro	N/A	N/A	Torrential thunderstorm rain and flash flooding closed SR 441 in Washington Borough.
September 6, 2014	Heavy Rain, Flash Flood	Kinzers; Salisbury Township	N/A	N/A	Torrential thunderstorm rains caused flash flooding and prompted water rescues near Kinzers and Gap.



Date of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses/Impacts
July 13, 2016	Heavy Rain, Flash Flood	West Lampeter Township	N/A	N/A	Many small streams out of their banks. Route 30 from the area of the Dutch Wonderland amusement park to the Pennsylvania State Police barracks near the Route 30/Route 462 split closed due to flooding. Three sinkholes also reported along Route 30.

Sources: NWS 2017; FEMA 2017

DR Federal Disaster Declaration

EM Emergency Management

EMA Emergency Management Agency

FEMA Federal Emergency Management Agency

NCEI National Centers for Environmental Information

NOAA National Oceanic Atmospheric Administration

N/A Not applicable/not available

SBA Small Business Administration

US United States



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Based on review of the CRREL database, Table 4.3.3-5 lists the ice jam events that have occurred in or near the County between 1780 and 2017. Events listed below that occurred outside of the County were included because they were close enough to the County borders to cause possible flooding impacts on Lancaster County. Information regarding losses associated with these reported ice jams was limited.

**Table 4.3.3-5. Ice Jam Events in Lancaster County between 1780 and 2017**

City (Additional Geographic Identifier)	River	Jam Date	Water Year	Gage Number	Impact
Columbia	Susquehanna River	1832	1832	-	An ice jam and flooding destroyed the Columbia-Wrightsville Bridge.
Safe Harbor	Susquehanna River	03/08/1904	1904	-	The gorge at Bainbridge, 14 miles below Harrisburg, moved on March 8, dislodging the gorge at Turkeyhill and forming a gorge below Safe Harbor, submerging the lower part of the town and destroying many houses and two bridges.
Marietta	Susquehanna River	01/03/1934	1934	01576000	An ice jam was reported near Marietta, which made the gage reach its annual maximum.
Columbia	Susquehanna River	02/10/1951	1951	-	An ice jam brought water levels 17 feet above normal in Columbia, PA. More than 40 families in Lancaster and York Counties had to evacuate their homes. Water works was rendered inoperative. Water was rationed. 2,000 workers were idle.
Safe Harbor	Susquehanna River	02/20/1951	1951	-	An ice jam was reported. No details were available.
Safe Harbor	Susquehanna River	01/22/1959	1959	-	Ice jamming was recorded as a note in river observations on Jan 22, 1959 on the Susquehanna River in the Safe Harbor area.
Safe Harbor	Susquehanna River	12/28/1961	1962	-	An ice jam was reported. No details were available.
Marietta	Susquehanna River	02/10/1965	1965	01576000	An ice jam was reported near Marietta, which made the gage reach its annual maximum.
Marietta	Susquehanna River	02/05/1969	1969	01576000	An ice jam was reported near Marietta, which made the gage reach its annual maximum.
Safe Harbor	Susquehanna River	02/18/1972	1972	-	Two minor jams resulted as heavy flow of slush ice ran into the pond. One jam was located north of Stricklers Run and the other in the falls below Chickies Gage. The jams held backwater 4 feet above normal but there was no flooding as a result.
Safe Harbor	Susquehanna River	01/28/1976	1976	-	Ice jams formed at the head of the Safe Harbor Pond with backwater forming behind these jams.
Safe Harbor	Susquehanna River	02/26/1977	1977	-	Ice was reported to extend 14 miles above the Safe Harbor Dam on December 27, 1976 with 3.3 feet of backwater at Chiques and 2.4 feet of backwater at Columbia.
Safe Harbor	Susquehanna River	01/27/1978	1978	-	Ice backed water up into Safe Harbor station, damaging generators and toppled transmission towers for two 230kV lines.
Columbia	Susquehanna River	02/05/1979	1979	-	A temporary ice jam was reported in Columbia. PA-441 had 7-8 feet of water on it near Washington Boro.
Marietta	Susquehanna River	02/08/1982	1982	01576000	An ice jam was reported near Marietta, which made the gage reach its annual maximum.



City (Additional Geographic Identifier)	River	Jam Date	Water Year	Gage Number	Impact
Churchtown	Little Conestoga Creek	12/28/1983	1984	01576085	An ice jam was reported. No details were available.
Churchtown	Little Conestoga Creek	02/03/1984	1984	01576085	An ice jam was reported. No details were available.
Churchtown	Little Conestoga Creek	02/12/1985	1985	01576085	Maximum annual gage height reached due to ice jam.
Morgantown	Little Conestoga Creek	02/12/1985	1985	01576083	An ice jam was reported. No details were available.
Churchtown	Little Conestoga Creek	03/07/1986	1986	01576085	Low flow due to freeze-up.
Churchtown	Little Conestoga Creek	02/05/1992	1992	01576085	Low flow due to freeze-up.
Martic Forge	Pequea Creek	01/29/1994	1994	01576787	An ice jam was reported. No details were available.
Safe Harbor	Susquehanna River	01/19/1996	1996	-	Ice jam at the Safe Harbor Hydroelectric Facility was one of the worst along the Susquehanna River.
Conestoga	Conestoga River	01/20/1996	1996	01576754	Instantaneous peak stage of 12.06 feet due to an ice jam.
Marietta	Susquehanna River	02/01/1996	1996	01576000	An ice jam was reported near Marietta.
Paradise	Pequea Creek	01/30/2001	2001	-	An ice jam caused flooding.
Mount Joy	Little Chiques Creek	03/09/2003	2003	-	Ice jam caused water to overflow the banks of the creek, but it did not affect the roadway.
Marietta	Susquehanna River	01/23/2005	2005	01576000	An ice jam was reported near Marietta along the Susquehanna River, which caused the water to rise approximately 5 feet.
Safe Harbor	Susquehanna River	01/29/2008	2008	-	An ice jam was reported. No details were available.
Marietta	Susquehanna River	01/23/2014	2014	-	An ice jam was reported near Marietta along the Susquehanna River, which caused the water to rise 4 feet.

Source: USACE 2017a

Notes:

Although events were reported for Lancaster County, information pertaining to every event was not easily ascertainable; therefore, this table may not list all ice jams in the County.

cfs Cubic feet per second

CRREL Cold Regions Research and Engineering Laboratory

USGS U.S. Geological Survey

#### 4.3.3.4 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 one 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 4.3.3-6 shows a range of flood recurrence intervals and associated probabilities of occurrence.

**Table 4.3.3-6. Recurrence intervals and associated probabilities of occurrence**

Flood Recurrence Interval	Chance of Occurrence in Any Given Year (%)	Flows
5 year	20	Extreme
10 year	10	Heavy to extreme
25 year	4	Moderate
50 year	2	Light to moderate
100 year	1	Light
500 year	0.2	Mild

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

For the 2017 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of flooding events for Lancaster 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 2017. 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.

**Table 4.3.3-7. Probability of Future Flooding Events**

Hazard Type	Number of Occurrences Between 1950 and 2017	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
Flash Flood	53	0.79	1.26	79.1%
Flood	48	0.72	1.40	71.6%
Ice Jam	27	0.40	2.48	40.2%

Sources: NOAA-NCEI 2017; USACE 2017a; Pennsylvania State Climatologist 2017

It is estimated that Lancaster County will continue to experience direct and indirect impacts of flooding events annually 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 Lancaster 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).



### 4.3.3.5 Vulnerability Assessment

To understand risk, a community must evaluate the assets exposed or vulnerable within the identified hazard area. For the flood hazard, the 1 percent (100-year) and 0.2 percent (500-year) annual chance flood events are examined. The following sections evaluate and estimate potential impact of flooding in Lancaster County, presenting:

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

#### Overview of Vulnerability

Flood is a significant concern for Lancaster County. To assess risk, exposures to the 1 percent and 0.2 percent annual chance flood events were examined, and potential losses were calculated for the 1 percent annual chance flood event. The flood hazard exposure and loss estimate analysis is presented below.

#### Data and Methodology

The 1 percent and 0.2 percent annual chance flood events were examined to evaluate Lancaster County's risk from and vulnerability to the flood hazard. Polygons representing the 1 percent and 0.2 percent annual chance events from the DFIRM dated March 2017 were used to estimate exposure. Figure 4.3.3-3 shown earlier in this section illustrates the flood boundaries used for this vulnerability assessment. A 1 percent annual chance flood depth grid was generated by FEMA (Risk Map 2016) for use in HAZUS-MH 3.2 to estimate potential losses within the County. Additional areas of the floodplain not included in the depth grid were generated utilizing the FEMA floodplains and digital elevation model (DEM) generated from the County's 5-foot contour data.

The version of the HAZUS-MH model applied to conduct Lancaster County's vulnerability assessment uses 2010 U.S. Census demographic data. Lancaster County's current spatial data do not support a countywide HAZUS-MH general building stock update at this time; therefore, the dasymetric census block configuration from HAZUS-MH was used.

To estimate exposure to the building stock, default dasymetric building stock data from HAZUS-MH 3.2 was used for replacement cost value and the County provided building footprint layer was used for the number of structures within the hazard area. Data from HAZUS-MH are at the census block level and are calculated by use of 2014 RS Means valuations.

#### 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); the degree of that impact varies and is not strictly measurable.

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. Molds 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 (Centers for Disease Control and Prevention [CDC] 2015).

Molds and mildews 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-MH are not equipped to measure public health impacts. The best level of mitigation for these impacts is to be aware that they can occur, educate the public on prevention, and be prepared to deal with these vulnerabilities in responding to flood events.

To estimate the population exposed to the 1 percent annual chance flood event, the FEMA DFIRM floodplain boundaries were overlaid upon the 2010 U.S. Census population data in Geographic Information Systems (GIS). Census blocks are not consistent with boundaries of the floodplain, and gross overestimate or underestimate of exposed population can occur via use of the centroid or intersect of the Census block with these zones. Limitations of these analyses are recognized, and thus results are used only to provide a general estimate.

The 2010 Census blocks with their centroids located in the flood boundaries were used to calculate the estimated population exposed to this hazard. Table 4.3.3-8 lists the estimated population located within the 1 percent annual chance flood zone by municipality. Use of this approach resulted in an estimate of 9,151 people within the 1 percent annual chance floodplain (1.8%), and 14,773 people within the 0.2 percent annual chance floodplain (2.8%)

**Table 4.3.3-8. Estimated Lancaster County Population Exposed to the 1 percent and 0.2 percent Flood Hazard (2010 Census)**

Municipality	Total Population	1 Percent Annual Chance Event		0.2 Percent Annual Chance Event	
		Population in Hazard Area	Percent Population in Boundary	Population in Hazard Area	Percent Population in Boundary
Adamstown Borough	1,772	5	<1%	5	<1%
Akron Borough	3,876	0	0.0%	57	1.5%
Bart Township	3,094	167	5.4%	167	5.4%
Brecknock Township	7,199	124	1.7%	252	3.5%
Caernarvon Township	4,748	21	<1%	21	<1%
Christiana Borough	1,168	57	4.9%	57	4.9%
Clay Township	6,308	150	2.4%	150	2.4%
Colerain Township	3,635	20	<1%	20	<1%



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Total Population	1 Percent Annual Chance Event		0.2 Percent Annual Chance Event	
		Population in Hazard Area	Percent Population in Boundary	Population in Hazard Area	Percent Population in Boundary
Columbia Borough	10,400	41	<1%	380	3.7%
Conestoga Township	3,776	15	<1%	15	<1%
Conoy Township	3,194	303	9.5%	504	15.8%
Denver Borough	3,861	321	8.3%	428	11.1%
Drumore Township	2,560	25	1.0%	25	1.0%
Earl Township	7,024	130	1.9%	147	2.1%
East Cocalico Township	10,310	108	1.0%	154	1.5%
East Donegal Township	7,755	168	2.2%	226	2.9%
East Drumore Township	3,791	12	<1%	12	<1%
East Earl Township	6,507	118	1.8%	133	2.0%
East Hempfield Township	23,522	634	2.7%	764	3.2%
East Lampeter Township	16,424	185	1.1%	188	1.1%
East Petersburg Borough	4,506	0	0.0%	0	0.0%
Eden Township	2,094	17	<1%	17	<1%
Elizabeth Township	3,886	46	1.2%	46	1.2%
Elizabethtown Borough	11,545	166	1.4%	234	2.0%
Ephrata Borough	13,394	195	1.5%	1,434	10.7%
Ephrata Township	9,400	326	3.5%	485	5.2%
Fulton Township	3,074	168	5.5%	168	5.5%
Lancaster City	59,322	344	<1%	656	1.1%
Lancaster Township	16,149	42	<1%	122	<1%
Leacock Township	5,220	47	<1%	47	<1%
Lititz Borough	9,369	292	3.1%	296	3.2%
Little Britain Township	4,106	10	<1%	10	<1%
Manheim Borough	4,858	307	6.3%	788	16.2%
Manheim Township	38,133	414	1.1%	832	2.2%
Manor Township	19,612	971	5.0%	1,010	5.1%
Marietta Borough	2,588	420	16.2%	974	37.6%
Martic Township	5,190	54	1.0%	54	1.0%
Millersville Borough	8,168	0	0.0%	0	0.0%
Mount Joy Borough	7,410	0	0.0%	0	0.0%
Mount Joy Township	9,873	113	1.1%	369	3.7%
Mountville Borough	2,802	0	0.0%	0	0.0%
New Holland Borough	5,378	0	0.0%	0	0.0%
Paradise Township	5,131	180	3.5%	232	4.5%
Penn Township	8,789	326	3.7%	326	3.7%
Pequea Township	4,605	54	1.2%	54	1.2%
Providence Township	6,897	179	2.6%	237	3.4%
Quarryville Borough	2,576	41	1.6%	87	3.4%
Rapho Township	10,442	148	1.4%	148	1.4%





Municipality	Total Population	1 Percent Annual Chance Event		0.2 Percent Annual Chance Event	
		Population in Hazard Area	Percent Population in Boundary	Population in Hazard Area	Percent Population in Boundary
Sadsbury Township	3,395	62	1.8%	62	1.8%
Salisbury Township	11,062	142	1.3%	142	1.3%
Strasburg Borough	2,809	0	0.0%	0	0.0%
Strasburg Township	4,182	40	1.0%	40	1.0%
Terre Hill Borough	1,295	0	0.0%	0	0.0%
Upper Leacock Township	8,708	119	1.4%	133	1.5%
Warwick Township	17,783	32	<1%	80	<1%
West Cocalico Township	7,280	113	1.6%	130	1.8%
West Donegal Township	8,260	44	<1%	44	<1%
West Earl Township	7,868	335	4.3%	576	7.3%
West Hempfield Township	16,153	86	<1%	86	<1%
West Lampeter Township	15,209	714	4.7%	1,149	7.6%
<b>Lancaster County</b>	<b>519,445</b>	<b>9,151</b>	<b>1.8%</b>	<b>14,773</b>	<b>2.8%</b>

Sources: U.S. Census 2010, FEMA 2000

Note: % Percent

The table above shows that 1.8 percent of the total County population is exposed to the 1 percent annual chance flood event, and that approximately 2.8 percent of the total County population is exposed to the 0.2 percent annual chance flood event. Marietta Borough has the largest portion of its population within the 1 percent annual chance event floodplain—16.2 percent of the population, and within the 0.2 percent annual chance event; 37.6 percent of its population is exposed. For this project, potential population exposed is used as a guide for planning purposes.

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.

Using 2010 U.S. Census data, HAZUS-MH 3.2 estimates potential sheltering needs based on a 1 percent annual chance flood event. During the 1 percent flood event, HAZUS-MH 3.2 estimates 12,328 households will be displaced, and 4,783 people will seek short-term sheltering, representing less than 1 percent of the Lancaster County population seeking short-term shelter. These statistics, by municipality, are listed in Table 4.3.3-9. The estimated displaced population and number of persons seeking short-term sheltering differ from the number of persons exposed to the 1 percent annual chance flood (Table 4.3.3-9), 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 4.3.3-9. Estimated Population Displaced or Seeking Short-Term Shelter from the 1 percent Annual Chance Flood Event**

Municipality	Total Population (2010 Census)	1 Percent Annual Chance Event	
		Displaced Households	Persons Seeking Short-Term Sheltering
Adamstown Borough	1,772	68	24
Akron Borough	3,876	21	18
Bart Township	3,094	126	23
Brecknock Township	7,199	323	105
Caernarvon Township	4,748	170	15
Christiana Borough	1,168	84	22
Clay Township	6,308	189	55
Colerain Township	3,635	72	2
Columbia Borough	10,400	122	56
Conestoga Township	3,776	52	3
Conoy Township	3,194	128	20
Denver Borough	3,861	261	196
Drumore Township	2,560	24	0
Earl Township	7,024	326	98
East Cocalico Township	10,310	230	30
East Donegal Township	7,755	171	23
East Drumore Township	3,791	68	5
East Earl Township	6,507	177	22
East Hempfield Township	23,522	726	469
East Lampeter Township	16,424	597	287
East Petersburg Borough	4,506	40	14
Eden Township	2,094	33	1
Elizabeth Township	3,886	67	2
Elizabethtown Borough	11,545	171	29
Ephrata Borough	13,394	294	150
Ephrata Township	9,400	465	213
Fulton Township	3,074	104	6
Lancaster City	59,322	373	296
Lancaster Township	16,149	427	322
Leacock Township	5,220	194	15
Lititz Borough	9,369	303	139
Little Britain Township	4,106	67	3
Manheim Borough	4,858	370	227
Manheim Township	38,133	1,009	612



Municipality	Total Population (2010 Census)	1 Percent Annual Chance Event	
		Displaced Households	Persons Seeking Short-Term Sheltering
Manor Township	19,612	407	173
Marietta Borough	2,588	452	196
Martic Township	5,190	82	7
Millersville Borough	8,168	10	2
Mount Joy Borough	7,410	36	9
Mount Joy Township	9,873	149	40
Mountville Borough	2,802	6	0
New Holland Borough	5,378	0	0
Paradise Township	5,131	252	71
Penn Township	8,789	229	55
Pequea Township	4,605	82	8
Providence Township	6,897	196	61
Quarryville Borough	2,576	76	20
Rapho Township	10,442	237	22
Sadsbury Township	3,395	84	9
Salisbury Township	11,062	350	20
Strasburg Borough	2,809	5	0
Strasburg Township	4,182	178	27
Terre Hill Borough	1,295	0	0
Upper Leacock Township	8,708	162	25
Warwick Township	17,783	405	219
West Cocalico Township	7,280	228	20
West Donegal Township	8,260	77	11
West Earl Township	7,868	468	213
West Hempfield Township	16,153	89	13
West Lampeter Township	15,209	216	60
<b>Lancaster County</b>	<b>519,445</b>	<b>12,328</b>	<b>4,783</b>

Source: HAZUS-MH 3.2

Note: The population displaced and seeking shelter was calculated using 2010 U.S. Census data.

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 Strategies) of this plan.



### **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.

To estimate replacement cost value exposure and number of structures in the hazard area, default dasymetric building stock data from HAZUS-MH 3.2 and the building footprint layer from the County were used. Replacement cost values of the dasymetric Census blocks with their centroids in the floodplain were totaled. Table 4.3.3-10 lists building stock exposure per municipality, and Table 4.3.3-11 lists number of exposed structures per watershed.

In total, 3,526 structures, or 1.3 percent of the building stock, are within the 1 percent annual chance flood zone; and 5,889 structures, or 2.2 percent of the building stock, are within the 0.2 percent flood zone. Approximately \$1.4 billion of building/contents are within the 1 percent annual chance flood zone in Lancaster County. This represents approximately 1.5 percent of the County's total general building stock replacement value inventory (\$91 billion). Also, an estimated \$2.4 billion of building/contents is within the 0.2 percent annual chance flood zone (2.6 percent of the County's total).

As discussed in the Methodology section, Lancaster County's current spatial data did not support a countywide HAZUS-MH general building stock update. Therefore, the HAZUS-MH flood model estimated potential damages to buildings in Lancaster County using the dasymetric dataset. Development of the dasymetric dataset involved removing homogeneous undeveloped areas (such as areas covered by bodies of water, parks, or forests) from the Census blocks. Cumulative building exposure is distributed only in developed sub-Census Block areas. As a result, more accurate flood loss determinations were produced using this dataset. Potential damage estimated to the Lancaster County general building stock inventory associated with the 1 percent annual chance flood exceeds \$550 million. Building stock potential loss estimates per municipality are listed in Table 4.3.3-12.



Table 4.3.3-10. Estimated General Building Stock Exposure to the 1 Percent Annual Chance Flood Event

Municipality	Total # Buildings	Total RCV (Structure and Contents)	Total (All Occupancies)							
			1 Percent Annual Chance Event				0.2 Percent Annual Chance Event			
			# Buildings	% Total	Total RCV (Structure and Contents)	% Total	# Buildings	% Total	Total RCV (Structure and Contents)	% Total
Adamstown Borough	980	\$450,258,000	13	1.3%	\$636,000	<1%	15	1.5%	\$636,000	<1%
Akron Borough	1,788	\$616,236,000	13	<1%	\$0	0.0%	22	1.2%	\$0	0.0%
Bart Township	2,567	\$335,836,000	13	<1%	\$20,856,000	6.2%	13	<1%	\$20,856,000	6.2%
Brecknock Township	6,071	\$998,227,000	50	<1%	\$18,660,000	1.9%	56	<1%	\$31,026,000	3.1%
Caernarvon Township	3,438	\$622,129,000	13	<1%	\$1,200,000	<1%	13	<1%	\$1,200,000	<1%
Christiana Borough	523	\$198,673,000	32	6.1%	\$9,092,000	4.6%	37	7.1%	\$9,092,000	4.6%
Clay Township	4,686	\$862,268,000	73	1.6%	\$6,768,000	<1%	73	1.6%	\$6,768,000	<1%
Colerain Township	3,125	\$385,028,000	12	<1%	\$3,418,000	<1%	12	<1%	\$3,418,000	<1%
Columbia Borough	3,338	\$1,749,096,000	69	2.1%	\$11,904,000	<1%	101	3.0%	\$107,276,000	6.1%
Conestoga Township	2,871	\$541,954,000	32	1.1%	\$350,000	<1%	68	2.4%	\$2,458,000	<1%
Conoy Township	2,590	\$434,872,000	63	2.4%	\$34,222,000	7.9%	99	3.8%	\$52,295,000	12.0%
Denver Borough	1,679	\$688,940,000	46	2.7%	\$78,598,000	11.4%	125	7.4%	\$82,450,000	12.0%
Drumore Township	2,418	\$316,735,000	55	2.3%	\$6,090,000	1.9%	56	2.3%	\$6,090,000	1.9%
Earl Township	5,209	\$1,817,500,000	99	1.9%	\$21,974,000	1.2%	150	2.9%	\$34,025,000	1.9%
East Cocalico Township	7,002	\$1,793,707,000	61	<1%	\$55,628,000	3.1%	144	2.1%	\$69,958,000	3.9%
East Donegal Township	4,176	\$1,240,941,000	68	1.6%	\$24,497,000	2.0%	112	2.7%	\$27,739,000	2.2%
East Drumore Township	2,958	\$713,496,000	15	<1%	\$1,269,000	<1%	15	<1%	\$1,269,000	<1%
East Earl Township	5,337	\$1,049,169,000	139	2.6%	\$10,688,000	1.0%	200	3.7%	\$12,702,000	1.2%
East Hempfield Township	10,748	\$5,931,760,000	86	<1%	\$130,322,000	2.2%	121	1.1%	\$150,491,000	2.5%
East Lampeter Township	7,998	\$3,533,820,000	161	2.0%	\$38,455,000	1.1%	233	2.9%	\$47,731,000	1.4%
East Petersburg Borough	1,923	\$709,918,000	2	<1%	\$452,000	<1%	6	<1%	\$452,000	<1%
Eden Township	1,738	\$259,861,000	3	<1%	\$1,029,000	<1%	3	<1%	\$1,029,000	<1%
Elizabeth Township	3,088	\$656,622,000	25	<1%	\$6,096,000	<1%	25	<1%	\$6,096,000	<1%
Elizabethtown Borough	3,963	\$1,800,576,000	19	<1%	\$25,210,000	1.4%	29	<1%	\$56,046,000	3.1%
Ephrata Borough	5,744	\$2,476,959,000	123	2.1%	\$19,067,000	<1%	296	5.2%	\$189,927,000	7.7%



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Total # Buildings	Total RCV (Structure and Contents)	Total (All Occupancies)							
			1 Percent Annual Chance Event				0.2 Percent Annual Chance Event			
			# Buildings	% Total	Total RCV (Structure and Contents)	% Total	# Buildings	% Total	Total RCV (Structure and Contents)	% Total
Ephrata Township	5,503	\$1,733,746,000	118	2.1%	\$50,673,000	2.9%	264	4.8%	\$77,248,000	4.5%
Fulton Township	3,138	\$450,131,000	51	1.6%	\$11,204,000	2.5%	51	1.6%	\$11,204,000	2.5%
Lancaster City	10,200	\$9,943,057,000	108	1.1%	\$35,691,000	<1%	239	2.3%	\$86,255,000	<1%
Lancaster Township	4,936	\$2,401,153,000	61	1.2%	\$4,105,000	<1%	148	3.0%	\$6,345,000	<1%
Leacock Township	4,262	\$775,791,000	49	1.1%	\$7,551,000	1.0%	54	1.3%	\$9,569,000	1.2%
Lititz Borough	3,710	\$2,117,828,000	103	2.8%	\$78,596,000	3.7%	120	3.2%	\$82,278,000	3.9%
Little Britain Township	3,559	\$533,035,000	18	<1%	\$13,351,000	2.5%	18	<1%	\$13,351,000	2.5%
Manheim Borough	2,613	\$894,777,000	190	7.3%	\$110,012,000	12.3%	413	15.8%	\$219,829,000	24.6%
Manheim Township	14,400	\$8,574,727,000	92	<1%	\$92,077,000	1.1%	190	1.3%	\$243,657,000	2.8%
Manor Township	10,385	\$3,404,670,000	176	1.7%	\$50,819,000	1.5%	207	2.0%	\$53,818,000	1.6%
Marietta Borough	1,228	\$381,645,000	220	17.9%	\$52,694,000	13.8%	410	33.4%	\$123,925,000	32.5%
Martic Township	4,438	\$627,819,000	36	<1%	\$3,194,000	<1%	66	1.5%	\$3,194,000	<1%
Millersville Borough	2,286	\$1,110,119,000	2	<1%	\$14,883,000	1.3%	3	<1%	\$14,883,000	1.3%
Mount Joy Borough	3,347	\$1,429,747,000	9	<1%	\$558,000	0.0%	9	<1%	\$558,000	0.0%
Mount Joy Township	5,754	\$1,663,039,000	41	<1%	\$22,298,000	1.3%	79	1.4%	\$52,344,000	3.1%
Mountville Borough	1,068	\$407,896,000	0	0.0%	\$0	0.0%	1	<1%	\$0	0.0%
New Holland Borough	2,421	\$972,312,000	0	0.0%	\$0	0.0%	0	0.0%	\$0	0.0%
Paradise Township	4,218	\$751,377,000	78	1.8%	\$16,144,000	2.1%	108	2.6%	\$38,995,000	5.2%
Penn Township	5,981	\$1,728,870,000	96	1.6%	\$44,469,000	2.6%	129	2.2%	\$44,469,000	2.6%
Pequea Township	3,479	\$703,142,000	30	<1%	\$10,972,000	1.6%	64	1.8%	\$10,972,000	1.6%
Providence Township	5,278	\$809,633,000	45	<1%	\$12,135,000	1.5%	60	1.1%	\$21,246,000	2.6%
Quarryville Borough	1,277	\$475,281,000	36	2.8%	\$18,872,000	4.0%	50	3.9%	\$33,605,000	7.1%
Rapho Township	8,411	\$1,796,999,000	52	<1%	\$22,802,000	1.3%	68	<1%	\$22,802,000	1.3%
Sadsbury Township	2,691	\$399,547,000	6	<1%	\$42,809,000	10.7%	9	<1%	\$44,067,000	11.0%
Salisbury Township	8,123	\$1,280,883,000	72	<1%	\$21,411,000	1.7%	72	<1%	\$21,411,000	1.7%
Strasburg Borough	1,480	\$530,296,000	1	<1%	\$0	0.0%	1	<1%	\$0	0.0%
Strasburg Township	3,600	\$664,574,000	44	1.2%	\$25,004,000	3.8%	53	1.5%	\$25,004,000	3.8%







Municipality	Total # Buildings	Total RCV (Structure and Contents)	Total (All Occupancies)							
			1 Percent Annual Chance Event				0.2 Percent Annual Chance Event			
			# Buildings	% Total	Total RCV (Structure and Contents)	% Total	# Buildings	% Total	Total RCV (Structure and Contents)	% Total
Terre Hill Borough	759	\$233,620,000	0	0.0%	\$0	0.0%	0	0.0%	\$0	0.0%
Upper Leacock Township	5,215	\$1,707,208,000	44	<1%	\$9,903,000	<1%	79	1.5%	\$13,145,000	<1%
Warwick Township	8,372	\$3,253,969,000	66	<1%	\$8,639,000	<1%	94	1.1%	\$23,706,000	<1%
West Cocalico Township	5,679	\$1,032,223,000	77	1.4%	\$18,589,000	1.8%	90	1.6%	\$21,961,000	2.1%
West Donegal Township	4,112	\$1,435,727,000	13	<1%	\$4,690,000	<1%	14	<1%	\$4,690,000	<1%
West Earl Township	5,151	\$1,368,975,000	211	4.1%	\$29,119,000	2.1%	506	9.8%	\$76,350,000	5.6%
West Hempfield Township	8,384	\$2,702,751,000	43	<1%	\$8,385,000	<1%	59	<1%	\$8,385,000	<1%
West Lampeter Township	6,607	\$2,857,346,000	53	<1%	\$36,063,000	1.3%	137	2.1%	\$57,986,000	2.0%
<b>Lancaster County</b>	<b>268,023</b>	<b>\$91,338,494,000</b>	<b>3,526</b>	<b>1.3%</b>	<b>\$1,404,193,000</b>	<b>1.5%</b>	<b>5,889</b>	<b>2.2%</b>	<b>\$2,388,282,000</b>	<b>2.6%</b>

Source: HAZUS-MH 3.2; FEMA 2017

Notes:

% Percent

RCV Replacement cost value (structure and contents)



**Table 4.3.3-11. Estimated General Building Stock Exposure by Watershed to the 1 Percent and 0.2 Percent Annual Chance Flood Events**

Watershed	Total Number of Buildings	1% Annual Chance Flood Boundary		0.2% Annual Chance Flood Boundary	
		Number of Buildings	% of Total	Number of Buildings	% of Total
Chiques Creek	15,471	375	2.4%	666	4.3%
Cocalico Creek	34,975	607	1.7%	1,172	3.4%
Conestoga River	69,692	873	1.3%	1,769	2.5%
Conewago Creek	1,881	10	<1%	15	<1%
Conowingo Creek	4,093	16	<1%	16	<1%
Donegal Creek	4,586	47	1.0%	104	2.3%
Little Chiques Creek	9,400	59	<1%	69	<1%
Little Conestoga Creek	33,366	200	<1%	265	<1%
Mill Creek	17,256	223	1.3%	276	1.6%
Octoraro Creek	14,013	99	<1%	107	<1%
Pequea Creek	33,817	402	1.2%	518	1.5%
Susquehanna River	28,774	611	2.1%	908	3.2%
West Branch	699	4	<1%	4	<1%
<b>Lancaster County</b>	<b>268,023</b>	<b>3,526</b>	<b>1.3%</b>	<b>5,889</b>	<b>2.2%</b>

Source: FEMA 2017, Lancaster County



Table 4.3.3-12. Estimated General Building Stock Potential Loss to the 1 Percent Annual Chance Flood Event

Municipality	Total Replacement Cost Value	1% Annual Chance Event							
		All Occupancies		Residential		Commercial		Industrial, Religious, Education and Government	
		Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total
Adamstown Borough	\$450,258,000	\$899,000	<1%	\$830,000	<1%	\$10,000	<1%	\$59,000	<1%
Akron Borough	\$616,236,000	\$790,000	<1%	\$538,000	<1%	\$226,000	<1%	\$26,000	<1%
Bart Township	\$335,836,000	\$1,847,000	<1%	\$1,214,000	<1%	\$474,000	<1%	\$159,000	<1%
Brecknock Township	\$998,227,000	\$6,079,000	<1%	\$3,868,000	<1%	\$1,022,000	<1%	\$1,189,000	<1%
Caernarvon Township	\$622,129,000	\$3,337,000	<1%	\$1,247,000	<1%	\$970,000	<1%	\$1,120,000	<1%
Christiana Borough	\$198,673,000	\$3,213,000	1.6%	\$1,899,000	1.0%	\$519,000	<1%	\$795,000	<1%
Clay Township	\$862,268,000	\$4,827,000	<1%	\$2,765,000	<1%	\$1,495,000	<1%	\$567,000	<1%
Colerain Township	\$385,028,000	\$1,063,000	<1%	\$708,000	<1%	\$216,000	<1%	\$139,000	<1%
Columbia Borough	\$1,749,096,000	\$5,825,000	<1%	\$3,857,000	<1%	\$1,419,000	<1%	\$549,000	<1%
Conestoga Township	\$541,954,000	\$1,922,000	<1%	\$1,766,000	<1%	\$58,000	<1%	\$98,000	<1%
Conoy Township	\$434,872,000	\$2,613,000	<1%	\$1,868,000	<1%	\$467,000	<1%	\$278,000	<1%
Denver Borough	\$688,940,000	\$14,228,000	2.1%	\$5,020,000	<1%	\$2,199,000	<1%	\$7,009,000	<1%
Drumore Township	\$316,735,000	\$503,000	<1%	\$454,000	<1%	\$26,000	<1%	\$23,000	<1%
Earl Township	\$1,817,500,000	\$11,811,000	<1%	\$2,109,000	<1%	\$2,465,000	<1%	\$7,237,000	<1%
East Cocalico Township	\$1,793,707,000	\$11,869,000	<1%	\$3,524,000	<1%	\$3,677,000	<1%	\$4,668,000	<1%
East Donegal Township	\$1,240,941,000	\$8,413,000	<1%	\$4,625,000	<1%	\$667,000	<1%	\$3,121,000	<1%
East Drumore Township	\$713,496,000	\$839,000	<1%	\$544,000	<1%	\$220,000	<1%	\$75,000	<1%
East Earl Township	\$1,049,169,000	\$4,544,000	<1%	\$2,364,000	<1%	\$710,000	<1%	\$1,470,000	<1%
East Hempfield Township	\$5,931,760,000	\$29,640,000	<1%	\$14,763,000	<1%	\$9,098,000	<1%	\$5,779,000	<1%
East Lampeter Township	\$3,533,820,000	\$34,132,000	1.0%	\$15,124,000	<1%	\$11,258,000	<1%	\$7,750,000	<1%
East Petersburg Borough	\$709,918,000	\$935,000	<1%	\$569,000	<1%	\$356,000	<1%	\$10,000	<1%



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Total Replacement Cost Value	1% Annual Chance Event							
		All Occupancies		Residential		Commercial		Industrial, Religious, Education and Government	
		Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total
Eden Township	\$259,861,000	\$1,916,000	<1%	\$188,000	<1%	\$262,000	<1%	\$1,466,000	<1%
Elizabeth Township	\$656,622,000	\$1,909,000	<1%	\$993,000	<1%	\$440,000	<1%	\$476,000	<1%
Elizabethtown Borough	\$1,800,576,000	\$8,356,000	<1%	\$2,893,000	<1%	\$1,354,000	<1%	\$4,109,000	<1%
Ephrata Borough	\$2,476,959,000	\$20,141,000	<1%	\$5,386,000	<1%	\$7,357,000	<1%	\$7,398,000	<1%
Ephrata Township	\$1,733,746,000	\$29,338,000	1.7%	\$13,567,000	<1%	\$5,321,000	<1%	\$10,450,000	<1%
Fulton Township	\$450,131,000	\$2,115,000	<1%	\$1,261,000	<1%	\$141,000	<1%	\$713,000	<1%
Lancaster City	\$9,943,057,000	\$30,362,000	<1%	\$9,213,000	<1%	\$3,690,000	<1%	\$17,459,000	<1%
Lancaster Township	\$2,401,153,000	\$29,338,000	1.2%	\$23,782,000	1.0%	\$4,344,000	<1%	\$1,212,000	<1%
Leacock Township	\$775,791,000	\$3,479,000	<1%	\$1,650,000	<1%	\$1,434,000	<1%	\$395,000	<1%
Lititz Borough	\$2,117,828,000	\$23,099,000	1.1%	\$3,948,000	<1%	\$7,492,000	<1%	\$11,659,000	<1%
Little Britain Township	\$533,035,000	\$2,329,000	<1%	\$1,858,000	<1%	\$178,000	<1%	\$293,000	<1%
Manheim Borough	\$894,777,000	\$33,416,000	3.7%	\$5,717,000	<1%	\$10,869,000	<1%	\$16,830,000	1.9%
Manheim Township	\$8,574,727,000	\$65,837,000	<1%	\$36,993,000	<1%	\$25,081,000	<1%	\$3,763,000	<1%
Manor Township	\$3,404,670,000	\$14,981,000	<1%	\$10,809,000	<1%	\$2,058,000	<1%	\$2,114,000	<1%
Marietta Borough	\$381,645,000	\$9,767,000	2.6%	\$5,056,000	1.3%	\$2,574,000	<1%	\$2,137,000	<1%
Martic Township	\$627,819,000	\$1,966,000	<1%	\$1,780,000	<1%	\$62,000	<1%	\$124,000	<1%
Millersville Borough	\$1,110,119,000	\$975,000	<1%	\$180,000	<1%	\$12,000	<1%	\$783,000	<1%
Mount Joy Borough	\$1,429,747,000	\$1,690,000	<1%	\$1,205,000	<1%	\$456,000	<1%	\$29,000	<1%
Mount Joy Township	\$1,663,039,000	\$4,233,000	<1%	\$2,271,000	<1%	\$1,814,000	<1%	\$148,000	<1%
Mountville Borough	\$407,896,000	\$39,000	<1%	\$28,000	<1%	\$2,000	<1%	\$9,000	<1%
New Holland Borough	\$972,312,000	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%
Paradise Township	\$751,377,000	\$8,468,000	1.1%	\$4,016,000	<1%	\$2,482,000	<1%	\$1,970,000	<1%
Penn Township	\$1,728,870,000	\$6,555,000	<1%	\$3,614,000	<1%	\$2,429,000	<1%	\$512,000	<1%





**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Total Replacement Cost Value	1% Annual Chance Event							
		All Occupancies		Residential		Commercial		Industrial, Religious, Education and Government	
		Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total
Pequea Township	\$703,142,000	\$2,802,000	<1%	\$1,992,000	<1%	\$278,000	<1%	\$532,000	<1%
Providence Township	\$809,633,000	\$7,650,000	<1%	\$5,095,000	<1%	\$1,666,000	<1%	\$889,000	<1%
Quarryville Borough	\$475,281,000	\$5,014,000	1.1%	\$989,000	<1%	\$3,808,000	<1%	\$217,000	<1%
Rapho Township	\$1,796,999,000	\$8,873,000	<1%	\$4,668,000	<1%	\$1,510,000	<1%	\$2,695,000	<1%
Sadsbury Township	\$399,547,000	\$2,416,000	<1%	\$915,000	<1%	\$73,000	<1%	\$1,428,000	<1%
Salisbury Township	\$1,280,883,000	\$3,530,000	<1%	\$1,690,000	<1%	\$686,000	<1%	\$1,154,000	<1%
Strasburg Borough	\$530,296,000	\$48,000	<1%	\$39,000	<1%	\$4,000	<1%	\$5,000	<1%
Strasburg Township	\$664,574,000	\$9,890,000	1.5%	\$2,963,000	<1%	\$6,220,000	<1%	\$707,000	<1%
Terre Hill Borough	\$233,620,000	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%
Upper Leacock Township	\$1,707,208,000	\$3,737,000	<1%	\$2,425,000	<1%	\$416,000	<1%	\$896,000	<1%
Warwick Township	\$3,253,969,000	\$14,246,000	<1%	\$6,787,000	<1%	\$5,936,000	<1%	\$1,523,000	<1%
West Cocalico Township	\$1,032,223,000	\$4,948,000	<1%	\$2,345,000	<1%	\$625,000	<1%	\$1,978,000	<1%
West Donegal Township	\$1,435,727,000	\$1,876,000	<1%	\$1,208,000	<1%	\$126,000	<1%	\$542,000	<1%
West Earl Township	\$1,368,975,000	\$23,060,000	1.7%	\$14,965,000	1.1%	\$3,188,000	<1%	\$4,907,000	<1%
West Hempfield Township	\$2,702,751,000	\$4,475,000	<1%	\$1,506,000	<1%	\$1,726,000	<1%	\$1,243,000	<1%
West Lampeter Township	\$2,857,346,000	\$10,106,000	<1%	\$7,140,000	<1%	\$2,162,000	<1%	\$804,000	<1%
<b>Lancaster County</b>	<b>\$91,338,494,000</b>	<b>\$552,309,000</b>	<b>&lt;1%</b>	<b>\$260,791,000</b>	<b>&lt;1%</b>	<b>\$145,828,000</b>	<b>&lt;1%</b>	<b>\$145,690,000</b>	<b>&lt;1%</b>

Source: HAZUS-MH 3.2

Note: % Percent







### NFIP Statistics

In addition to total building stock modeling, individual data available regarding flood policies, claims, repetitive loss (RL) properties, and severe repetitive loss (SRL) properties were analyzed. 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 of these claims payments exceeding \$20,000
- At least two separate claims payments (building payments only), with the cumulative amount of the building portion of these claims payments exceeding the market value of the building

Moreover, for both of the above, at least two of the referenced claims must have occurred within any 10-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.

Lancaster County has 150 RL and 9 SRL properties throughout the County. Table 4.3.3-13 categorizes numbers of RL and SRL properties by municipality and by occupancy class (non-residential or residential).



Table 4.3.3-13. Summary of Repetitive Loss Properties by Municipality

Municipality	Repetitive Loss Properties					Severe Repetitive Loss Properties				
	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family
Adamstown Borough	0									
Akron Borough	0									
Bart Township	0									
Brecknock Township	0	0	1	0	0	0	0	0	0	0
Caernarvon Township	0	0	0	0	1	0	0	0	0	0
Christiana Borough	0	0	1	0	0	0	0	0	0	0
Clay Township	0									
Colerain Township	0									
Columbia Borough	0	0	0	0	2	0	0	0	0	0
Conestoga Township	0	1	0	0	3	0	0	0	0	1
Conoy Township	0	0	0	0	3	0	0	0	0	0
Denver Borough	0									
Drumore Township	0	1	0	0	1	0	0	0	0	0
Earl Township	0	0	1	0	2	0	0	0	0	0
East Cocalico Township	0									
East Donegal Township	0	0	0	0	1	0	0	0	0	0
East Drumore Township	0	0	0	0	1	0	0	0	0	0
East Earl Township	0									
East Hempfield Township	0	1	0	1	3	0	0	0	0	0
East Lampeter Township	0	1	4	1	2	0	0	0	0	0
East Petersburg Borough	0									
Eden Township	0									



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Repetitive Loss Properties					Severe Repetitive Loss Properties				
	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family
Elizabeth Township	0									
Elizabethtown Borough	0	0	1	0	0	0	0	0	0	0
Ephrata Borough	0	0	1	0	0	0	0	0	0	0
Ephrata Township	0	0	1	0	4	0	0	0	0	0
Fulton Township	0									
Lancaster City	0	1	0	0	1	0	0	0	0	1
Lancaster Township	0	0	2	0	8	0	0	0	0	1
Leacock Township	0	0	1	0	1	0	0	0	0	0
Lititz Borough	1	0	1	0	0	0	0	0	0	0
Little Britain Township	0									
Manheim Borough	0	0	1	0	7	0	0	0	0	0
Manheim Township	0	0	2	0	4	0	0	0	0	1
Manor Township	1	0	2	0	11	1	0	0	0	1
Marietta Borough	1	0	2	0	14	0	0	0	0	0
Martic Township	0	0	5	0	4	0	0	0	0	0
Millersville Borough	0									
Mount Joy Borough	0									
Mount Joy Township	0	0	1	0	0	0	0	0	0	0
Mountville Borough	0									
New Holland Borough	0									
Paradise Township	0	1	5	0	5	0	0	0	0	1
Penn Township	0									
Pequea Township	0	0	2	0	2	0	0	0	0	0





**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Repetitive Loss Properties					Severe Repetitive Loss Properties				
	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family
Providence Township	0									
Quarryville Borough	0									
Rapho Township	0	0	0	0	3	0	0	0	0	0
Sadsbury Township	0									
Salisbury Township	0									
Strasburg Borough	0									
Strasburg Township	0	0	6	0	1	0	0	1	0	0
Terre Hill Borough	0									
Upper Leacock Township	0	1	0	0	1	0	0	0	0	0
Warwick Township	0									
West Cocalico Township	0									
West Donegal Township	0									
West Earl Township	0	0	1	0	2	0	0	0	0	0
West Hempfield Township	0	0	0	0	2	0	0	0	0	0
West Lampeter Township	2	0	1	0	5	0	0	0	0	1
<b>Lancaster County (Total)</b>	<b>5</b>	<b>7</b>	<b>42</b>	<b>2</b>	<b>94</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>

Source: PEMA 2017

Note: Repetitive loss property totals include severe repetitive loss properties.





Table 4.3.3-14 summaries NFIP policies and claims for Lancaster County.

**Table 4.3.3-14. NFIP Policies, Claims, and Repetitive Loss Statistics**

Municipality	# Policies (1)	# Claims (Losses) (1)	# Repetitive Loss Properties (1)	Total Loss Payments (2)
Adamstown Borough	1	1	0	\$1,273.88
Akron Borough	4	5	0	\$125,154.80
Bart Township	4	3	0	\$3,918.10
Brecknock Township	11	8	1	\$73,907.38
Caernarvon Township	10	7	1	\$42,505.28
Christiana Borough	4	16	1	\$485,547.99
Clay Township	15	3	0	\$15,205.65
Colerain Township	4	3	0	\$6,657.43
Columbia Borough	18	52	2	\$428,321.24
Conestoga Township	8	67	4 RL/1 SRL	\$430,749.39
Conoy Township	11	17	3	\$258,038.45
Denver Borough	25	10	0	\$235,208.04
Drumore Township	3	16	2	\$132,125.41
Earl Township	5	14	3	\$80,652.10
East Cocalico Township	25	12	0	\$249,356.13
East Donegal Township	14	18	1	\$557,217.07
East Drumore Township	1	0	1	\$19,300.21
East Earl Township	11	1	0	\$777.72
East Hempfield Township	63	73	5	\$797,129.08
East Lampeter Township	38	73	8	\$1,746,157.33
East Petersburg Borough	4	3	0	\$47,339.00
Eden Township	2	2	0	\$6,514.30
Elizabeth Township	13	3	0	\$127,141.68
Elizabethtown Borough	25	20	1	\$415,286.33
Ephrata Borough	74	72	1	\$1,940,413.40
Ephrata Township	26	35	5	\$1,428,713.87
Fulton Township	4	3	0	\$27,644.66
Lancaster City	100	140	2 RL/1 SRL	\$1,467,499.88
Lancaster Township	39	115	10 RL/1 SRL	\$1,502,482.02
Leacock Township	8	27	2	\$217,871.77
Lititz Borough	52	52	2	\$389,341.85
Little Britain Township	6	2	0	\$509.00





**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	# Policies (1)	# Claims (Losses) (1)	# Repetitive Loss Properties (1)	Total Loss Payments (2)
Manheim Borough	71	147	8	\$2,987,598.98
Manheim Township	88	83	6 RL/1 SRL	\$458,759.43
Manor Township	55	146	14 RL/2 SRL	\$1,701,578.13
Marietta Borough	115	157	17	\$2,898,777.52
Martic Township	9	47	9	\$493,540.41
Millersville Borough	4	3	0	\$2,009.13
Mount Joy Borough	10	13	0	\$344,022.48
Mount Joy Township	12	9	1	\$274,873.20
Mountville Borough	1	0	0	\$0.00
New Holland Borough	-	-	-	-
Paradise Township	15	45	11 RL/1 SRL	\$292,033.13
Penn Township	19	16	0	\$1,143,525.47
Pequea Township	5	22	4	\$267,780.84
Providence Township	11	5	0	\$3,426.15
Quarryville Borough	18	5	0	\$9,730.84
Rapho Township	17	20	3	\$279,180.35
Sadsbury Township	2	2	0	\$5,185.02
Salisbury Township	6	2	0	\$899.52
Strasburg Borough	0	0	0	\$0.00
Strasburg Township	9	134	7 RL/1 SRL	\$1,529,230.41
Terre Hill Borough	-	-	-	-
Upper Leacock Township	15	28	2	\$167,797.94
Warwick Township	18	15	0	\$130,096.52
West Cocalico Township	13	10	0	\$140,714.40
West Donegal Township	20	2	0	\$46,578.53
West Earl Township	21	29	3	\$386,295.81
West Hempfield Township	26	25	2	\$177,399.34
West Lampeter Township	4	100	8 RL/1 SRL	\$660,660.88
<b>Lancaster County</b>	<b>1,212</b>	<b>1,938</b>	<b>150 RL/9 SRL</b>	<b>\$27,661,654.87</b>

Source: FEMA 2017

Notes:

(1) Policies, claims, RL, and SRL statistics provided by FEMA, and are current as of June 30, 2017. Communities with SRL properties are noted in the column. The number of claims represents claims closed by June 30, 2017.

(2) Total building and content loss information was collected from the claims file provided by FEMA: <http://bsa.nfipstat.fema.gov/reports/1040.htm#42>.

FEMA Federal Emergency Management Agency

PEMA Pennsylvania Emergency Management Agency

RL Repetitive loss

SRL

Severe repetitive loss





### Impact on Critical Facilities

In addition to consideration of general building stock at risk, risk of flood to critical facilities and utilities was evaluated. HAZUS-MH was used to estimate potential for flood loss to critical facilities exposed to the flood risk. Using depth/damage function curves, HAZUS estimates percent of damage to building and contents of critical facilities. HAZUS-MH estimates that few emergency and utility facilities within the County would be nonfunctional for more than 1 day, and most would undergo relatively minimal damages.

To address impacts on short-term functionality of critical facilities and utilities by a hazard during a disaster event, other facilities of neighboring municipalities may have to increase support response functions. Mitigation planning should consider means to reduce impacts on critical facilities and utilities, and ensure that sufficient emergency and school services remain functional when a significant event occurs. Actions addressing shared services agreements are included in Section 6 (Mitigation Strategy) of this plan.

Table 4.3.3-15 lists critical facilities and utilities within the 1 percent annual change flood boundary. TTable 4.3.3-16 lists critical facilities and utilities within the 0.2 percent annual change flood boundary.

**Table 4.3.3-15. Critical Facilities and Utilities Within the 1 percent Annual Chance Flood Boundary**

Municipality	Facility Types													
	Communication	County Building	EMS	Fire Station	Hazmat	Outflow	Potable Facility	Potable Pump	Potable Tank	School	Shelter	Well	Wastewater Pump	Wastewater Facility
Adamstown Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Akron Borough	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Bart Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Brecknock Township	0	0	0	0	1	0	0	0	0	0	0	1	0	1
Caernarvon Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Christiana Borough	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Clay Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colerain Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia Borough	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Conestoga Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conoy Township	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Denver Borough	0	0	0	0	1	0	0	1	0	0	0	0	0	0
Drumore Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Earl Township	0	0	0	0	1	0	0	0	0	0	0	0	0	0
East Cocalico Township	0	0	0	0	0	0	0	0	0	0	0	1	0	0
East Donegal Township	0	1	0	0	0	0	0	0	0	0	0	2	0	0
East Drumore Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East Earl Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East Hempfield Township	0	0	0	0	0	0	0	2	0	0	0	1	0	0
East Lampeter Township	0	0	0	0	0	0	0	0	0	0	1	0	1	0



**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Facility Types													
	Communication	County Building	EMS	Fire Station	Hazmat	Outflow	Potable Facility	Potable Pump	Potable Tank	School	Shelter	Well	Wastewater Pump	Wastewater Facility
East Petersburg Borough	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Eden Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elizabeth Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elizabethtown Borough	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Ephrata Borough	0	0	0	0	1	0	0	0	1	0	0	0	3	0
Ephrata Township	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Fulton Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lancaster City	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Lancaster Township	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Leacock Township	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Lititz Borough	0	0	1	0	2	0	0	0	0	0	0	2	1	0
Little Britain Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manheim Borough	0	0	0	0	0	0	0	1	0	0	0	2	1	0
Manheim Township	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Manor Township	0	0	0	0	2	0	0	0	0	0	0	0	4	1
Marietta Borough	0	0	1	1	1	0	0	0	0	0	0	0	1	1
Martic Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Millersville Borough	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Mount Joy Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mount Joy Township	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Mountville Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Holland Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Township	0	0	0	0	0	0	0	0	0	2	0	0	2	1
Penn Township	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Pequea Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Providence Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quarryville Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rapho Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sadsbury Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salisbury Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strasburg Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strasburg Township	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Terre Hill Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upper Leacock Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Warwick Township	0	0	0	0	0	0	0	0	0	0	0	1	1	0
West Cocalico Township	0	0	0	0	0	0	0	0	0	0	0	0	0	1





SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM

Municipality	Facility Types													
	Communication	County Building	EMS	Fire Station	Hazmat	Outflow	Potable Facility	Potable Pump	Potable Tank	School	Shelter	Well	Wastewater Pump	Wastewater Facility
West Donegal Township	0	0	0	0	0	0	0	0	0	0	0	0	1	1
West Earl Township	0	0	0	0	0	0	1	0	0	0	0	0	1	0
West Hempfield Township	0	0	0	0	0	0	0	0	0	0	0	0	2	0
West Lampeter Township	0	0	0	0	0	0	0	0	0	0	0	0	1	0
<b>Lancaster County</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>9</b>	<b>4</b>	<b>1</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>31</b>	<b>8</b>

Source: Lancaster County, FEMA 2017

Table 4.3.3-16. Critical Facilities and Utilities Within the 0.2 percent Annual Chance Flood Boundary

Municipality	Facility Types															
	Communication	County Building	EMS	Emergency Operation Center	Fire Station	Hazmat	Outflow	Potable Facility	Potable Pump	Potable Tank	School	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Adamstown Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Akron Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Bart Township	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Brecknock Township	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1
Caernarvon Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Christiana Borough	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clay Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colerain Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia Borough	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Conestoga Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conoy Township	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
Denver Borough	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
Drumore Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Earl Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
East Cocalico Township	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
East Donegal Township	0	3	0	0	0	1	0	0	0	0	0	0	2	1	0	0
East Drumore Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East Earl Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East Hempfield Township	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0





**SECTION 4.3.3: RISK ASSESSMENT - FLOOD, FLASH FLOOD, ICE JAM**

Municipality	Facility Types															
	Communication	County Building	EMS	Emergency Operation Center	Fire Station	Hazmat	Outflow	Potable Facility	Potable Pump	Potable Tank	School	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
East Lampeter Township	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0
East Petersburg Borough	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Eden Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elizabeth Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elizabethtown Borough	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ephrata Borough	0	0	1	0	0	1	0	0	0	1	0	0	1	1	3	1
Ephrata Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0
Fulton Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lancaster City	1	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0
Lancaster Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0
Leacock Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Lititz Borough	0	0	1	0	0	2	0	0	0	0	0	0	0	2	1	0
Little Britain Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manheim Borough	0	0	0	0	1	0	0	0	1	0	0	0	1	2	1	0
Manheim Township	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Manor Township	0	0	0	0	0	3	0	0	0	0	0	0	1	0	5	1
Marietta Borough	0	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1
Martic Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Millersville Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Mount Joy Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mount Joy Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Mountville Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Holland Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Township	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1
Penn Township	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Pequea Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Providence Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Quarryville Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rapho Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Sadsbury Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salisbury Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strasburg Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strasburg Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Terre Hill Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





Municipality	Facility Types															
	Communication	County Building	EMS	Emergency Operation Center	Fire Station	Hazmat	Outflow	Potable Facility	Potable Pump	Potable Tank	School	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Upper Leacock Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Warwick Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
West Cocalico Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
West Donegal Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
West Earl Township	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1
West Hempfield Township	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0
West Lampeter Township	0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	0
<b>Lancaster County</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>17</b>	<b>4</b>	<b>1</b>	<b>9</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>12</b>	<b>39</b>	<b>11</b>

Source: Lancaster County, FEMA 2017

### 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 damages, agricultural losses, business interruption, and impacts on tourism and tax base within Lancaster County. Damages to general building stock can be quantified by use of HAZUS-MH as discussed above. Other economic components such as loss of facility use, functional downtime, and social economic factors are less susceptible to measurement with a high degree of certainty. For the purposes of this analysis, general building stock damages are discussed further.

Flooding can cause extensive damage to public utilities and disruptions in delivery of services. Loss of power and communications may occur, and drinking water and wastewater treatment facilities may be temporarily out of operation. Flooded streets and roadblocks make it difficult for emergency vehicles to respond to calls for service. Flood waters can wash out sections of roadway and bridges.

Direct building losses are estimated costs to repair or replace damage caused to buildings. Estimated potential damage to general building stock inventory associated with the 1 percent flood is approximately \$1.4 billion, which represents 1.5 percent of the County’s overall total general building stock inventory. These dollar value losses from the County’s total building inventory replacement value, in addition to damages to roadways and infrastructure, would impact the local economy.

HAZUS-MH 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 4.3.3-17 summarizes the debris HAZUS-MH 3.2 estimates to result from a 1 percent annual chance flood event—28,000+ 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 4.3.3-17. Estimated Debris Generated from the 1 percent Annual Chance Flood Event

Municipality	1% Flood Event			
	Total (tons)	Finish (tons)	Structure (tons)	Foundation (tons)
Adamstown Borough	35.5	34.3	0.5	0.7
Akron Borough	53.5	29.3	13.5	10.8
Bart Township	76.8	73.2	2.0	1.5
Brecknock Township	149.6	132.0	7.0	10.7
Caernarvon Township	84.1	66.8	6.1	11.3
Christiana Borough	161.2	133.7	14.0	13.5
Clay Township	187.2	121.5	29.4	36.3
Colerain Township	50.1	42.6	4.4	3.1
Columbia Borough	465.6	278.7	109.8	77.0
Conestoga Township	141.5	62.4	43.0	36.0
Conoy Township	135.2	66.4	38.4	30.4
Denver Borough	304.6	284.0	12.6	8.0
Drumore Township	32.7	24.5	3.9	4.3
Earl Township	1,017.5	183.4	480.5	353.6
East Cocalico Township	251.3	163.1	38.6	49.6
East Donegal Township	331.5	179.5	85.8	66.2
East Drumore Township	27.7	23.7	1.3	2.7
East Earl Township	154.3	128.5	13.2	12.6
East Hempfield Township	594.5	538.6	27.5	28.4
East Lampeter Township	3,039.4	901.7	1,190.4	947.3
East Petersburg Borough	23.2	23.2	0.0	0.0
Eden Township	12.0	9.4	0.8	1.8
Elizabeth Township	59.0	51.7	4.1	3.2
Elizabethtown Borough	151.0	149.7	0.8	0.5
Ephrata Borough	1,090.6	496.5	316.8	277.2
Ephrata Township	875.9	376.2	282.4	217.2
Fulton Township	98.0	61.7	15.0	21.3
Lancaster City	2,574.2	698.3	1,083.6	792.4
Lancaster Township	2,477.3	785.6	938.1	753.5
Leacock Township	121.0	92.3	13.5	15.2
Lititz Borough	291.6	287.6	1.5	2.5
Little Britain Township	194.1	86.4	61.2	46.5
Manheim Borough	645.6	546.0	59.4	40.3
Manheim Township	3,548.8	1,513.0	1,131.4	904.3
Manor Township	1,006.5	569.4	254.1	183.0
Marietta Borough	573.1	488.7	33.4	51.0
Martic Township	167.5	100.9	36.4	30.2
Millersville Borough	8.2	8.0	0.1	0.1
Mount Joy Borough	140.3	92.4	26.9	21.0
Mount Joy Township	109.3	87.1	11.6	10.6
Mountville Borough	2.9	2.1	0.3	0.5
New Holland Borough	0.0	0.0	0.0	0.0



Municipality	1% Flood Event			
	Total (tons)	Finish (tons)	Structure (tons)	Foundation (tons)
Paradise Township	535.0	269.7	149.2	116.1
Penn Township	223.7	163.7	27.7	32.3
Pequea Township	347.0	123.9	130.0	93.2
Providence Township	904.8	237.3	370.6	296.8
Quarryville Borough	79.7	79.4	0.1	0.1
Rapho Township	427.8	216.5	115.1	96.1
Sadsbury Township	61.5	57.2	1.9	2.3
Salisbury Township	131.4	100.9	10.7	19.8
Strasburg Borough	2.0	1.9	0.0	0.1
Strasburg Township	289.4	196.3	51.5	41.5
Terre Hill Borough	0.0	0.0	0.0	0.0
Upper Leacock Township	370.3	106.3	148.0	116.0
Warwick Township	453.9	220.0	129.2	104.7
West Cocalico Township	110.4	91.2	8.2	11.0
West Donegal Township	48.3	46.7	0.9	0.6
West Earl Township	2,128.0	552.7	890.1	685.2
West Hempfield Township	143.6	74.0	37.8	31.8
West Lampeter Township	593.9	204.3	220.6	169.0
<b>Lancaster County</b>	<b>28,314.4</b>	<b>12,736.1</b>	<b>8,685.3</b>	<b>6,892.9</b>

Source: HAZUS-MH 3.2

### Impact on the Environment

As discussed, floodplains serve beneficial and natural functions on ecological/environmental, social, and economic levels. Areas in the floodplain that typically provide these natural functions and benefits are wetlands, riparian areas, sensitive areas, and habitats for rare and endangered species. Floods, however, can also lead to negative impacts on the environment. Loss of riparian buffers, land use change within a watershed, and introduction of non-natural contaminants may be environmental issues when floods occur (Tobin and Montz 1997, Rubin 2013).

To determine exposure of natural and beneficial land in Lancaster County to the flood hazard, acreages of wetlands and forested land were calculated. Table 4.3.3-18 lists results of these calculations.

**Table 4.3.3-18. Acreage of Natural and Beneficial Land Within the Floodplain**

Wetlands	Area in the 1 percent Annual Chance Floodplain (acres)	Area in the 0.2 percent Annual Chance Floodplain (acres)
Wetlands	3,906	3,944
Forest	10,289	11,035

Sources: USGS National Land Cover Data (NLCD) 2014, FEMA 2017

The basic environmental impact of major flooding is morphological, and shape of a river valley is often determined more by a catastrophic event than a long, gradual, methodical process. This is a primary factor in formation of natural habitat for flora and fauna, and may influence habitats beyond the river corridor (Hickey and Salas 1995).





Flooding can cause a wide range of environmental impacts including but not limited to erosion and loss of vegetation and habitats. These in turn may lead to decreased protection of the waterbody from adjacent land uses, and to degraded water quality. Moreover, floods may generate large amounts of tree and construction debris, disperse household hazardous waste into the fluvial system, and contaminate water supplies and wildlife habitats with extremely toxic substances. Floods of greater depth are likely to result in greater environmental damage than floods of lesser depth. Long-duration floods could exacerbate environmental problems because cleanup likely would be delayed and contaminants could remain in the environment for a longer period of time. Cleanup after a flood raises additional environmental concerns. The volume of debris to be collected, the extent to which public utilities (water supply systems and sewer operations) have been damaged, and the quantity of agricultural and industrial pollutants entering water bodies might present additional issues (Montz and Tobin 1997, Rubin 2013).

### **Future Growth and Development**

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As discussed in Section 2.4, areas targeted for future growth and development have been identified across the County. Any areas of growth could be impacted by the flood hazard if within identified hazard areas. The County intends to discourage development within vulnerable areas and to encourage higher regulatory standards on the local level.

### **Effect of Climate Change on Vulnerability**

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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 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 (U.S. Environmental Protection Agency [EPA] 2006).

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 June 2009 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. Summer floods and general stream flow variability are projected to increase due to increased variability in precipitation. Even with the anticipated increase in winter precipitation as rain rather than snow, increased winter temperatures and a reduced snowpack may decrease rain-on-snow events and thus major flooding events in Pennsylvania. This conclusion, 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 how the changing climate will alter temperature, precipitation, storms, and flood events in Pennsylvania (Shortle et al. 2009).

### **Additional Data and Next Steps**

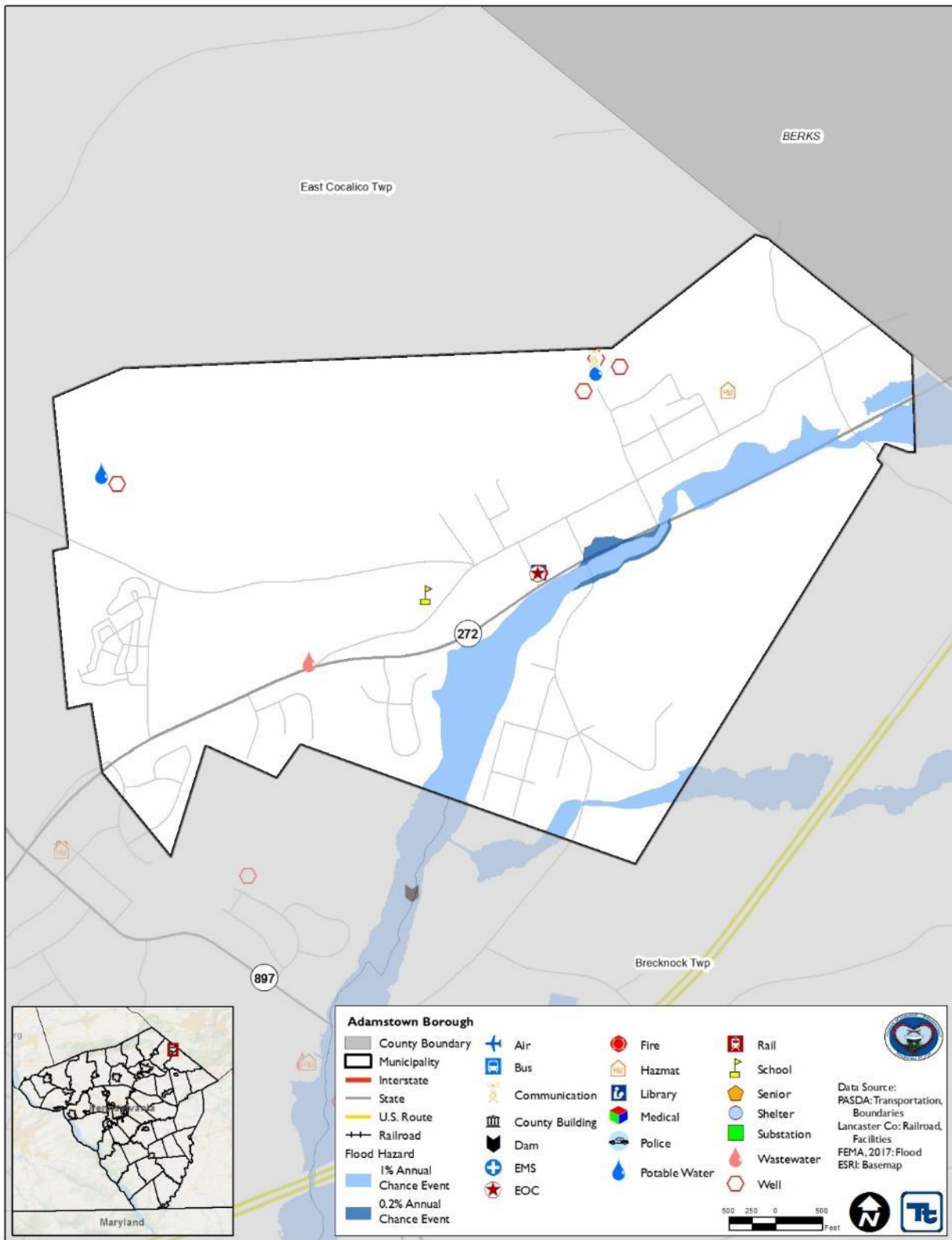
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A HAZUS-MH riverine flood analysis of Lancaster County was based on the most current and best available data, including building and critical facility inventories, and FEMA DFIRM. For future plan updates, more accurate exposure and loss estimates may be produced by updating the default general building stock inventory in HAZUS-MH with a countywide inventory based on countywide available footprints and associated building attributes, and conducting the loss estimates at the structure level.

Section 6 (Mitigation Strategy) of this HMP includes discussions of specific mitigation actions addressing improved data collection, and further vulnerability analysis.

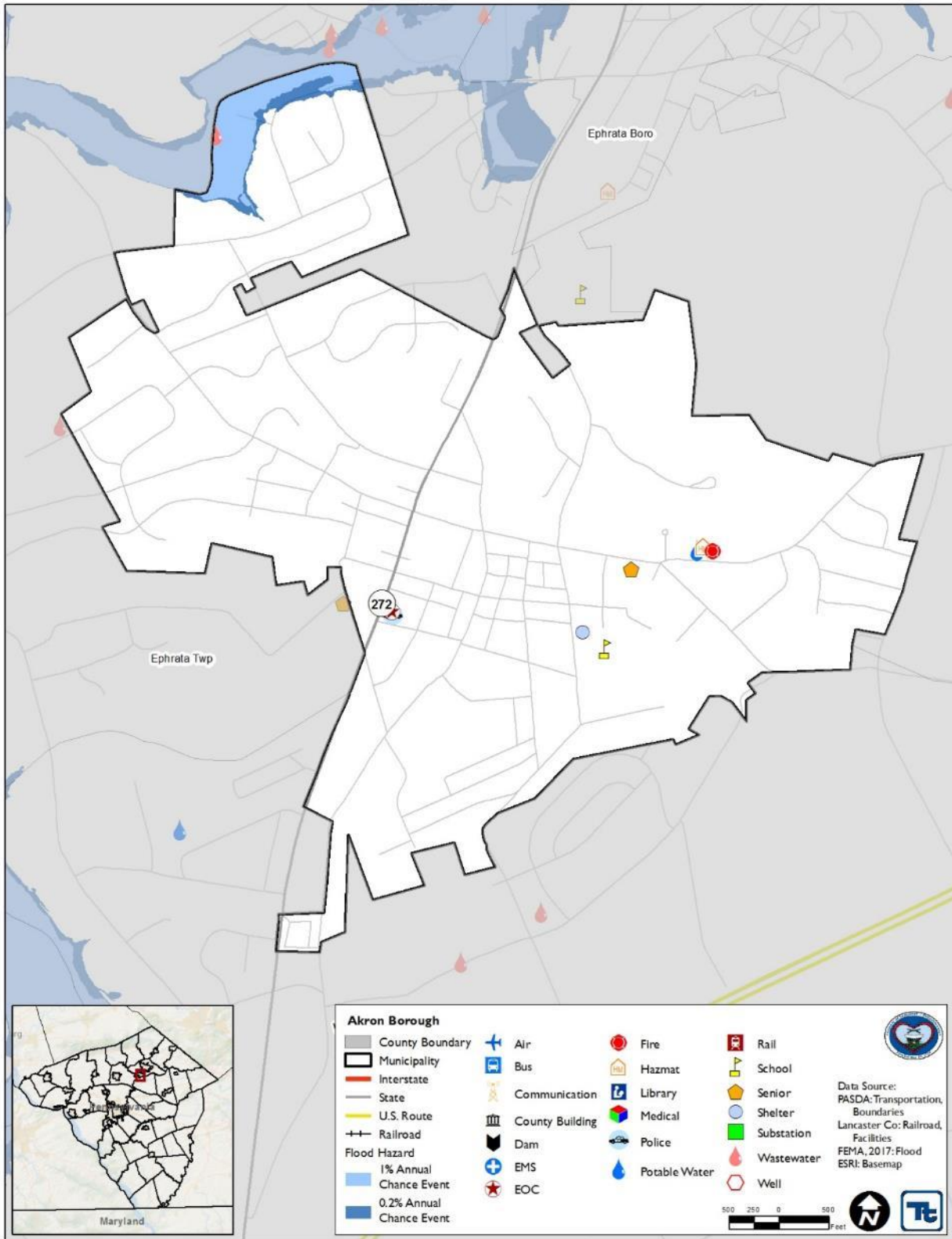


# Adamstown Borough





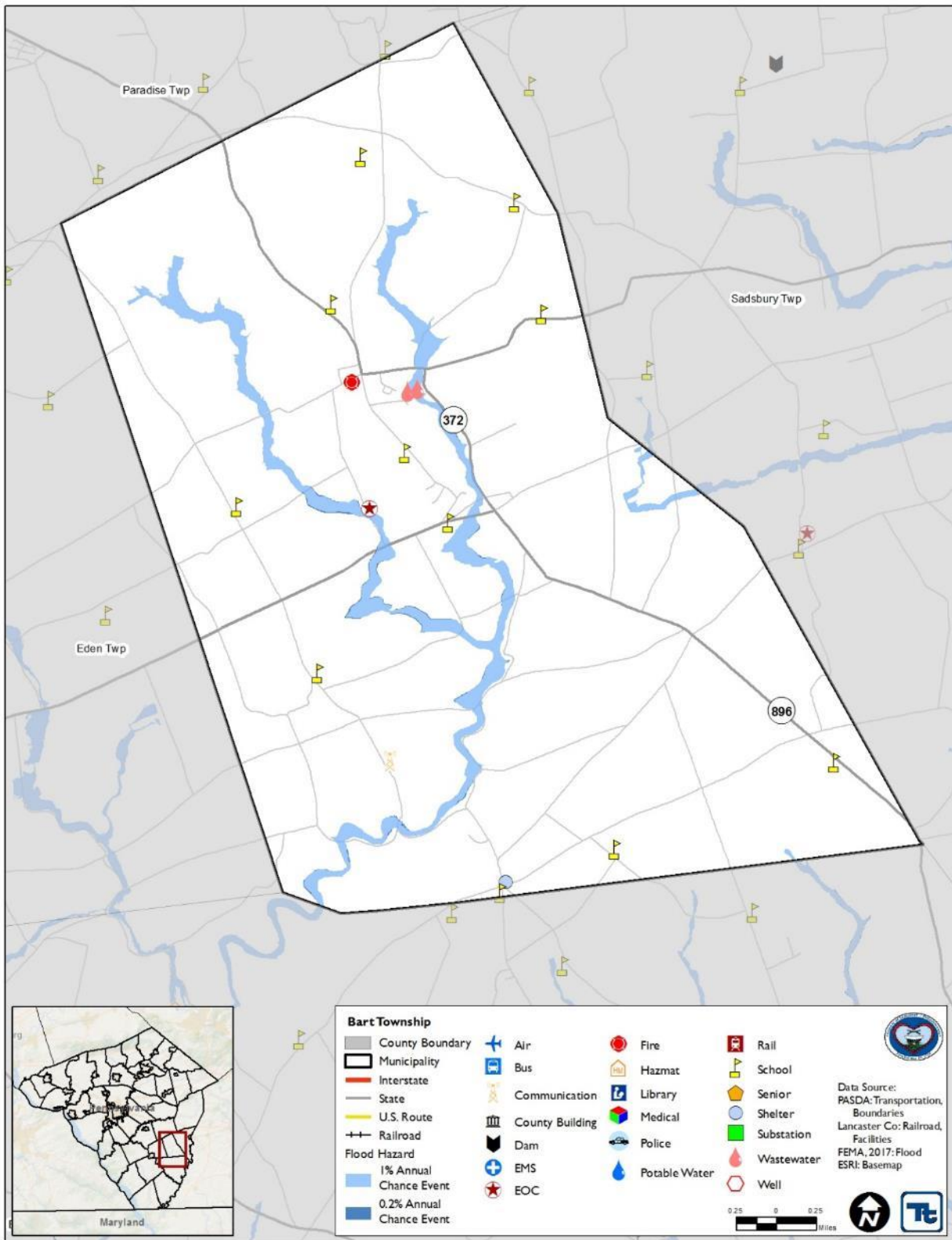
# Akron Borough







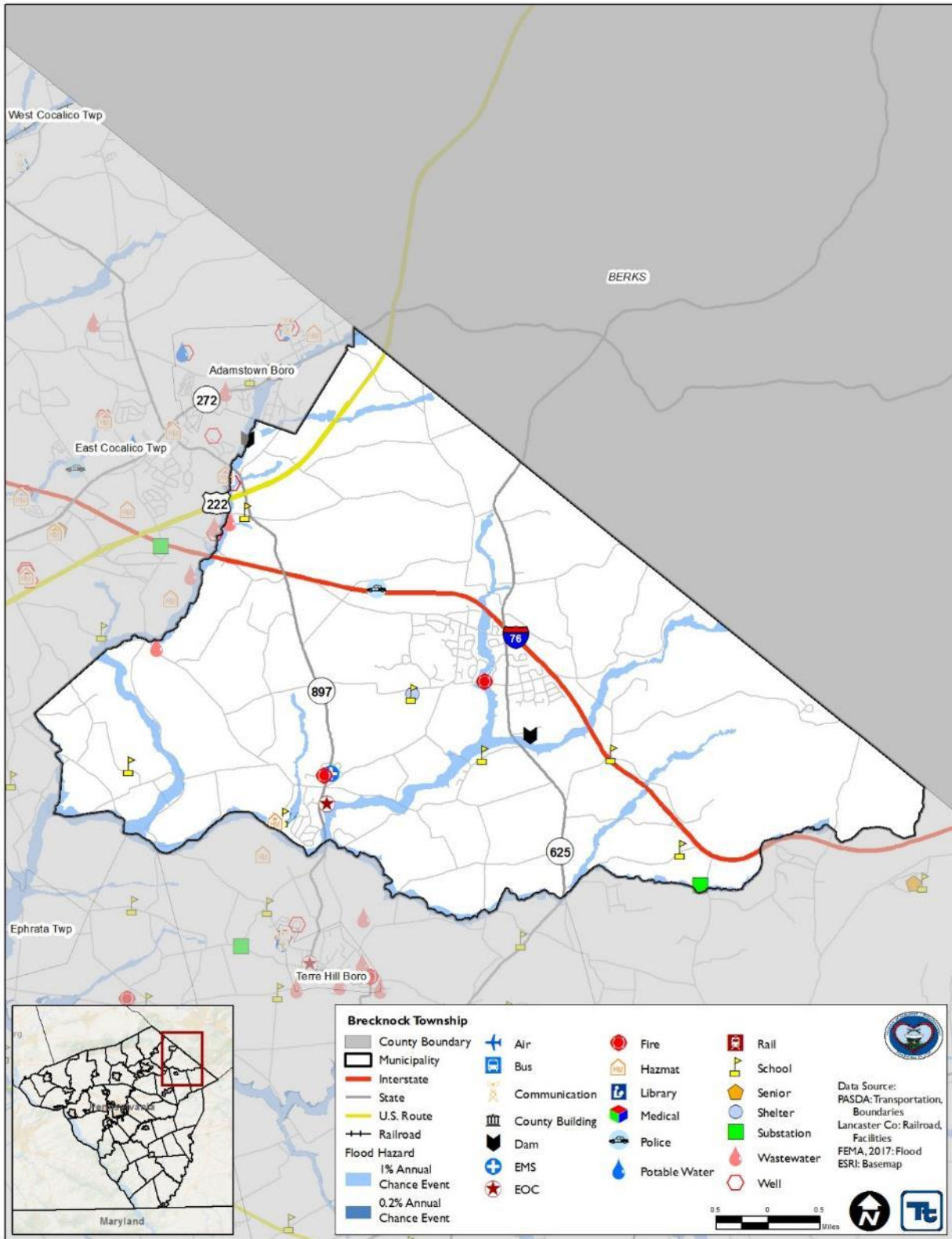
## Bart Township





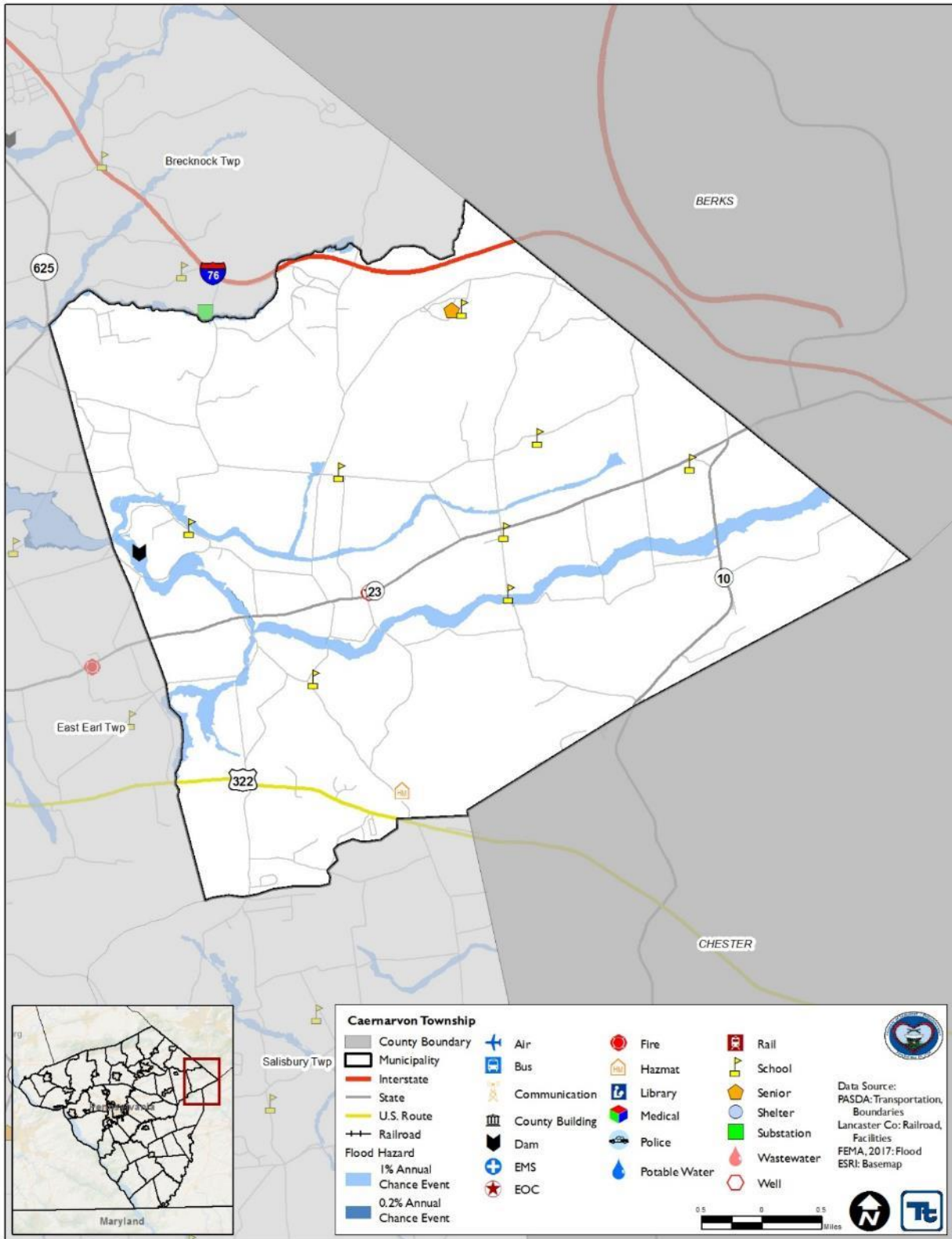


# Brecknock Township



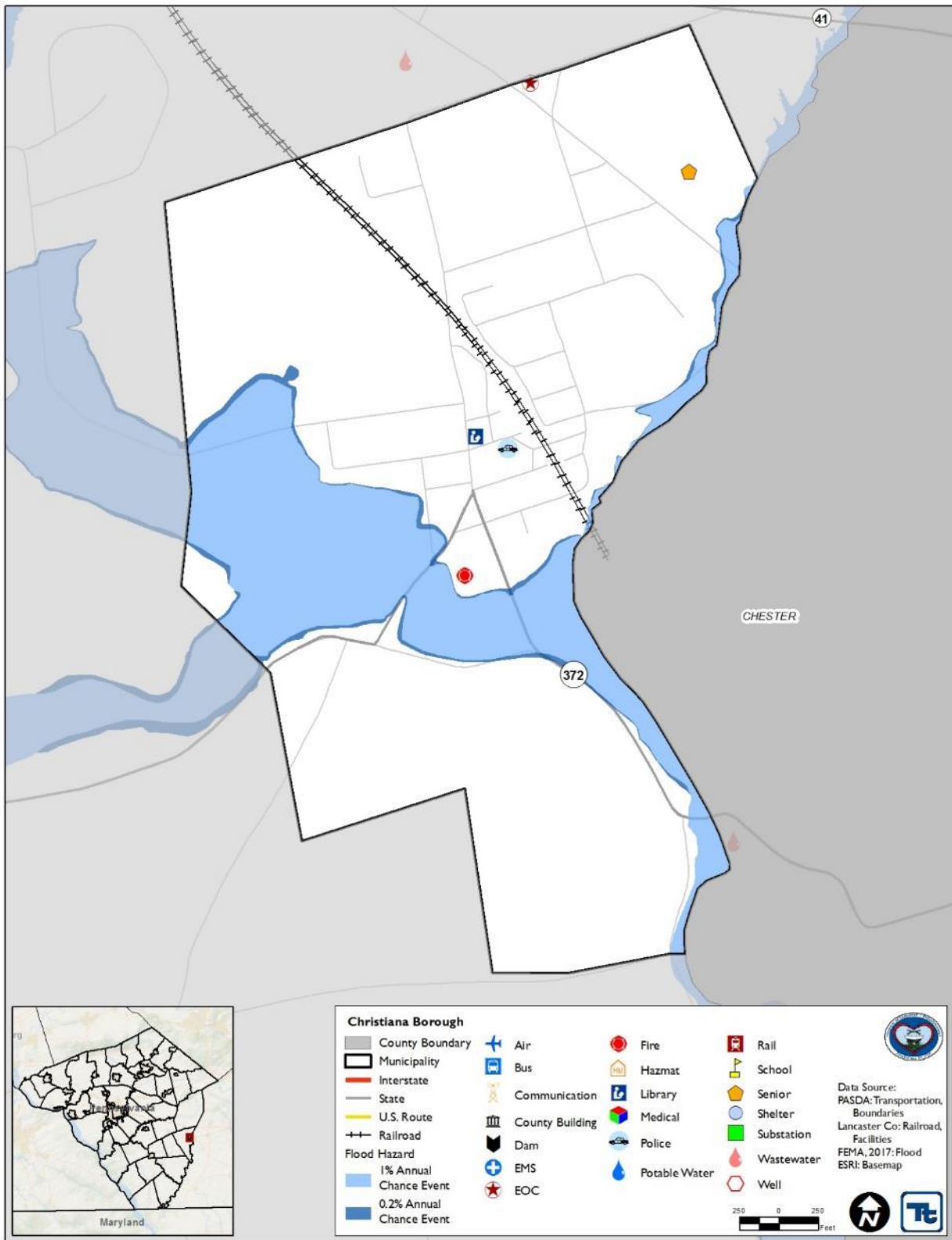


# Caernarvon Township





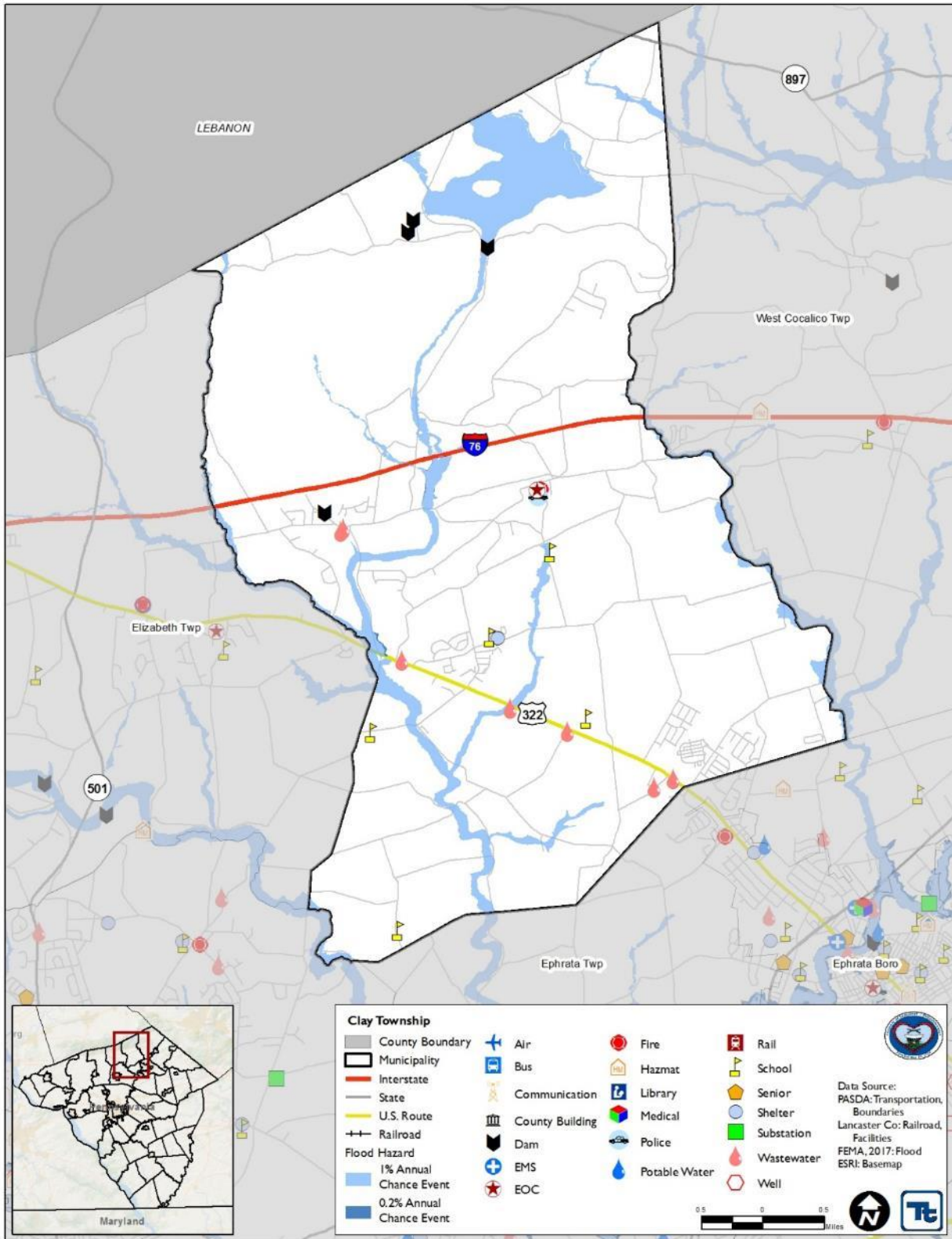
## Christiana Borough





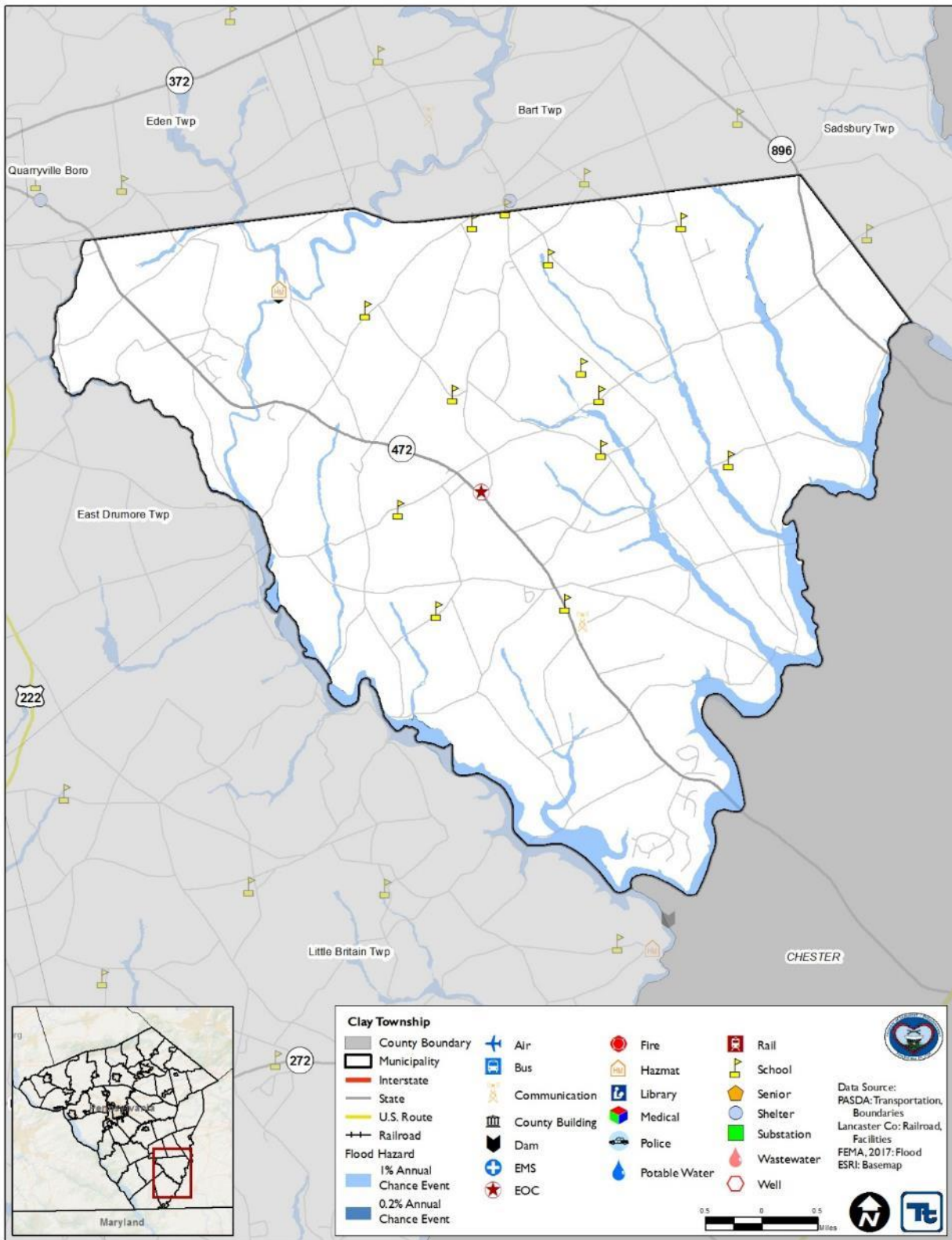


## Clay Township



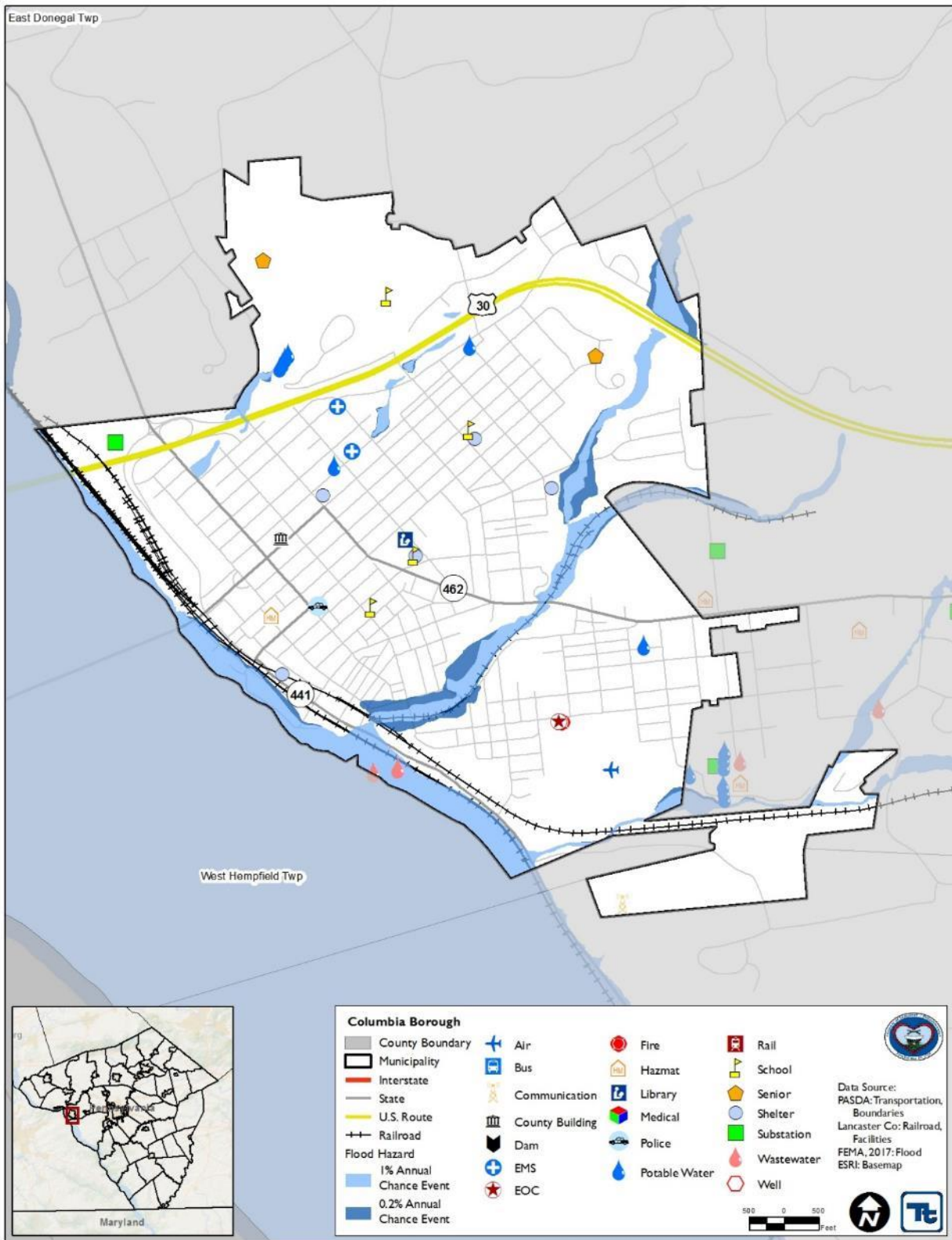


## Colerain Township





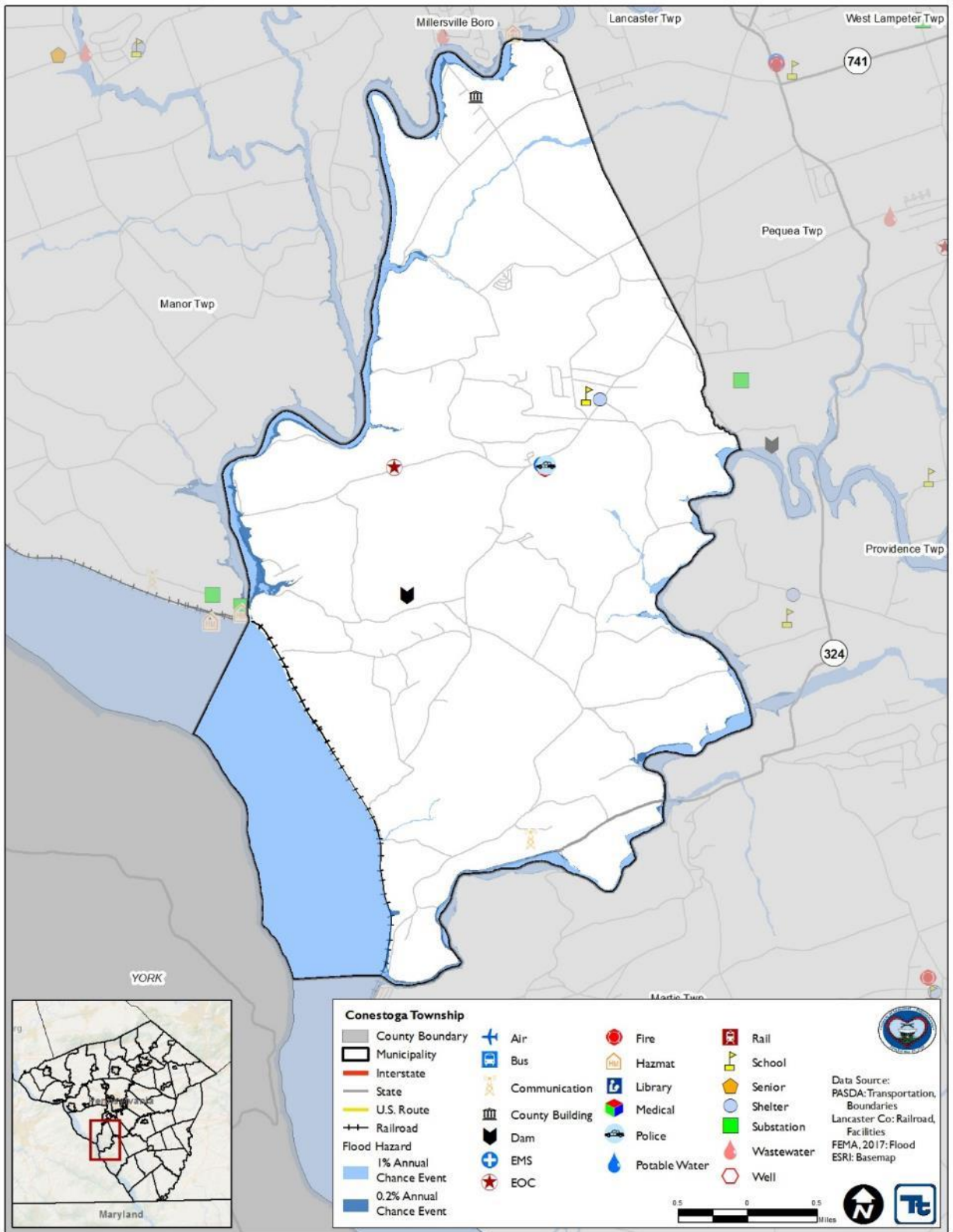
# Columbia Borough





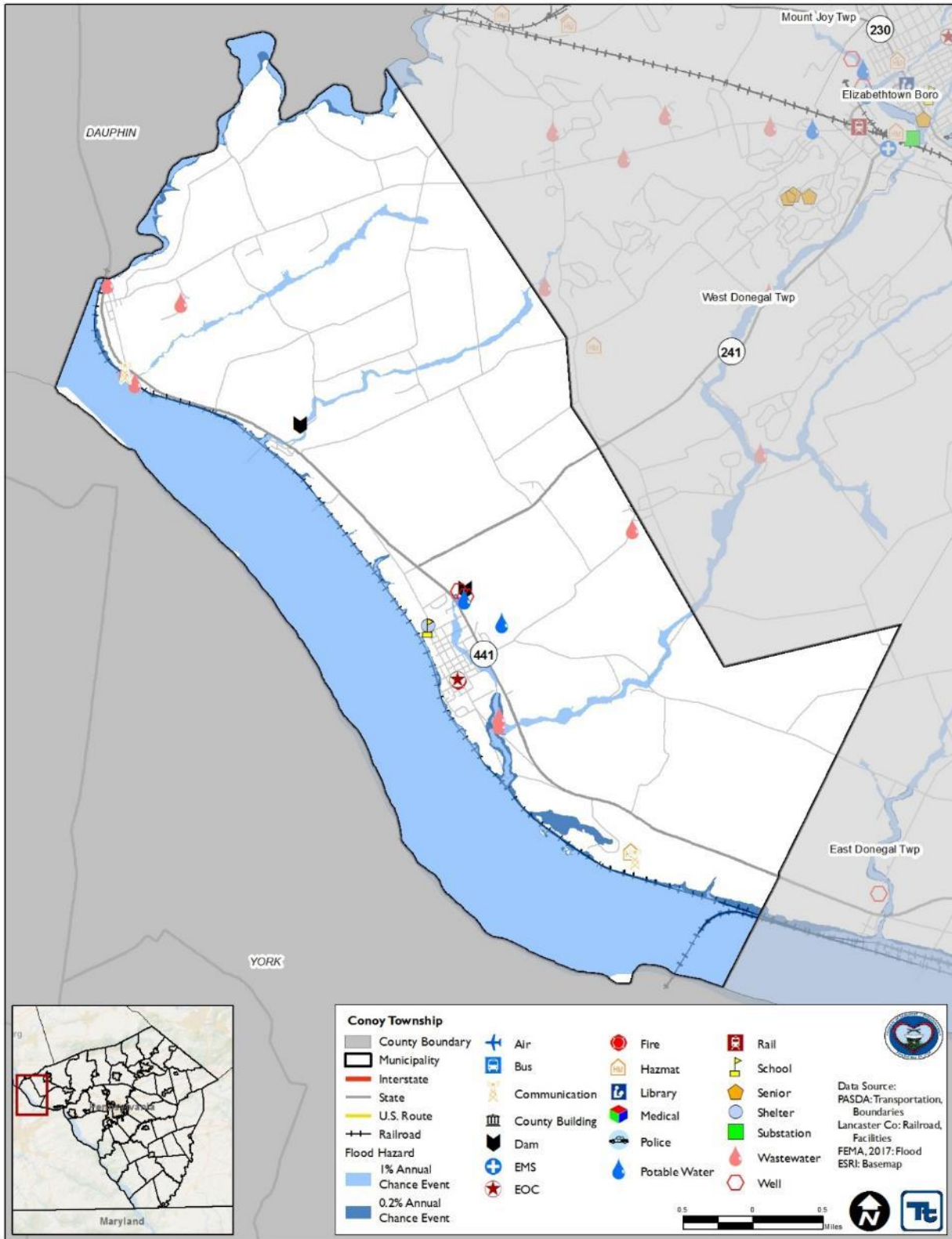


## Conestoga Township



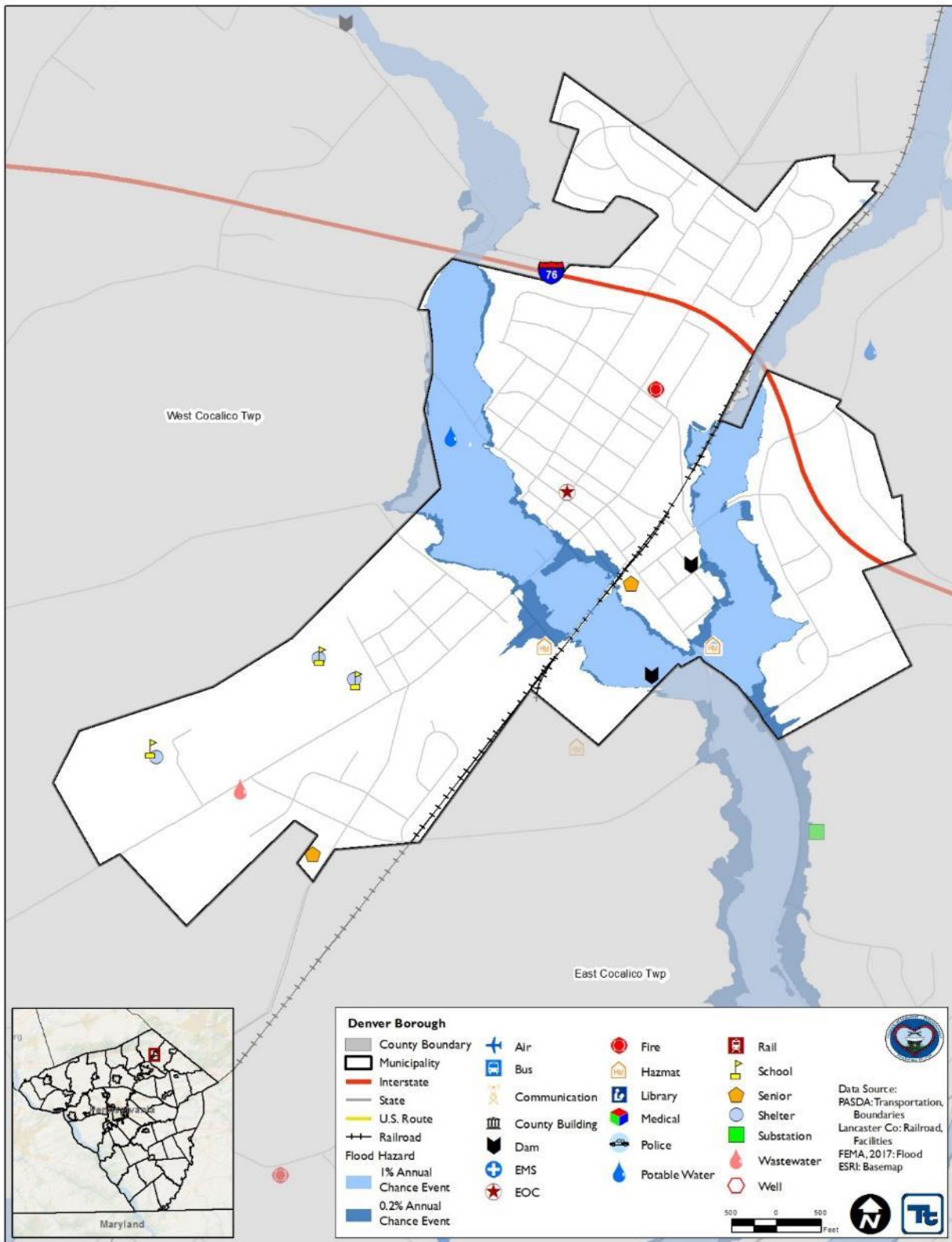


# Conoy Township





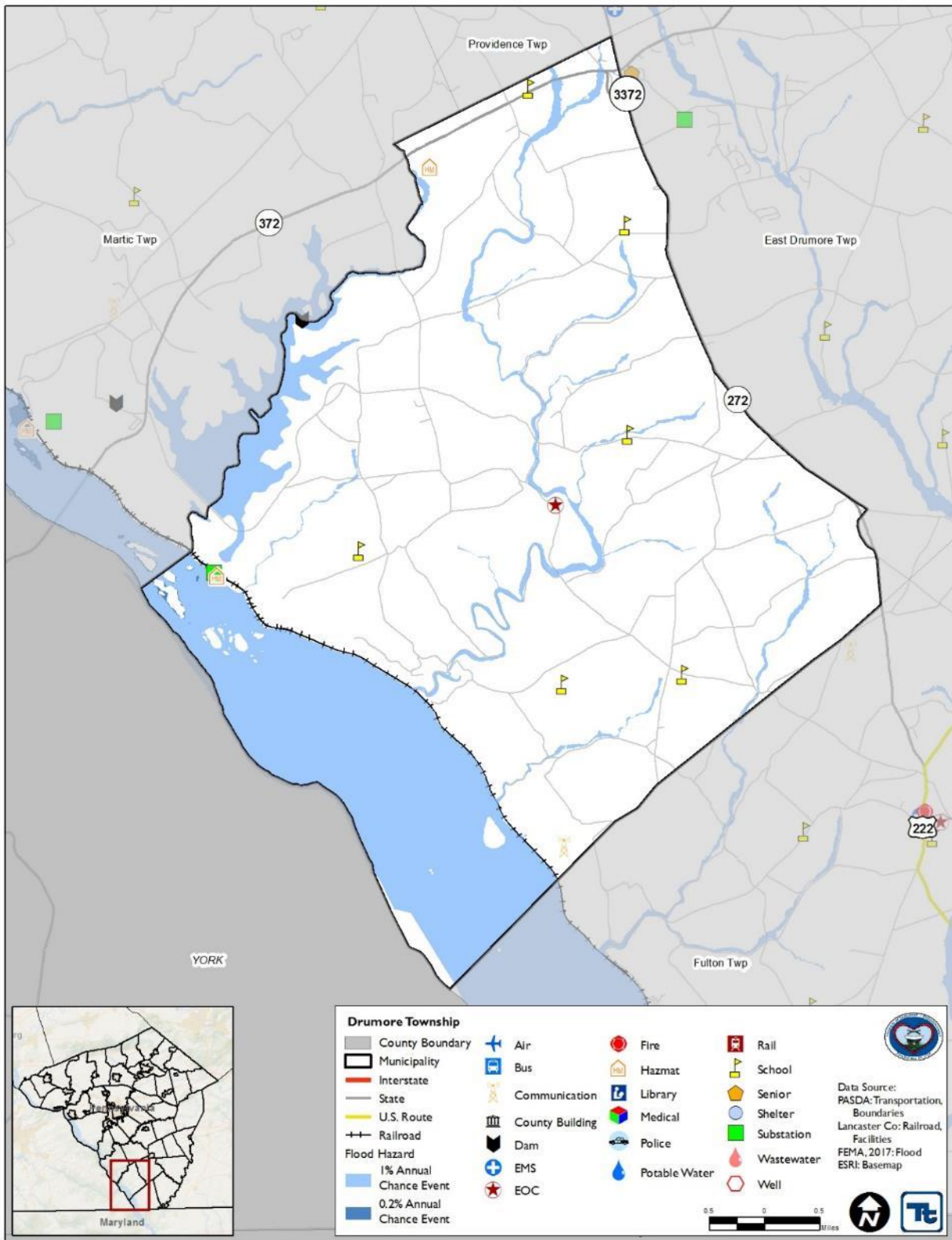
## Denver Borough





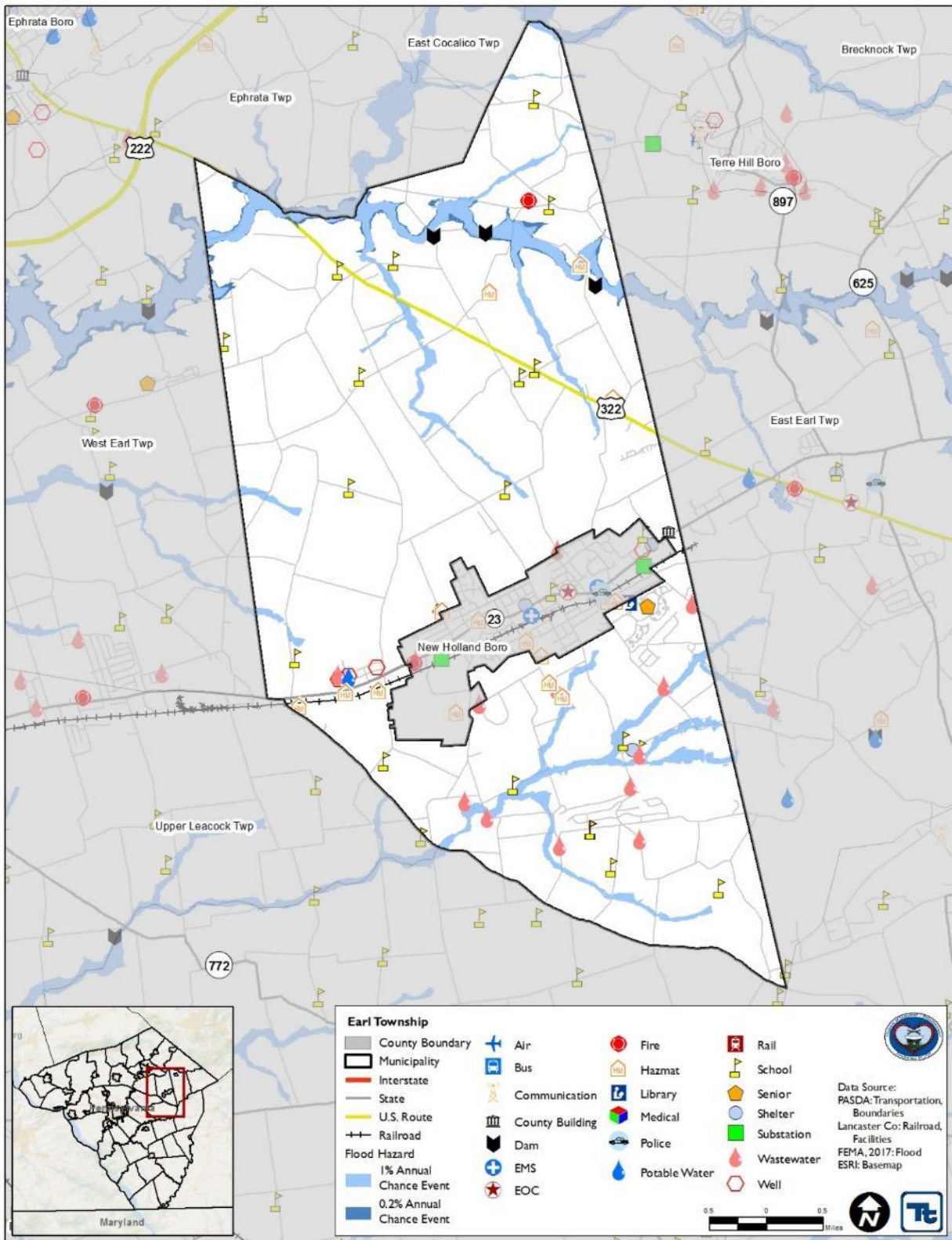


## Drumore Township





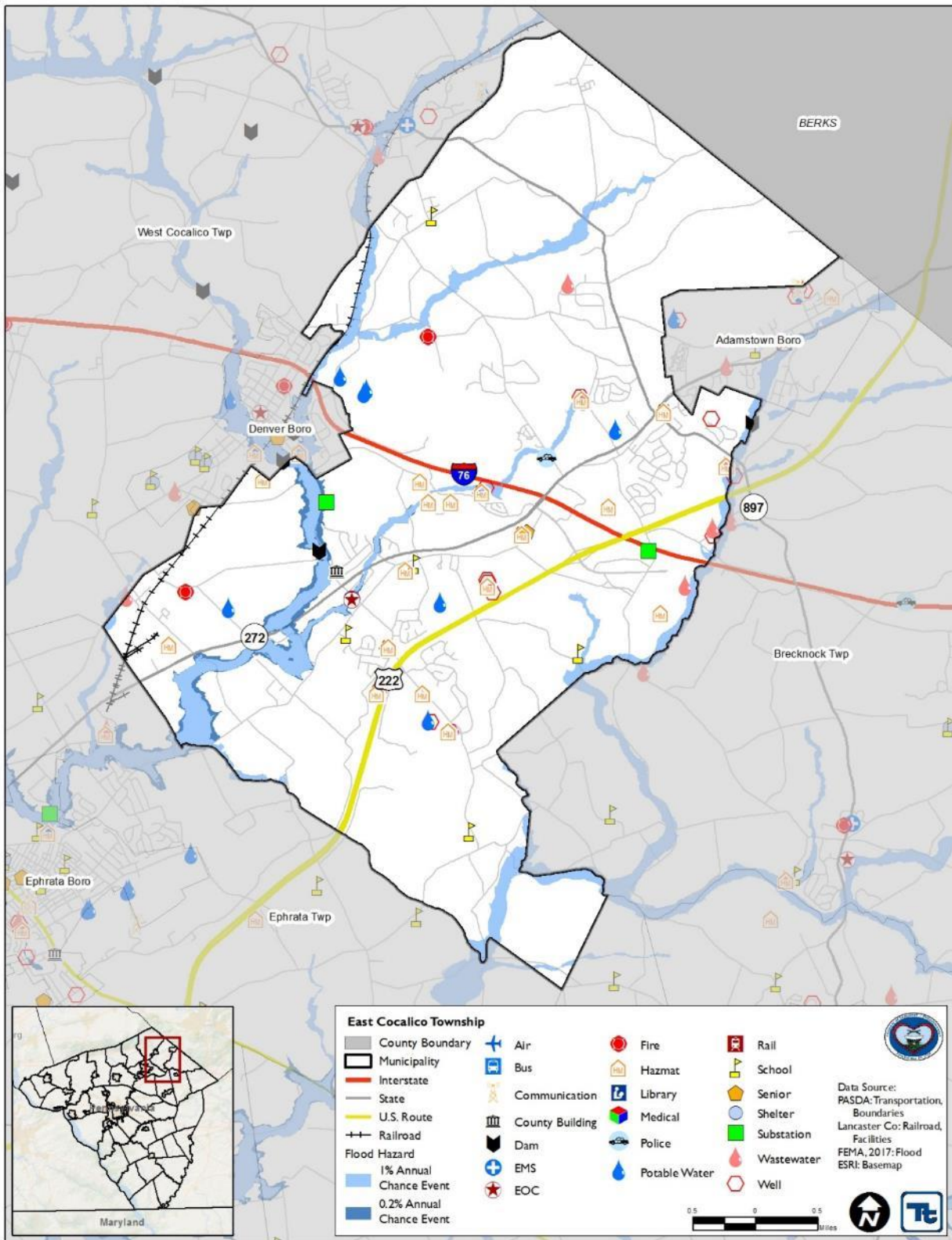
# Earl Township





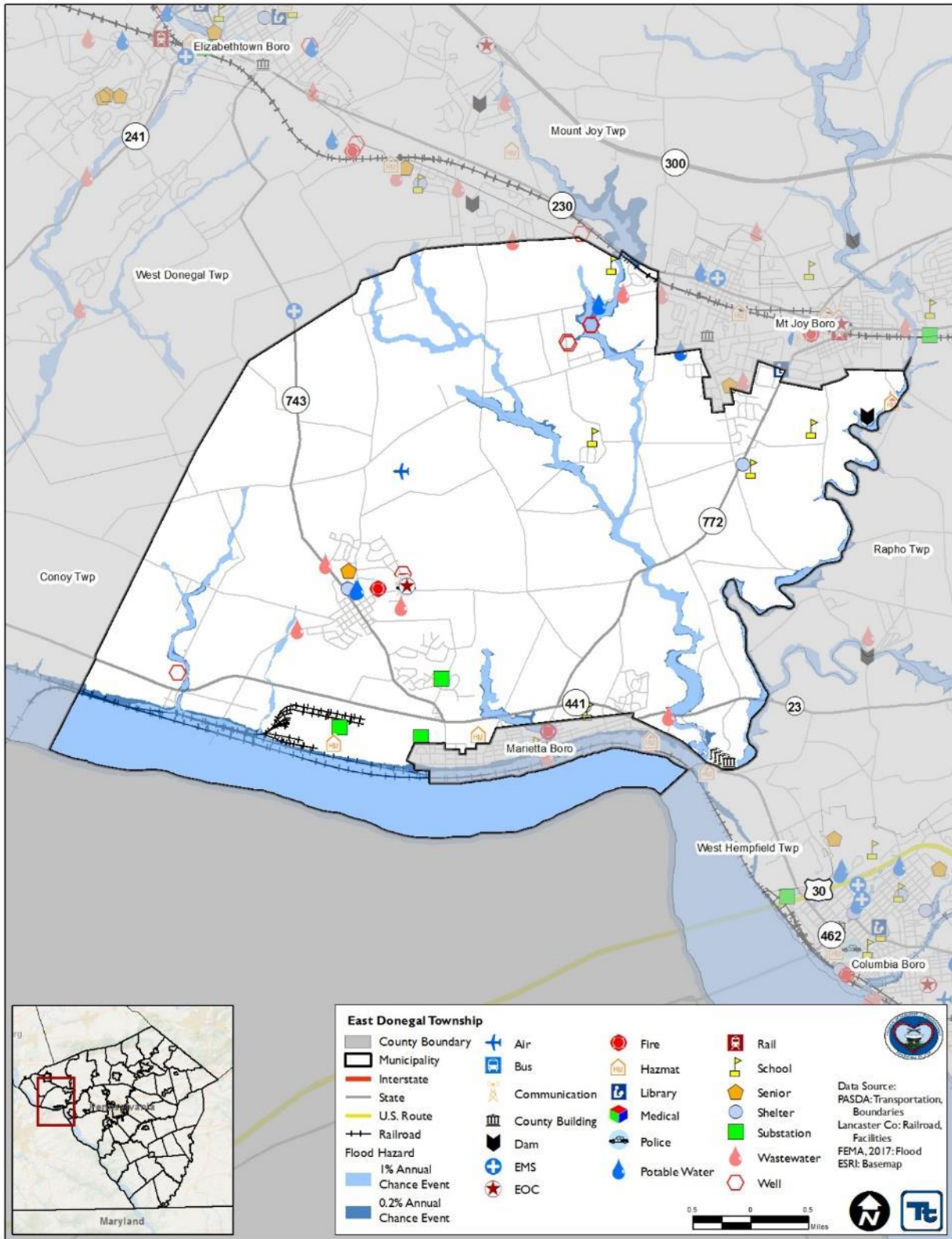


## East Cocalico Township





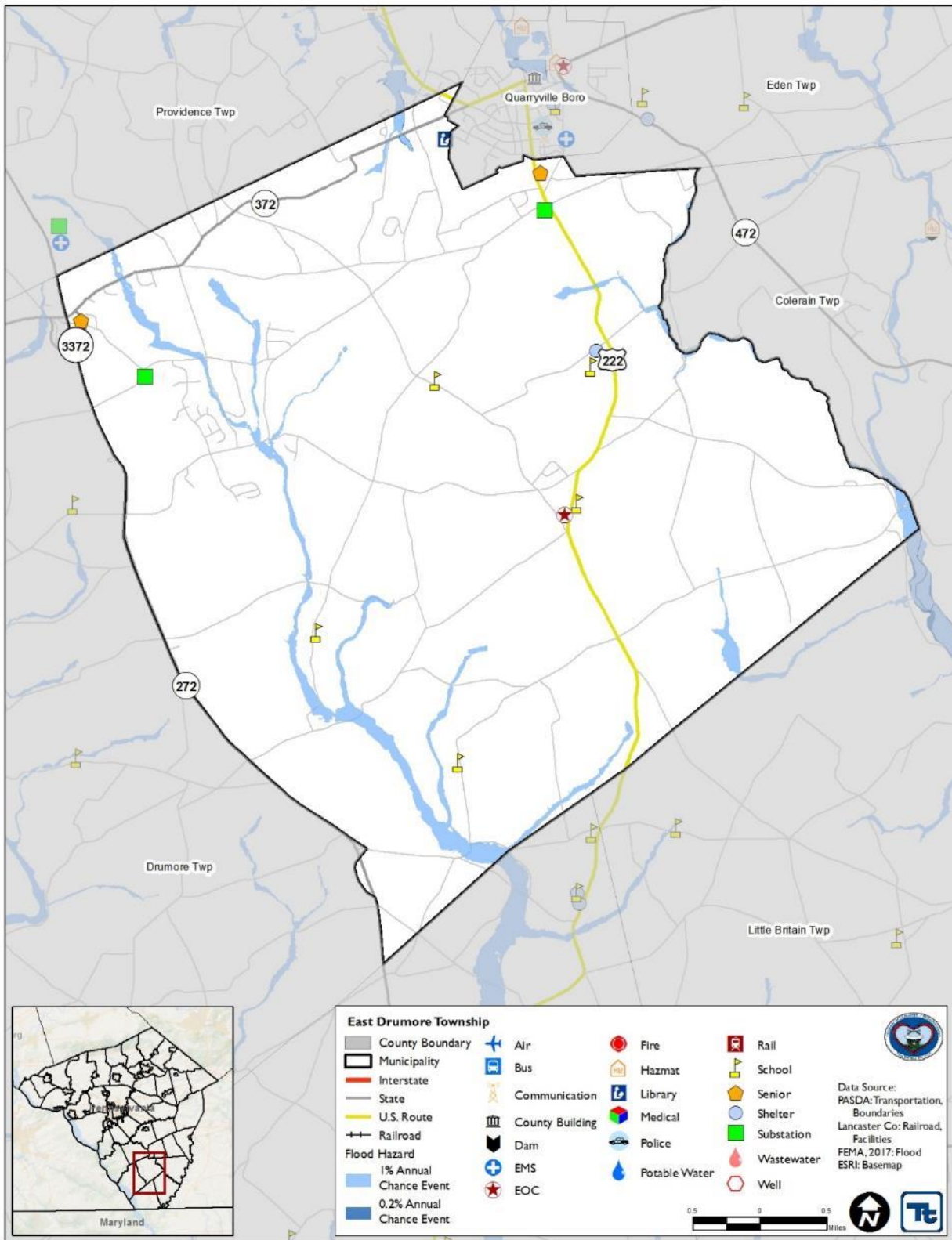
## East Donegal Township





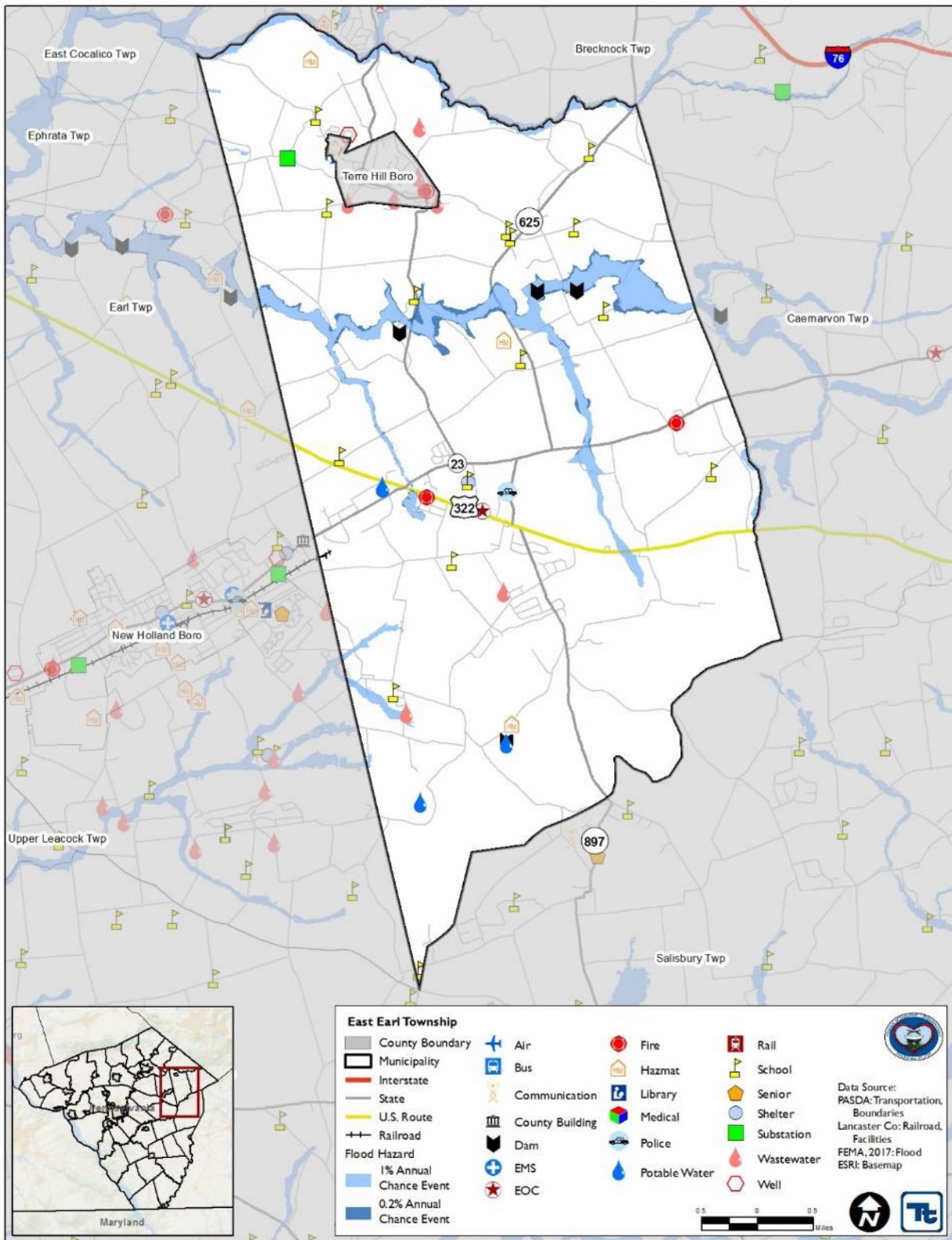


# East Drumore Township





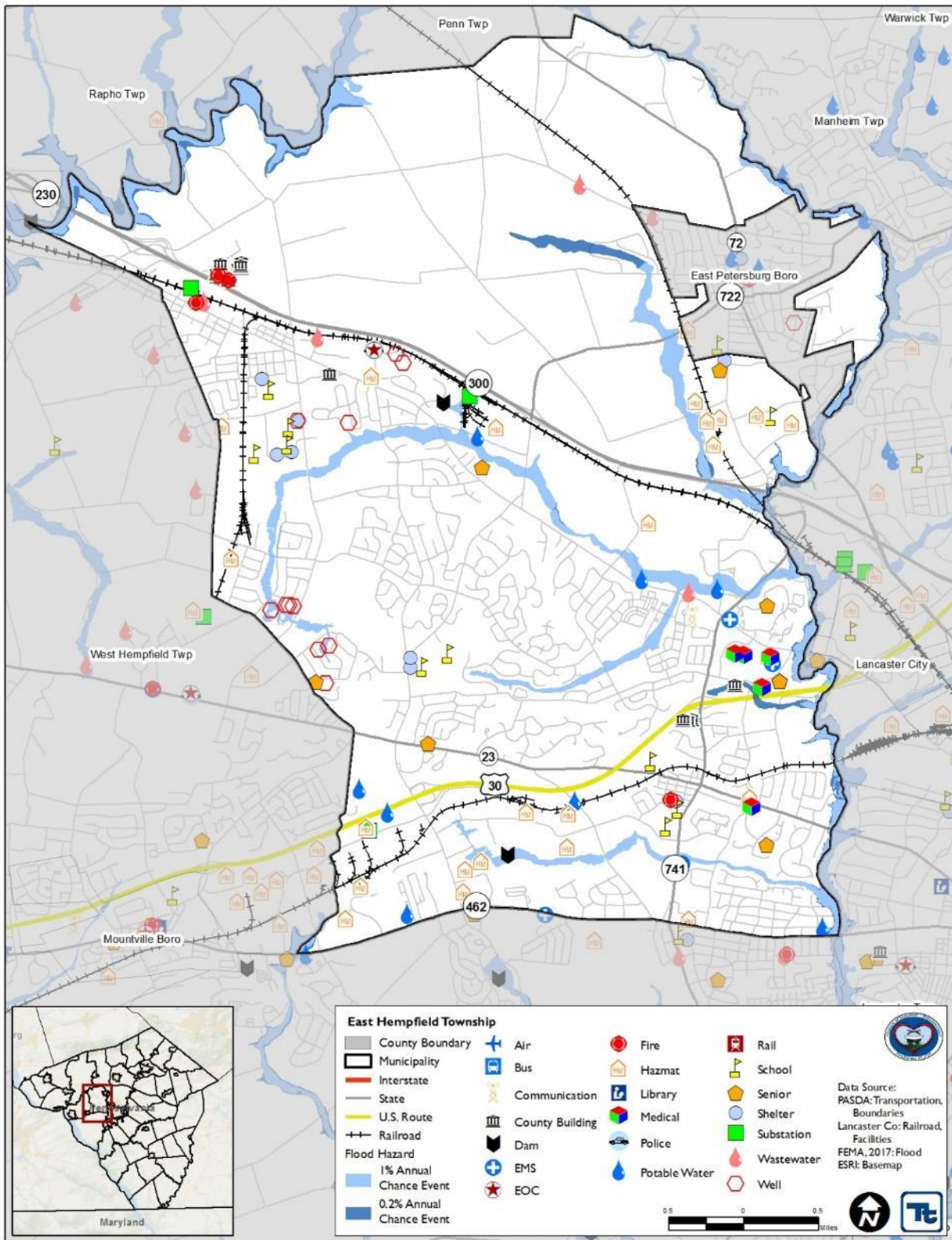
## East Earl Township







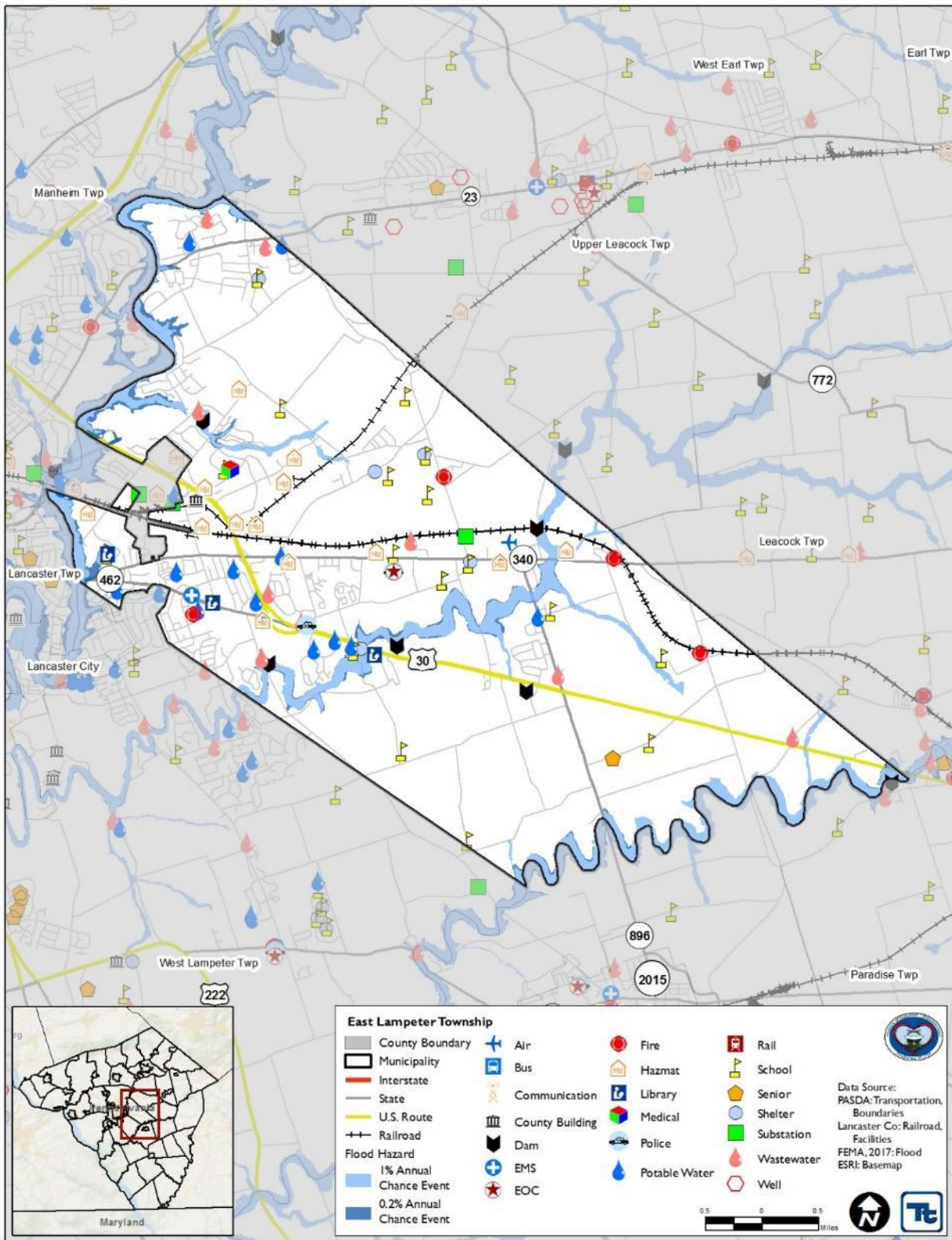
# East Hempfield Township





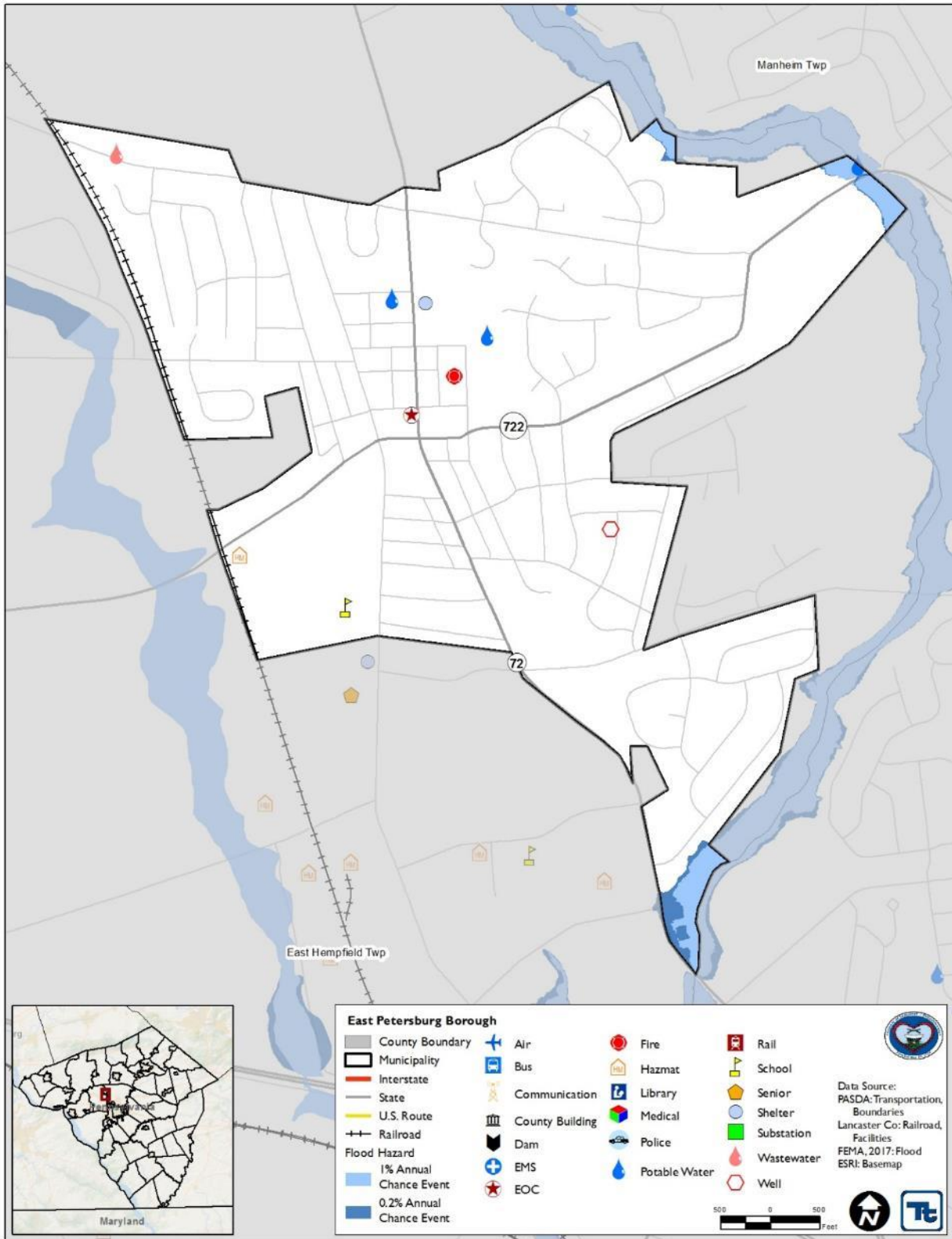


### East Lampeter Township



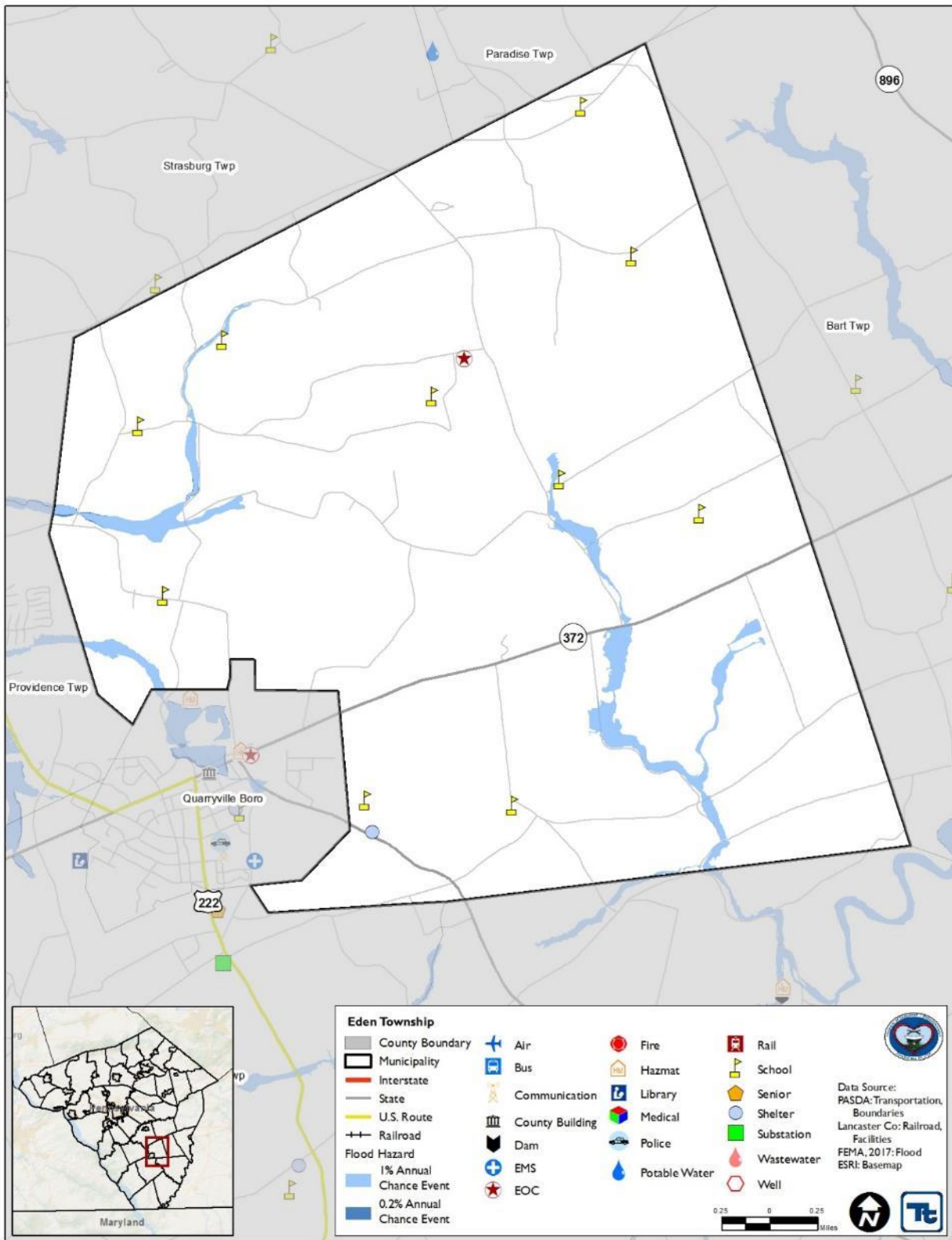


# East Petersburg Borough





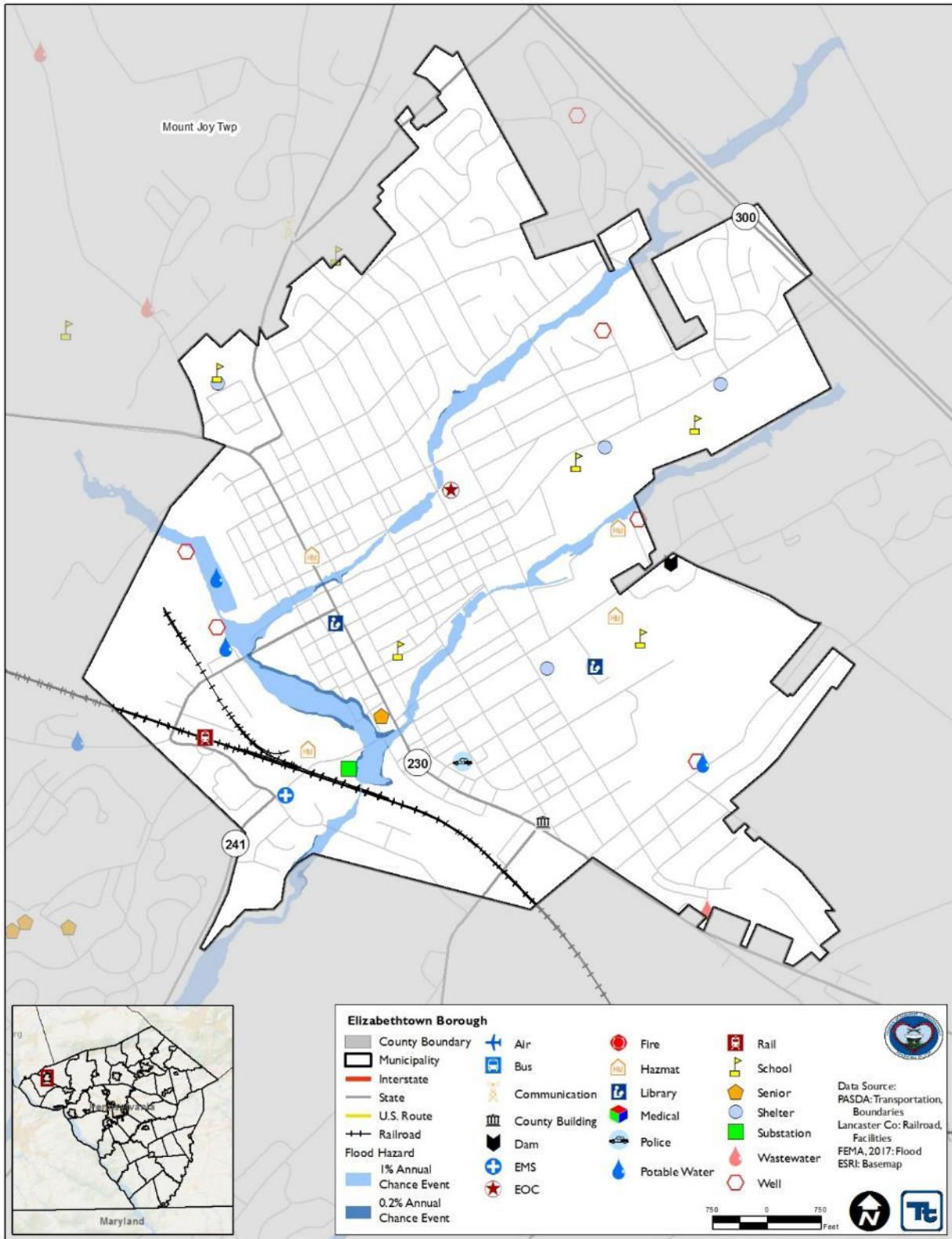
# Eden Township





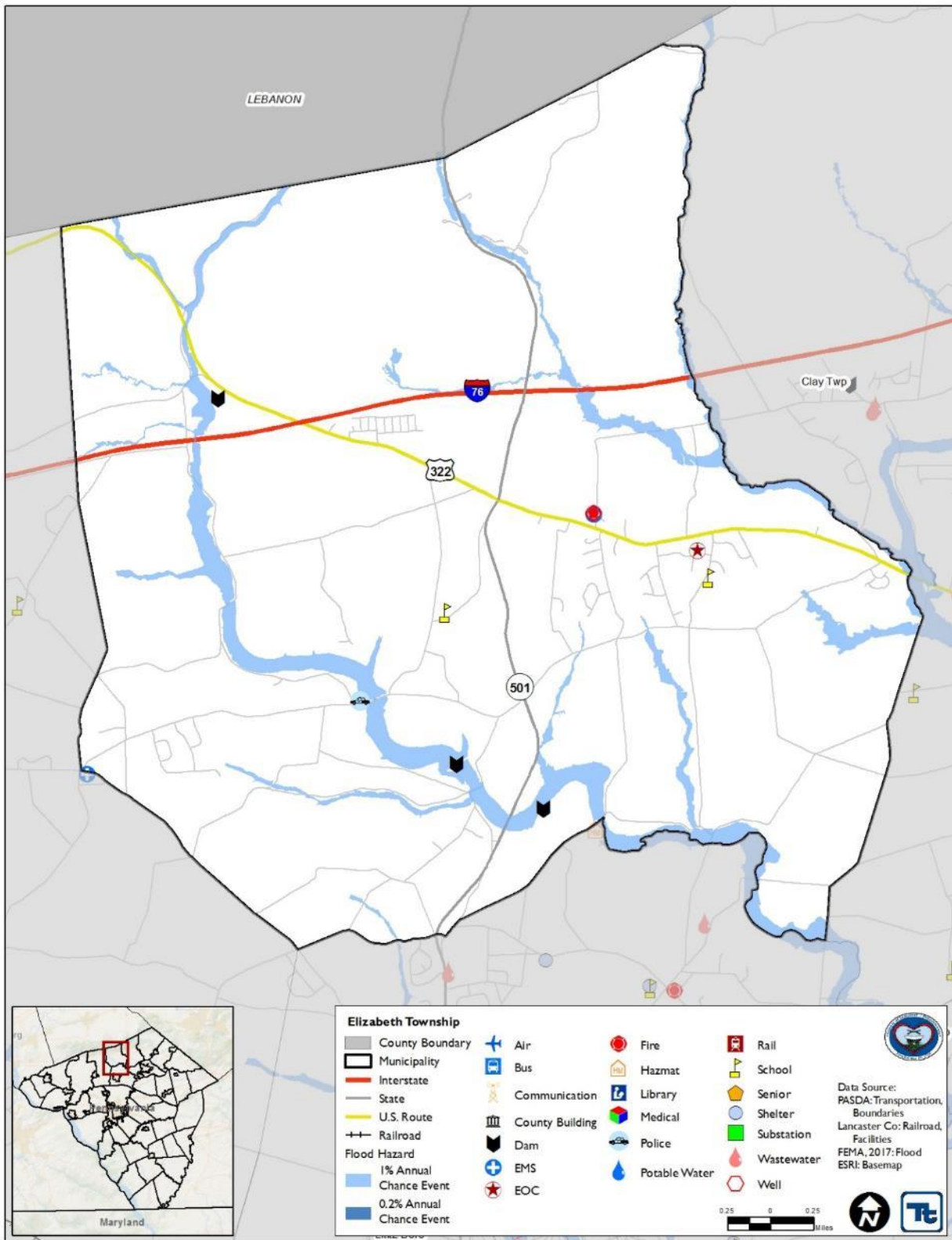


# Elizabeth Township





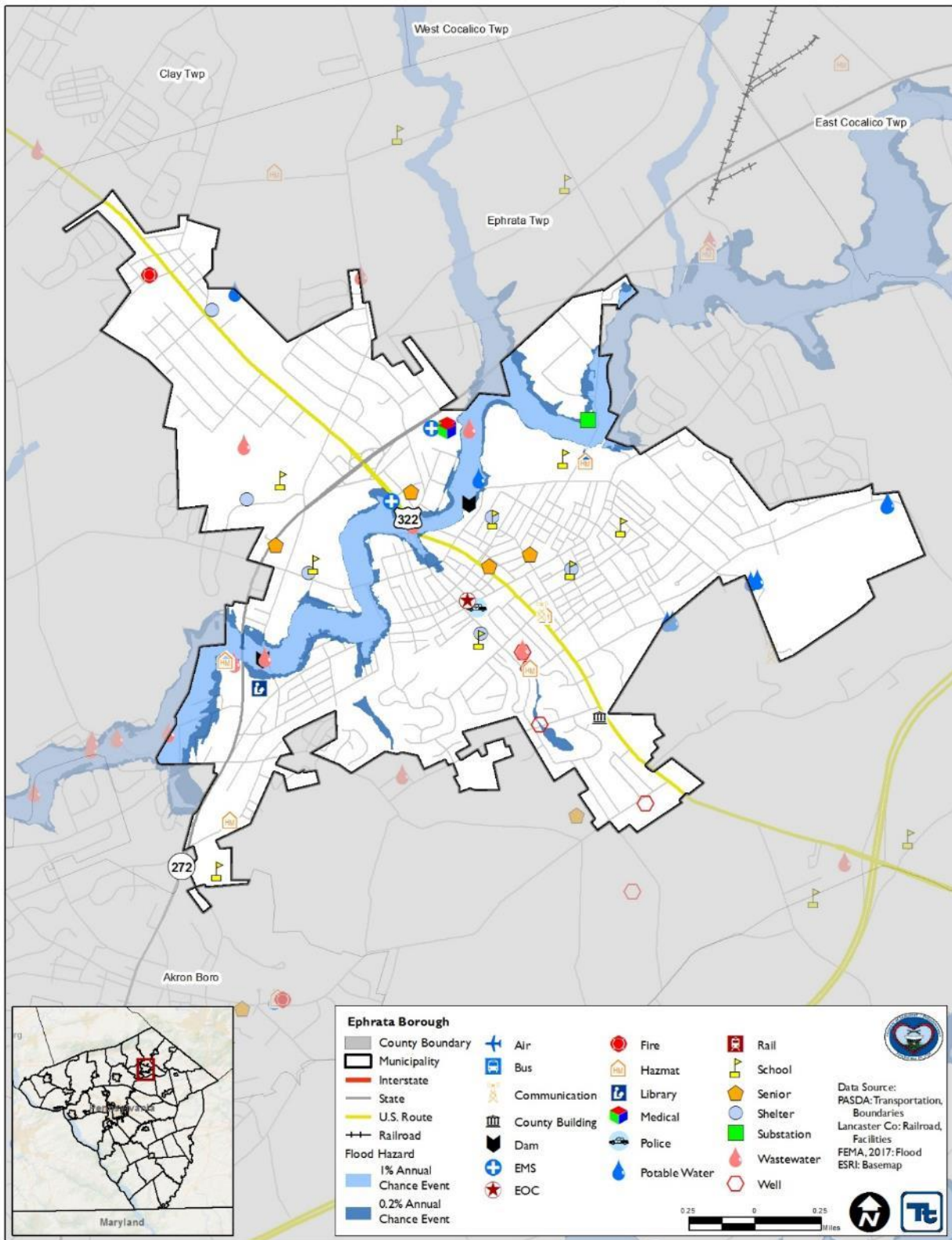
# Elizabethtown Borough





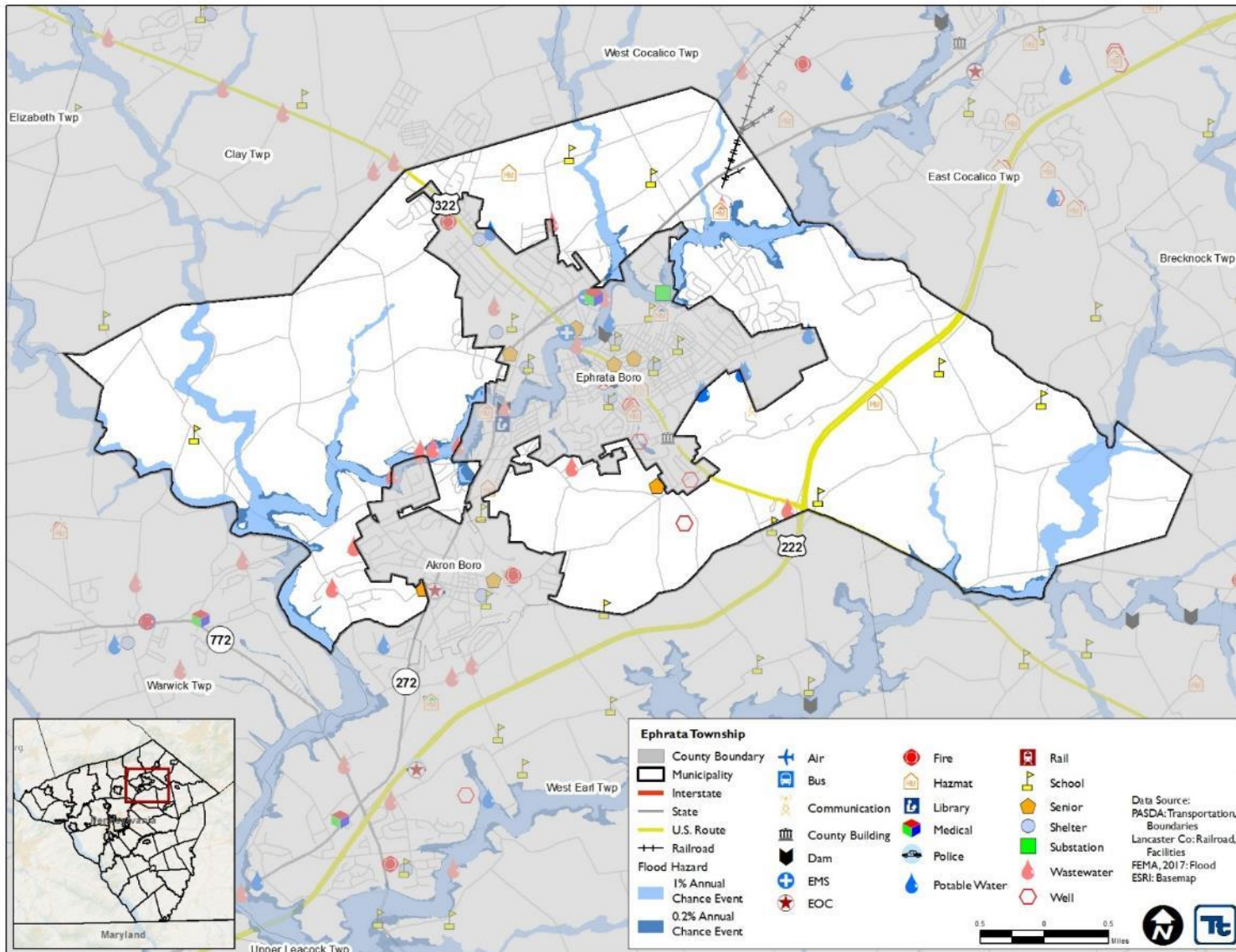


# Ephrata Borough





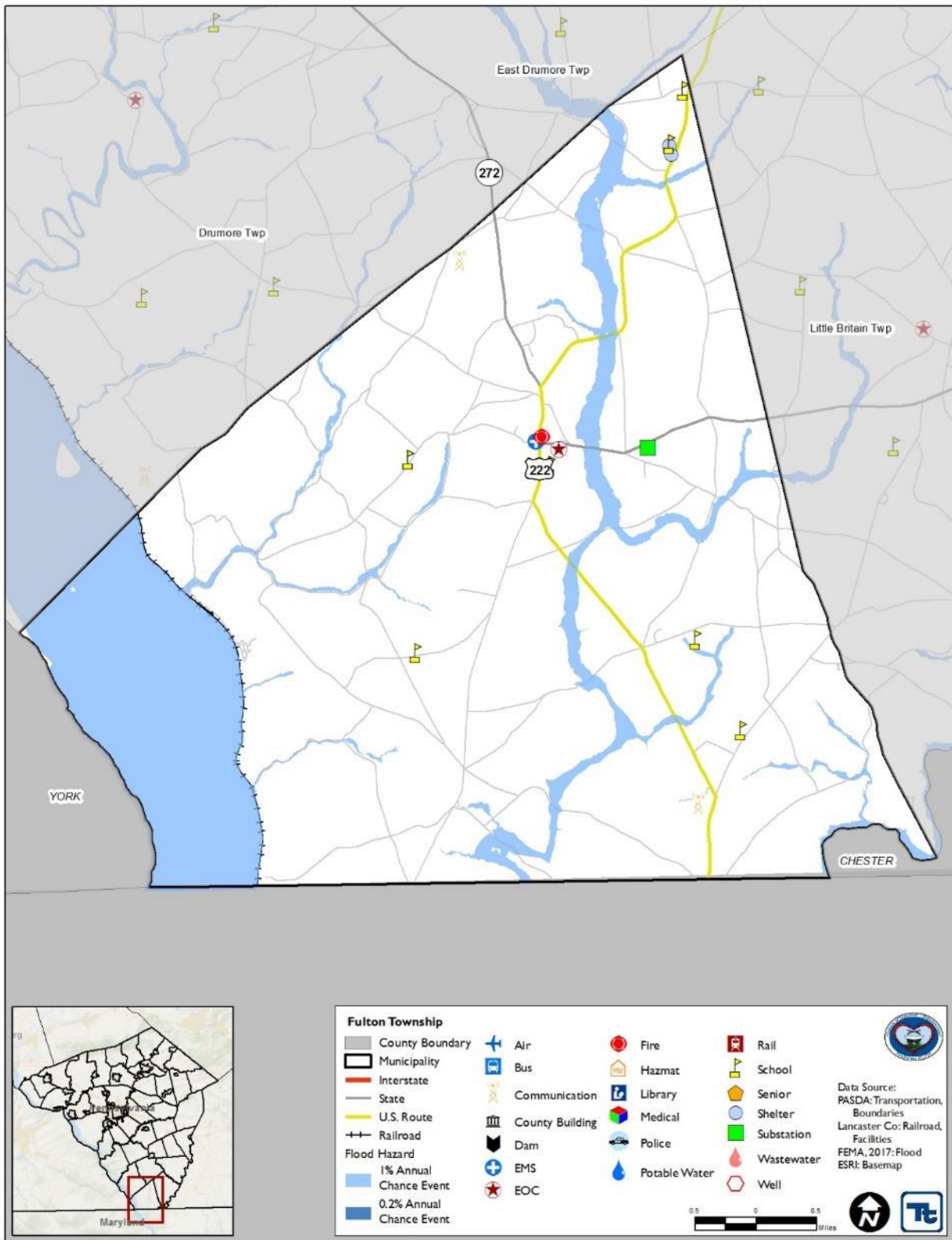
# Ephrata Township





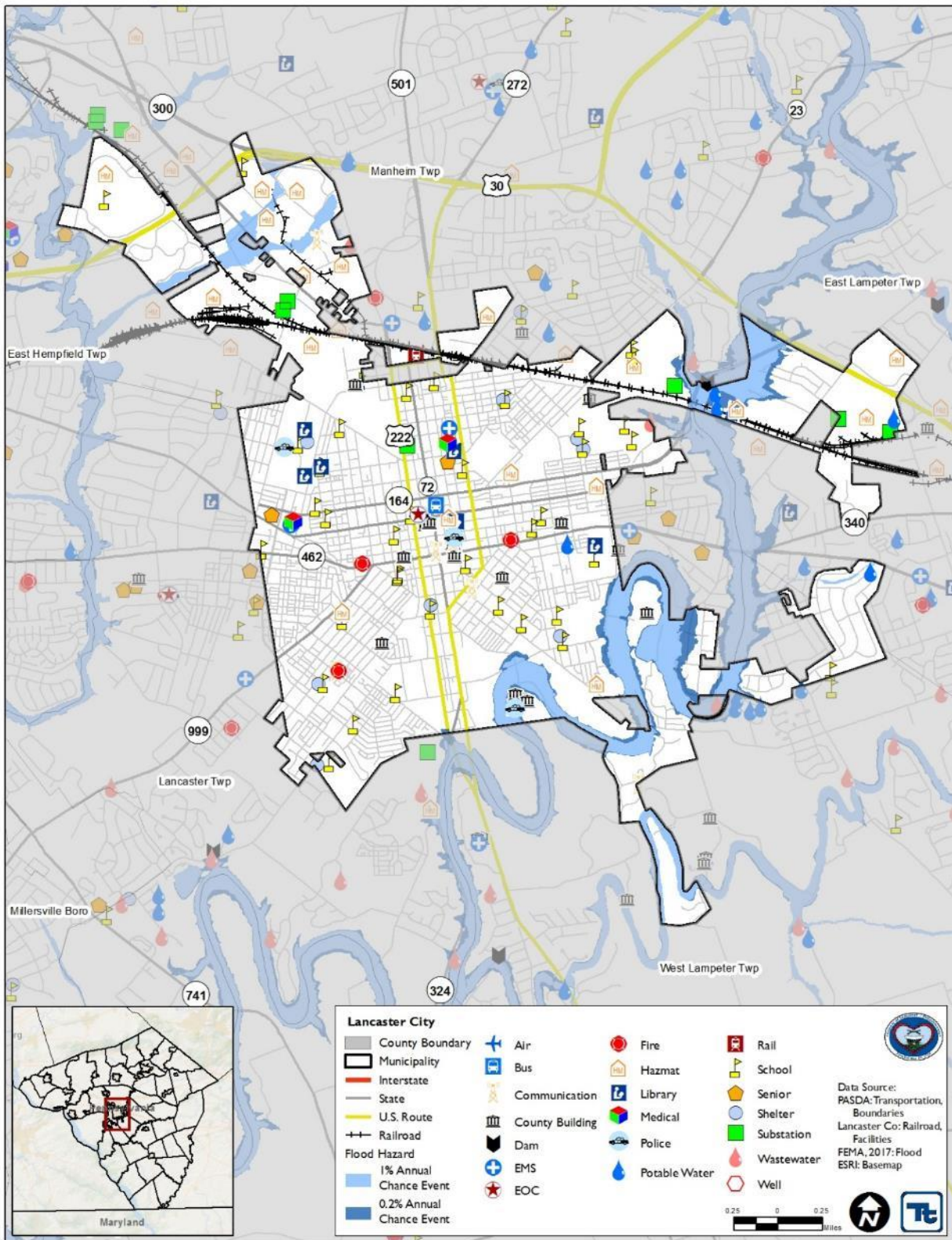


## Fulton Township





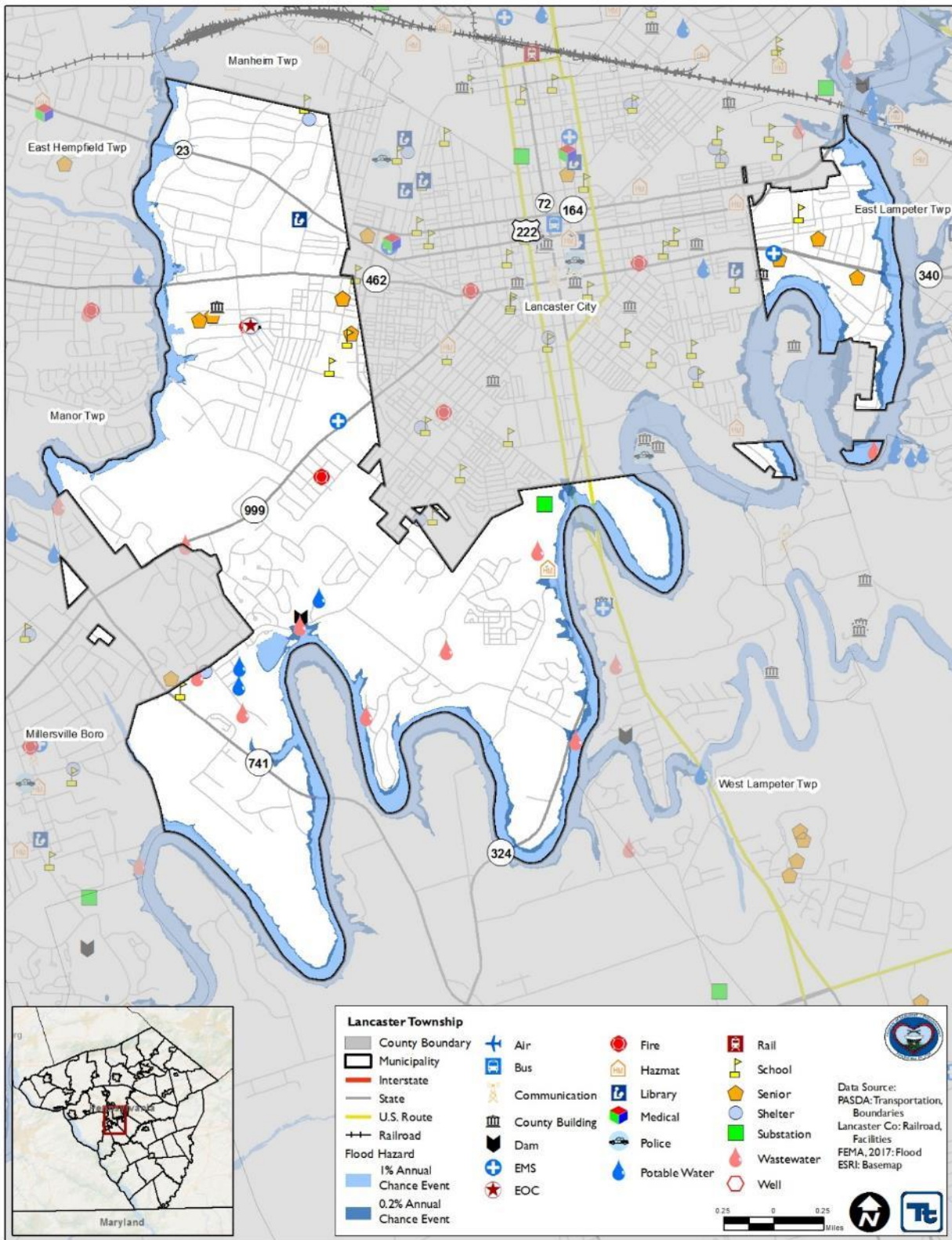
## Lancaster City







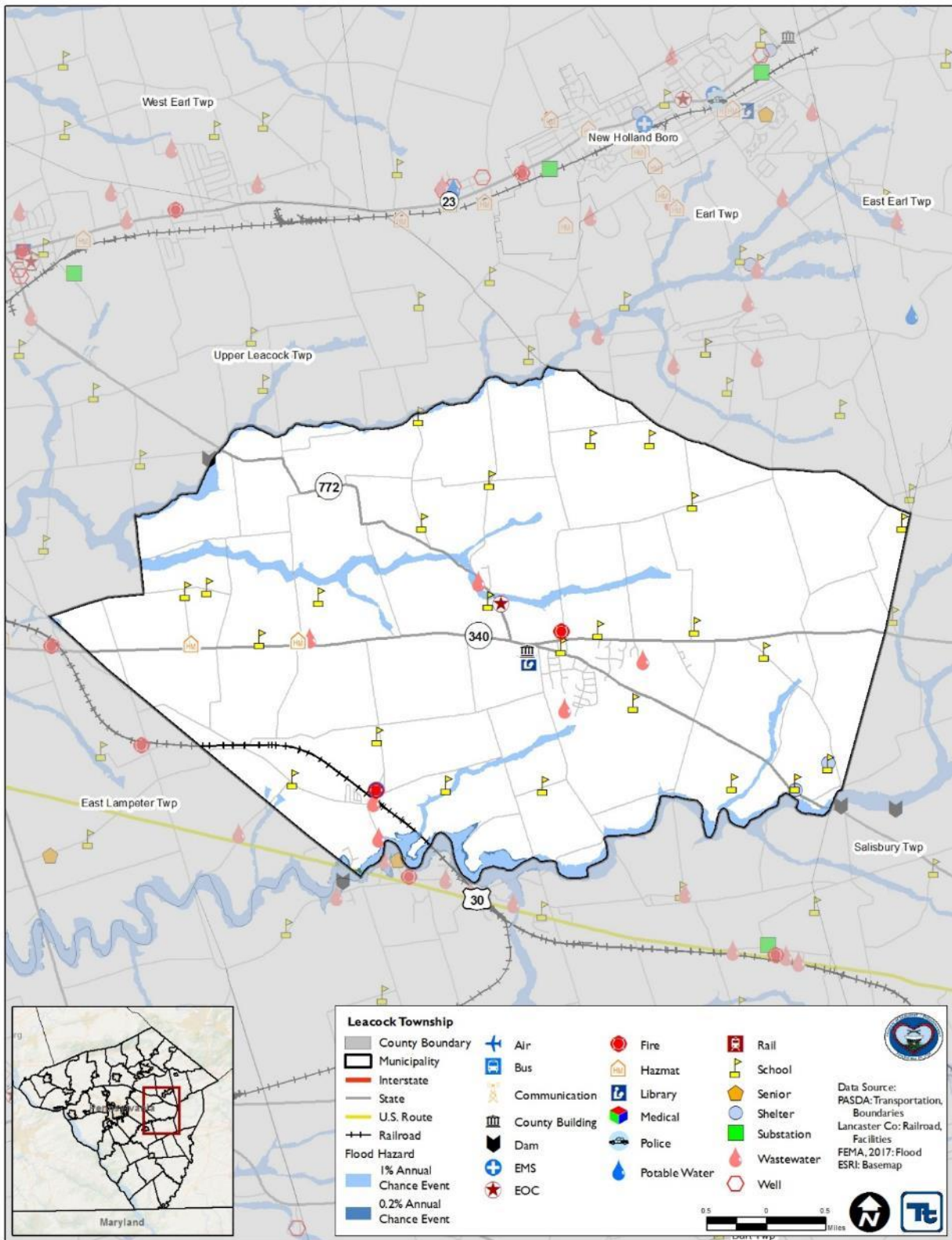
# Lancaster Township





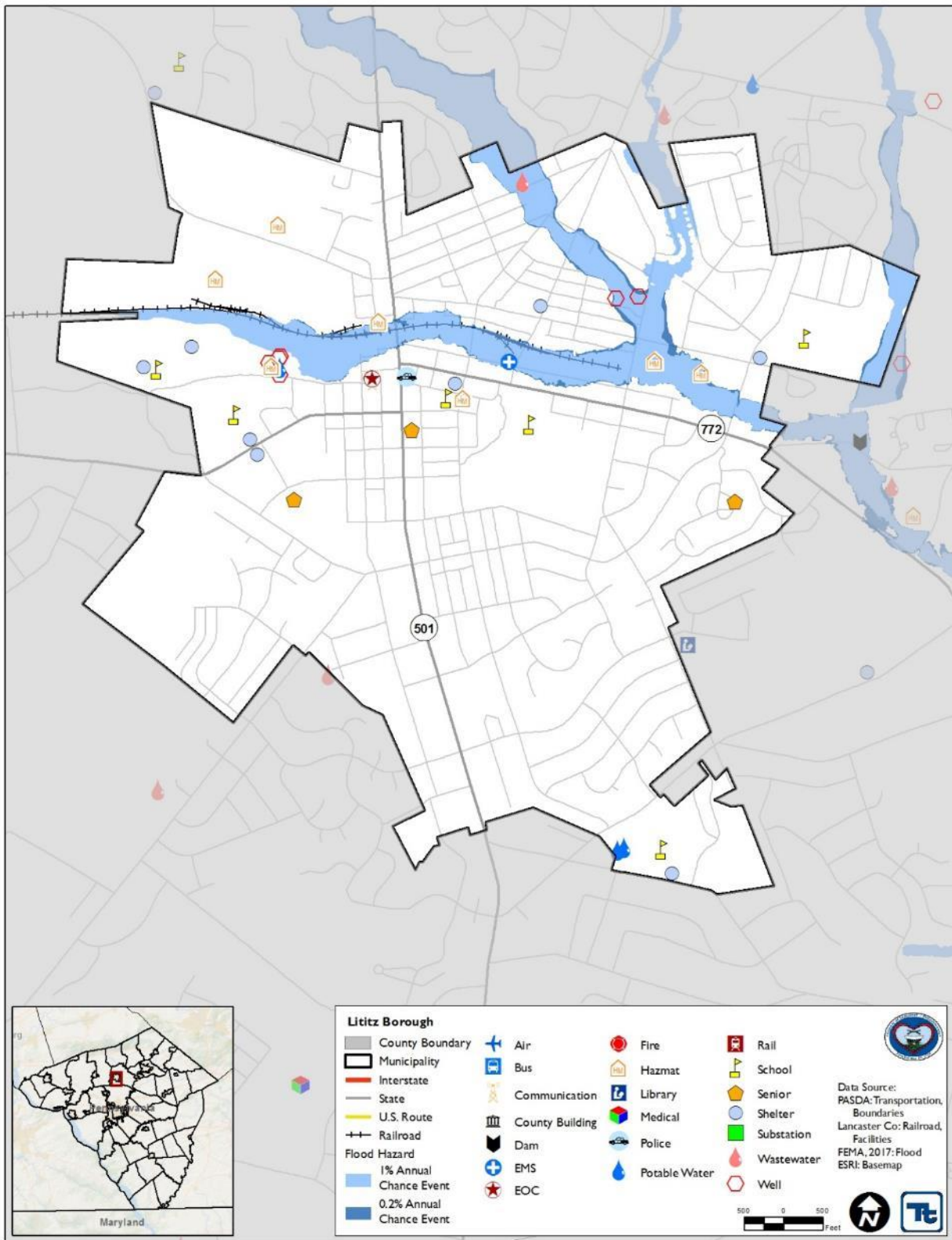


# Leacock Township



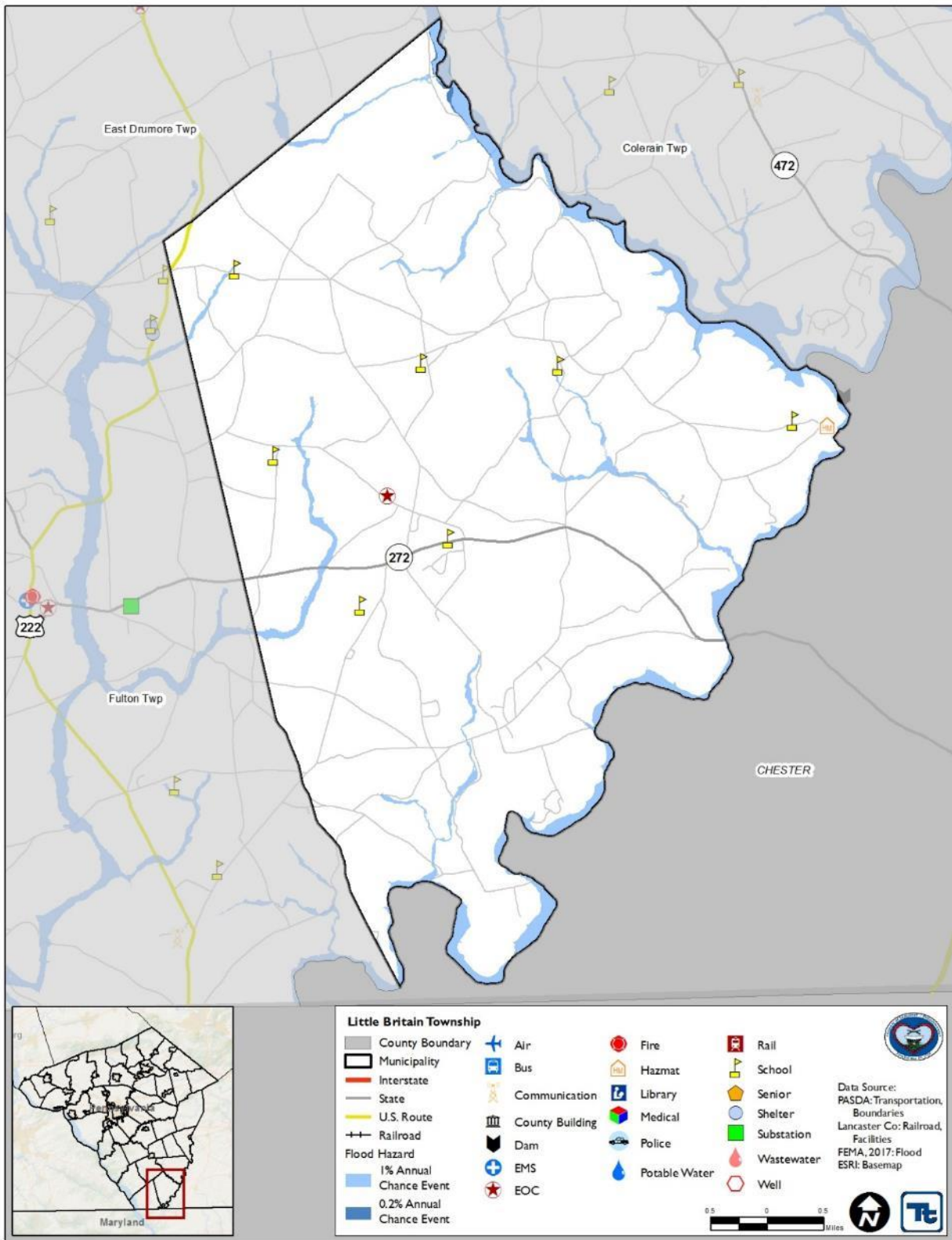


## Lititz Borough





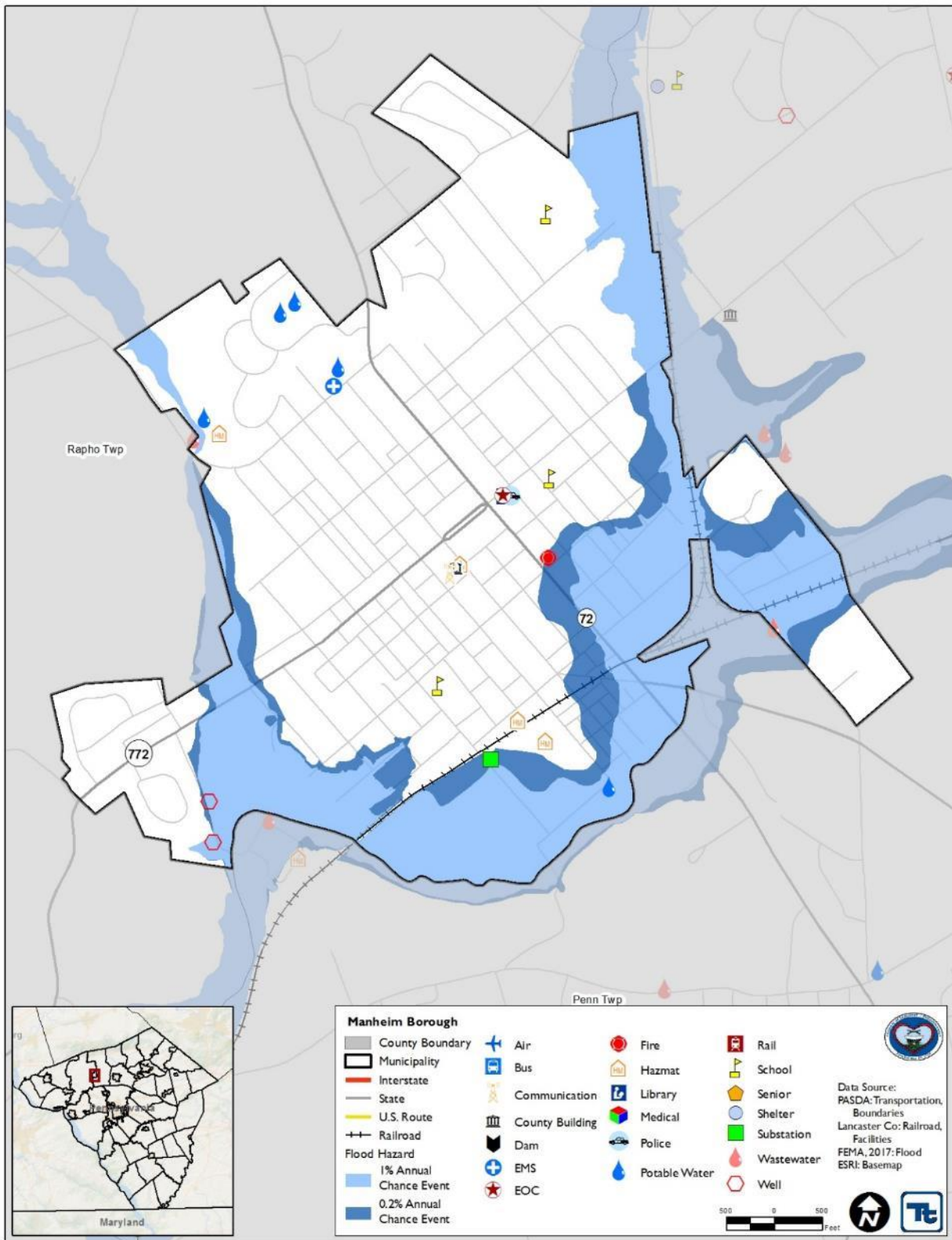
## Little Britain Township





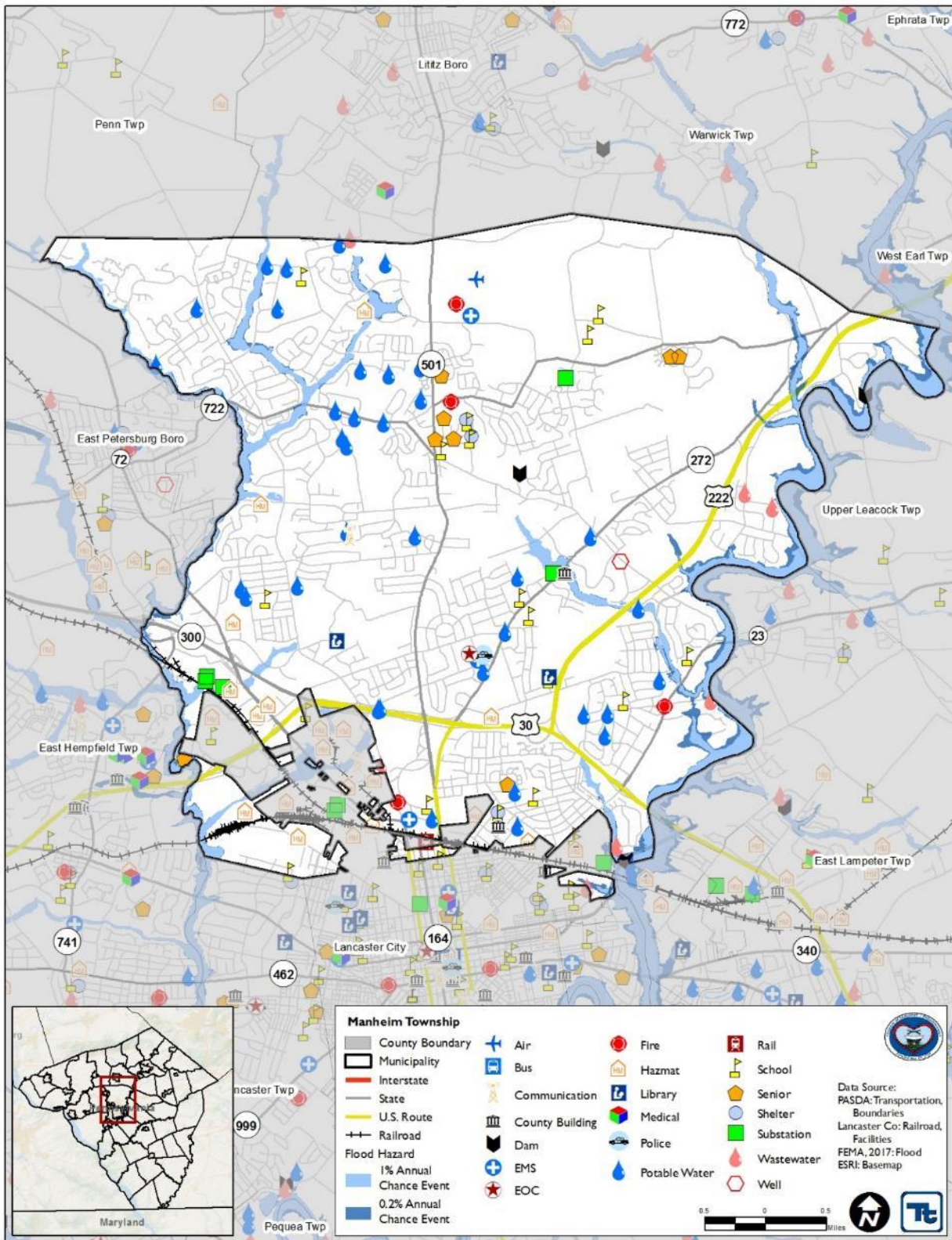


## Manheim Borough





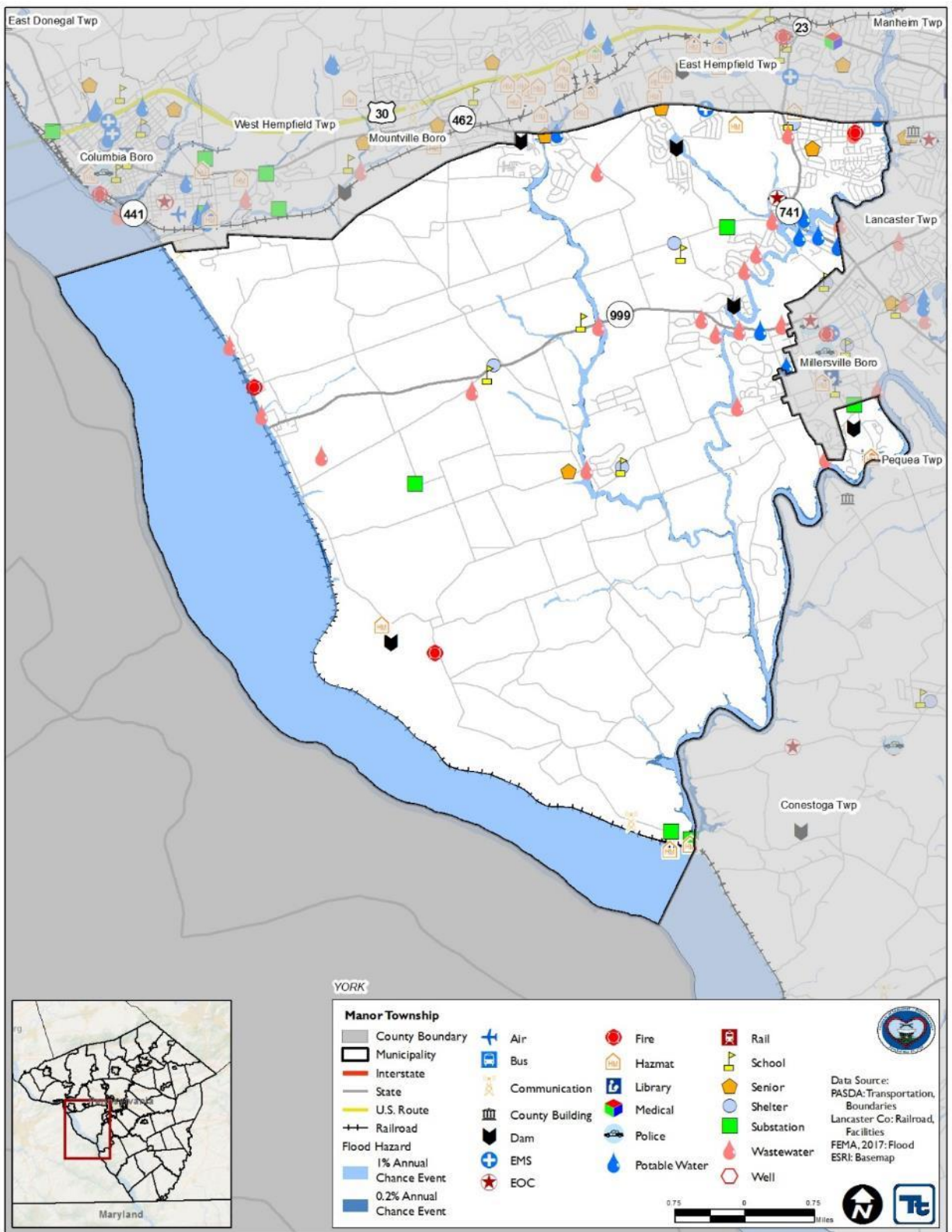
# Manheim Township





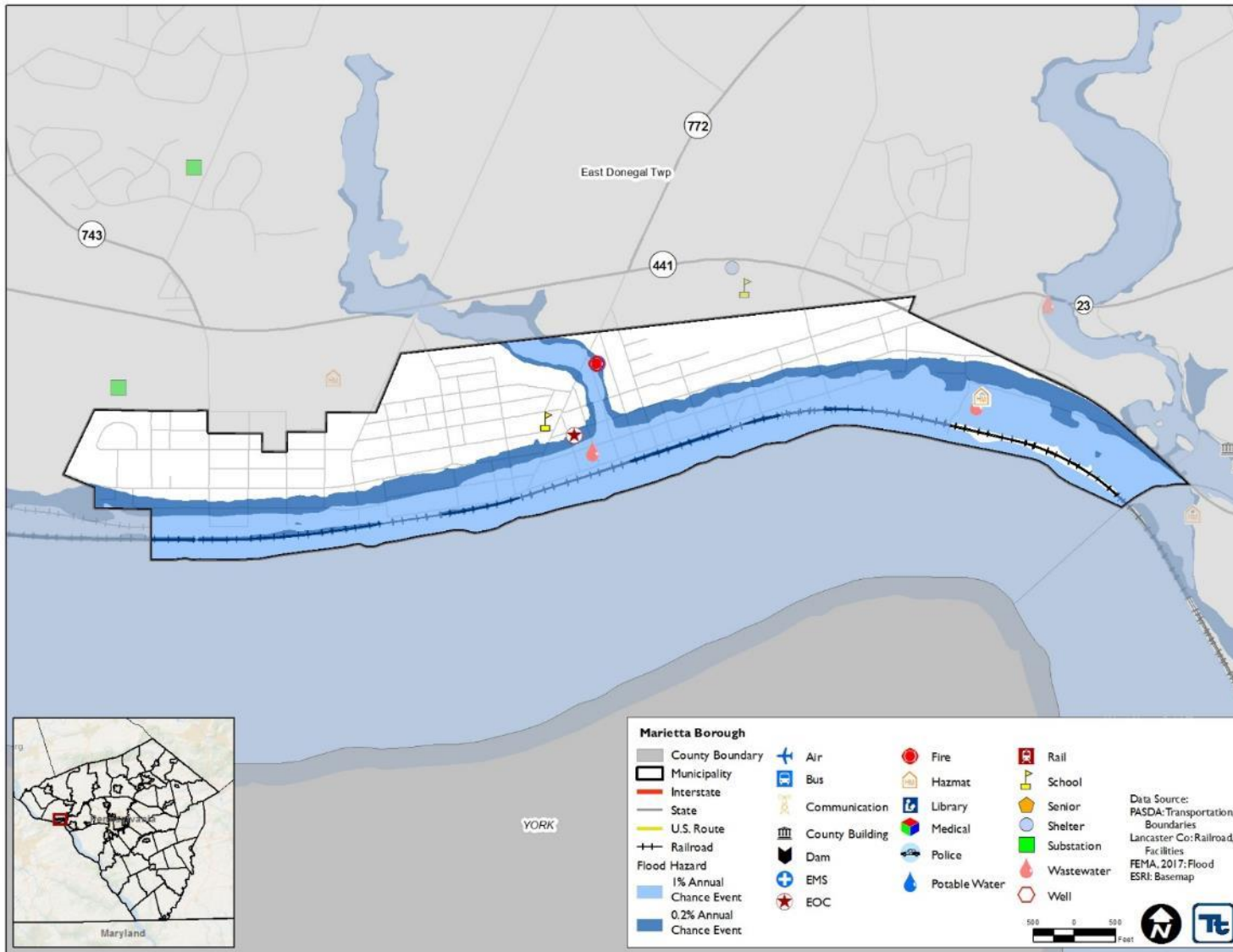


## Manor Township



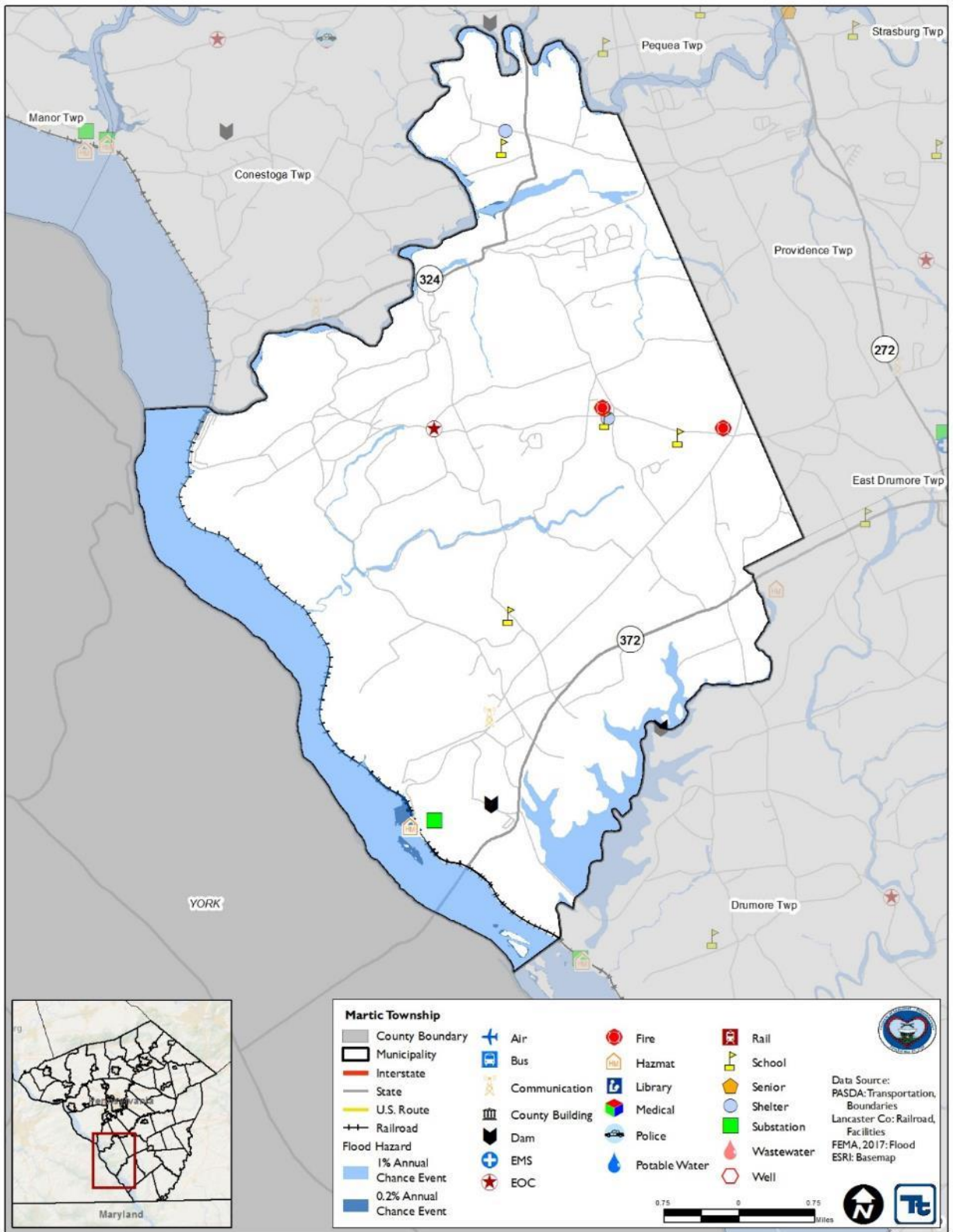


## Marietta Borough





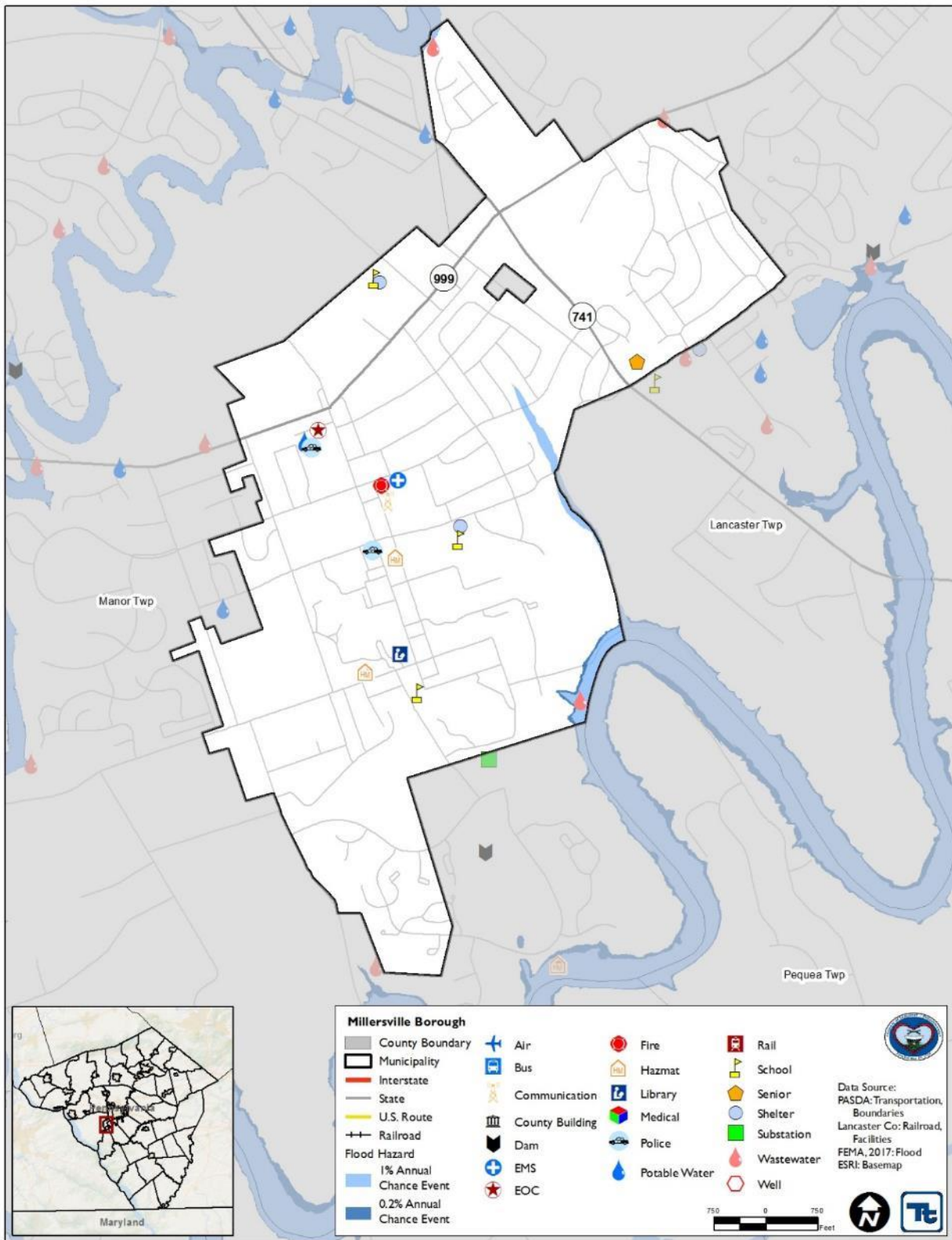
## Martic Township





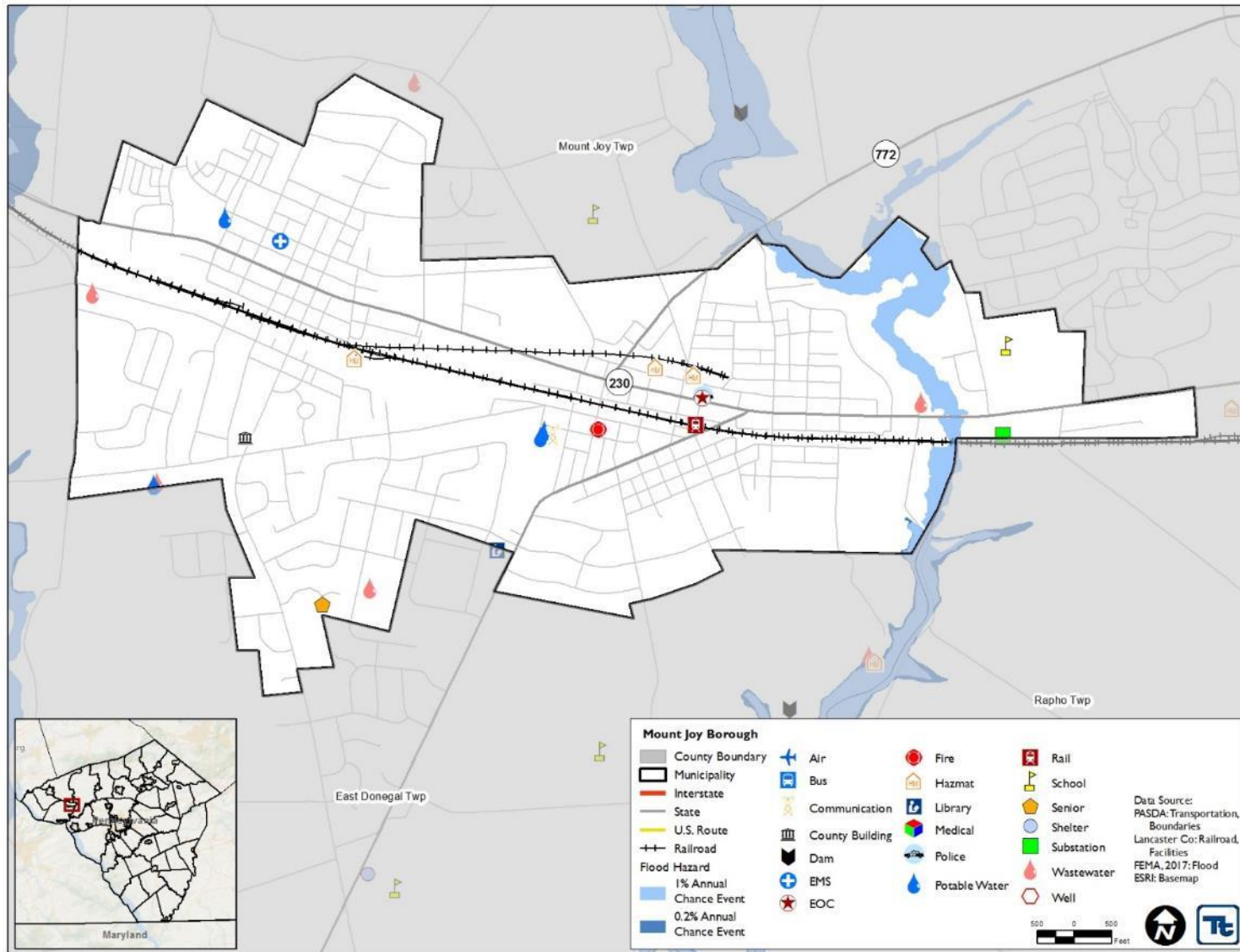


# Millersville Borough





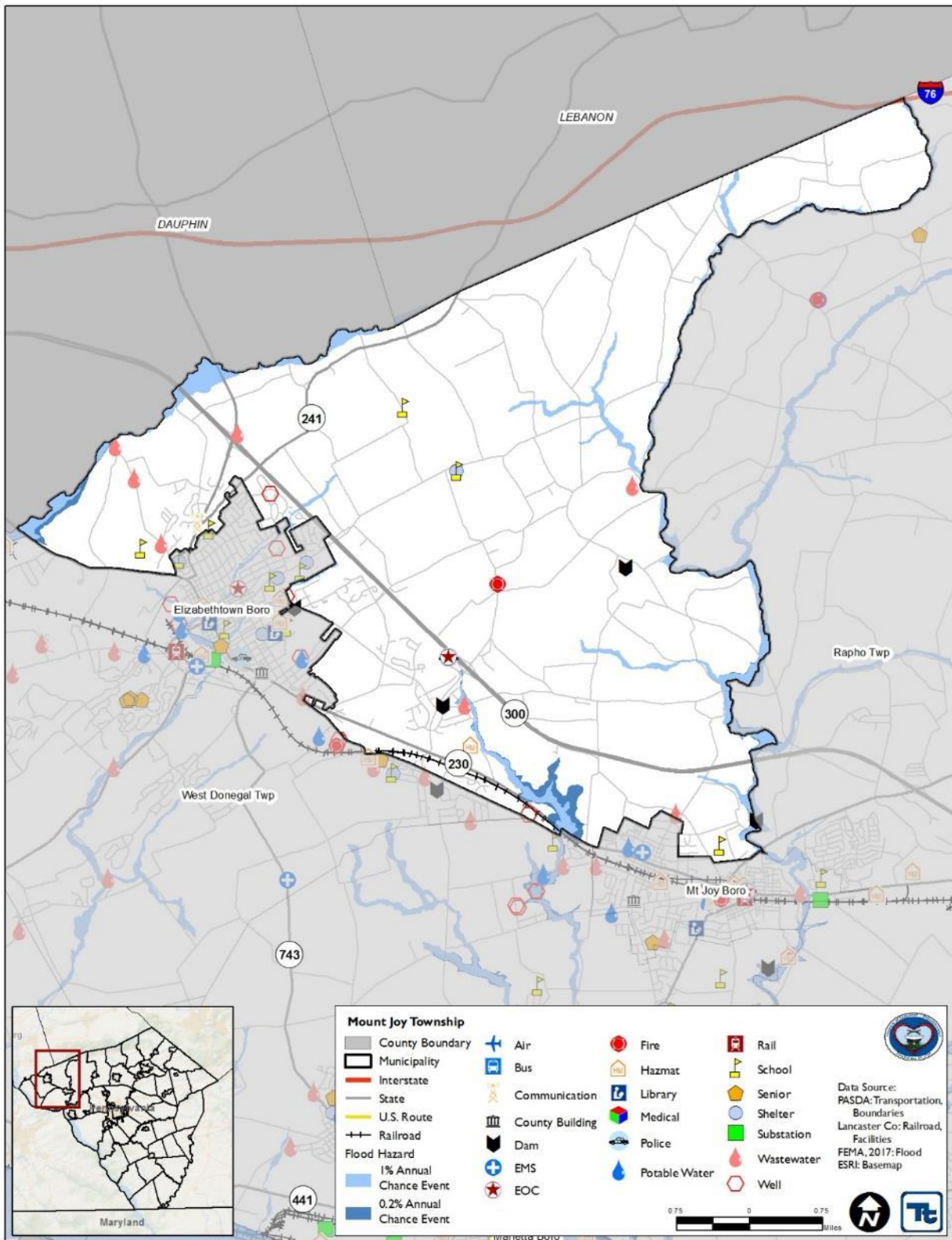
# Mount Joy Borough





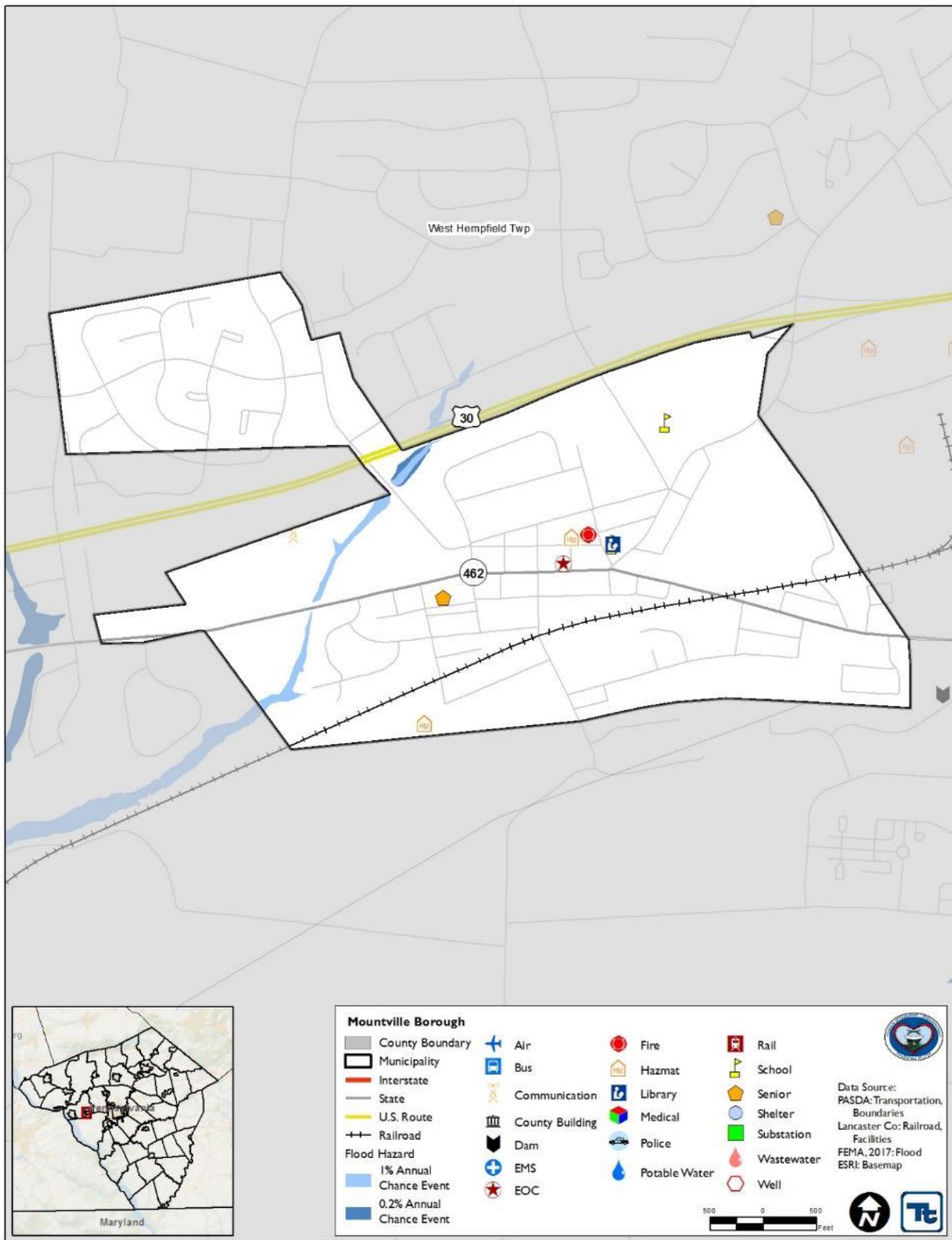


# Mount Joy Township



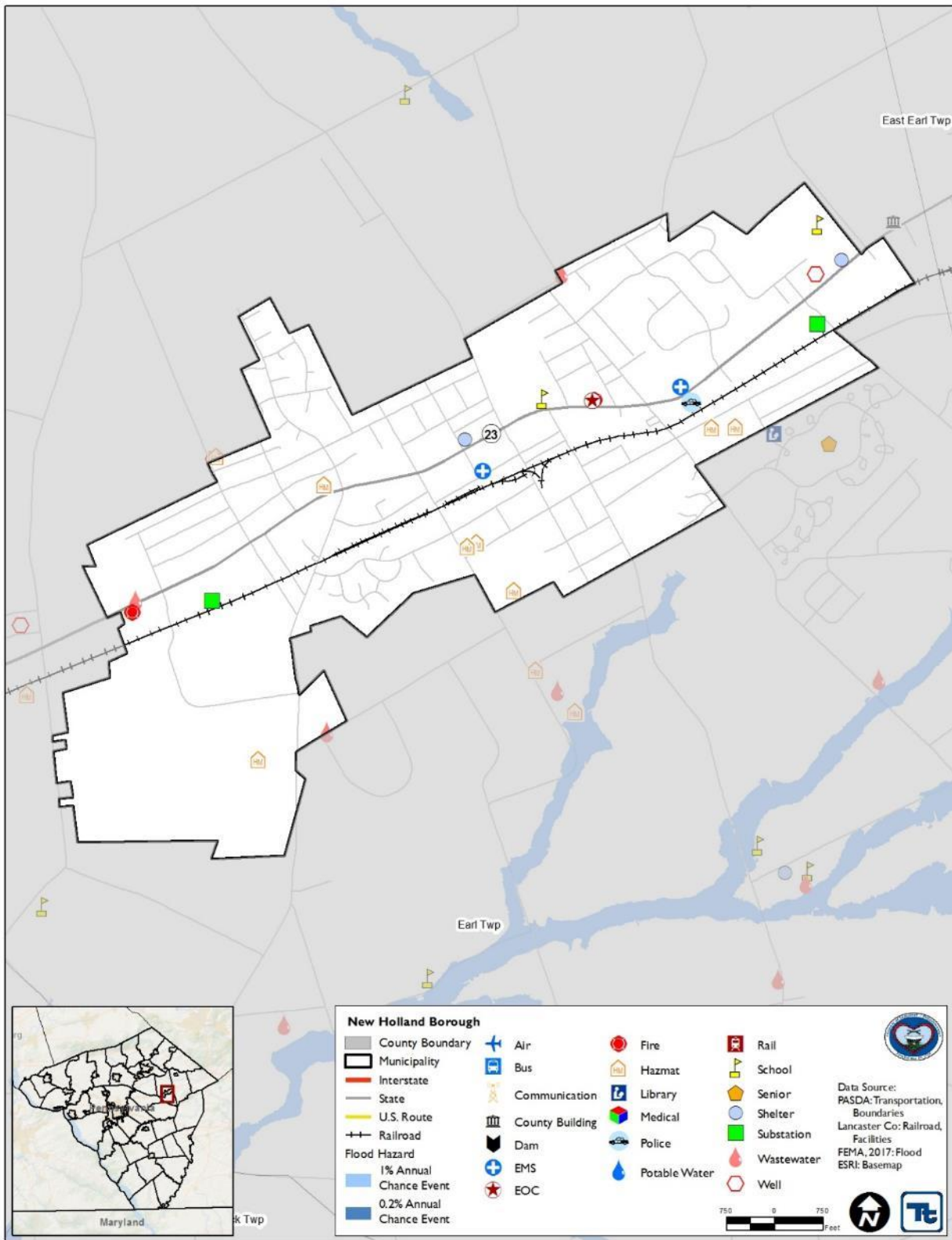


## Mountville Borough





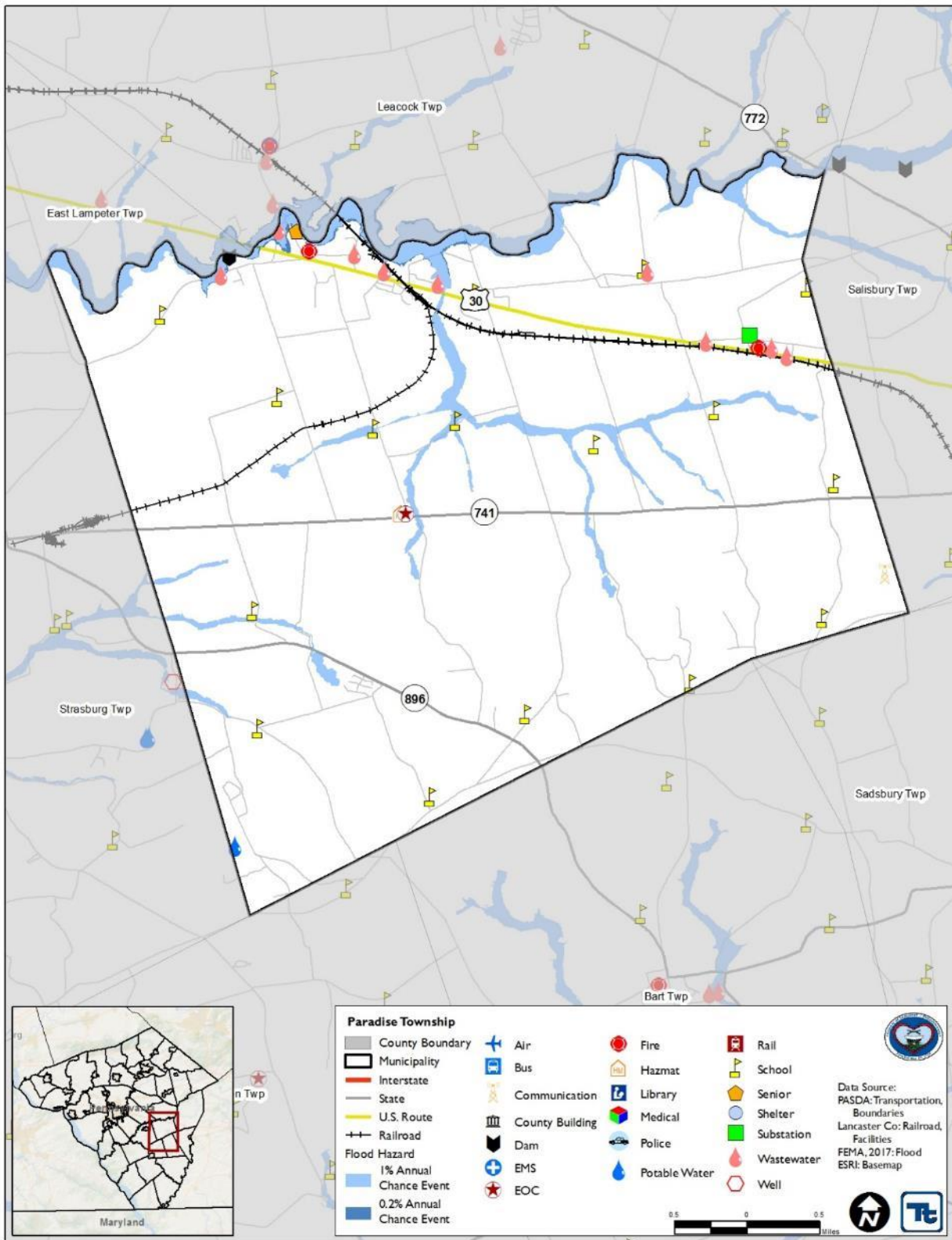
## New Holland Borough







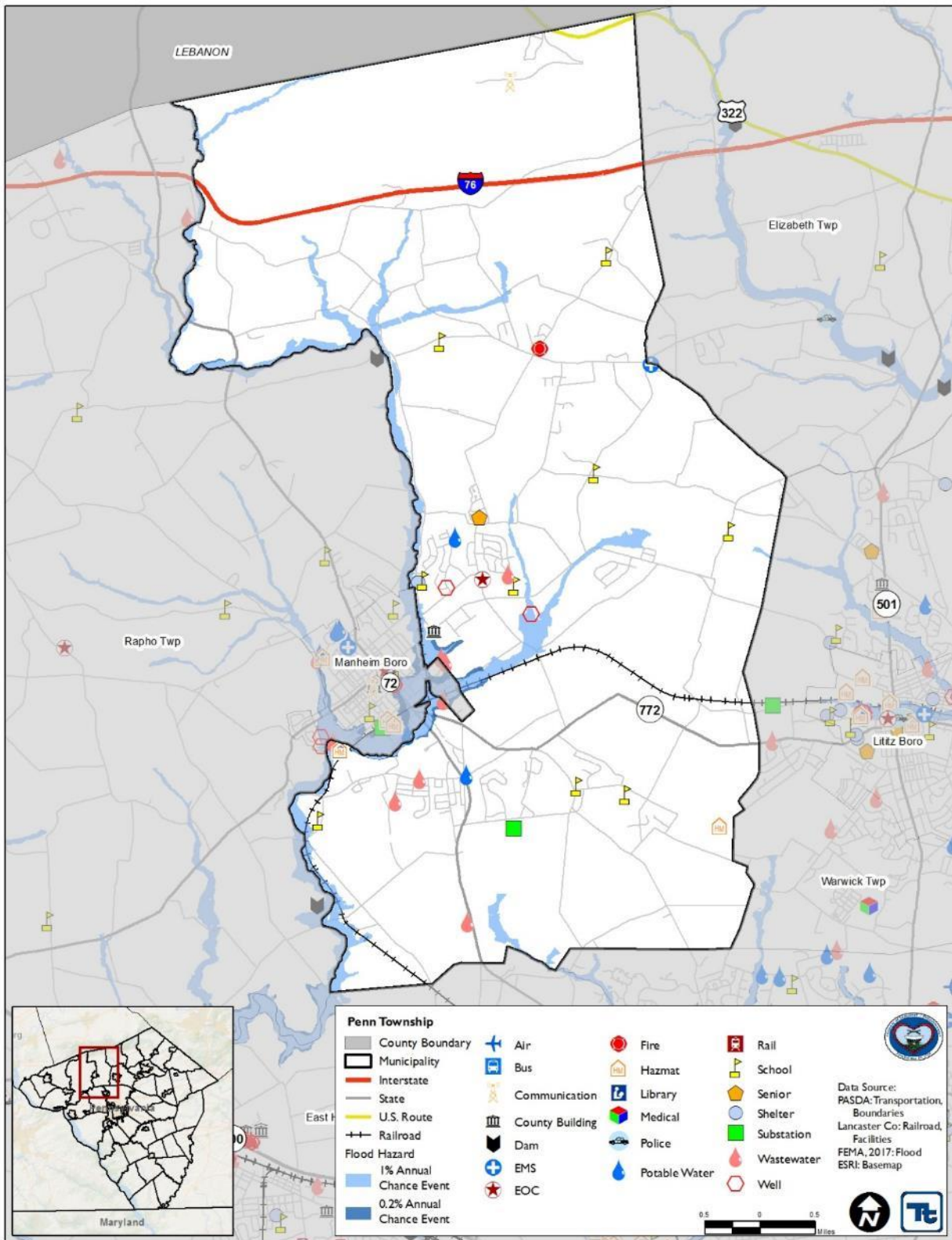
# Paradise Township





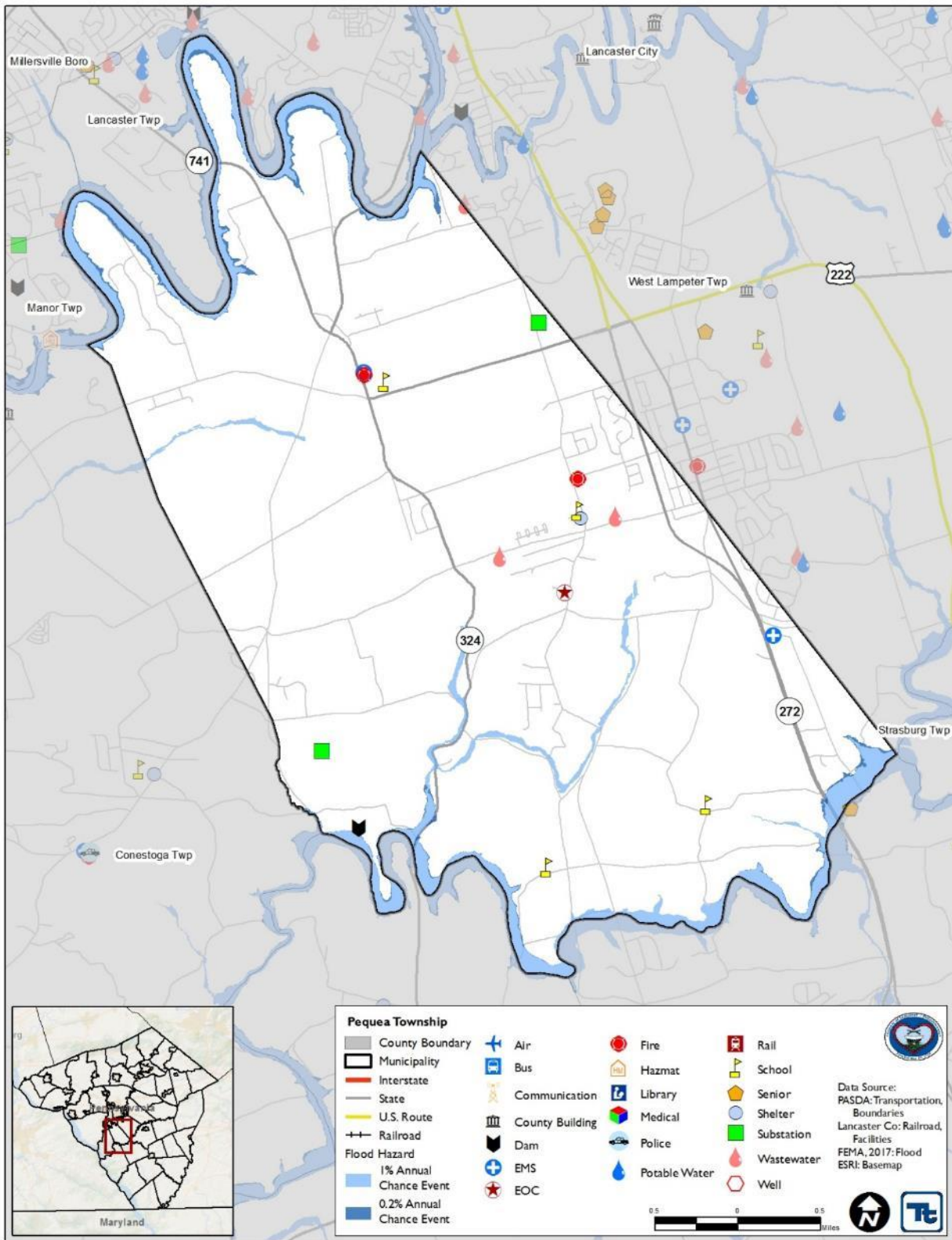


# Penn Township





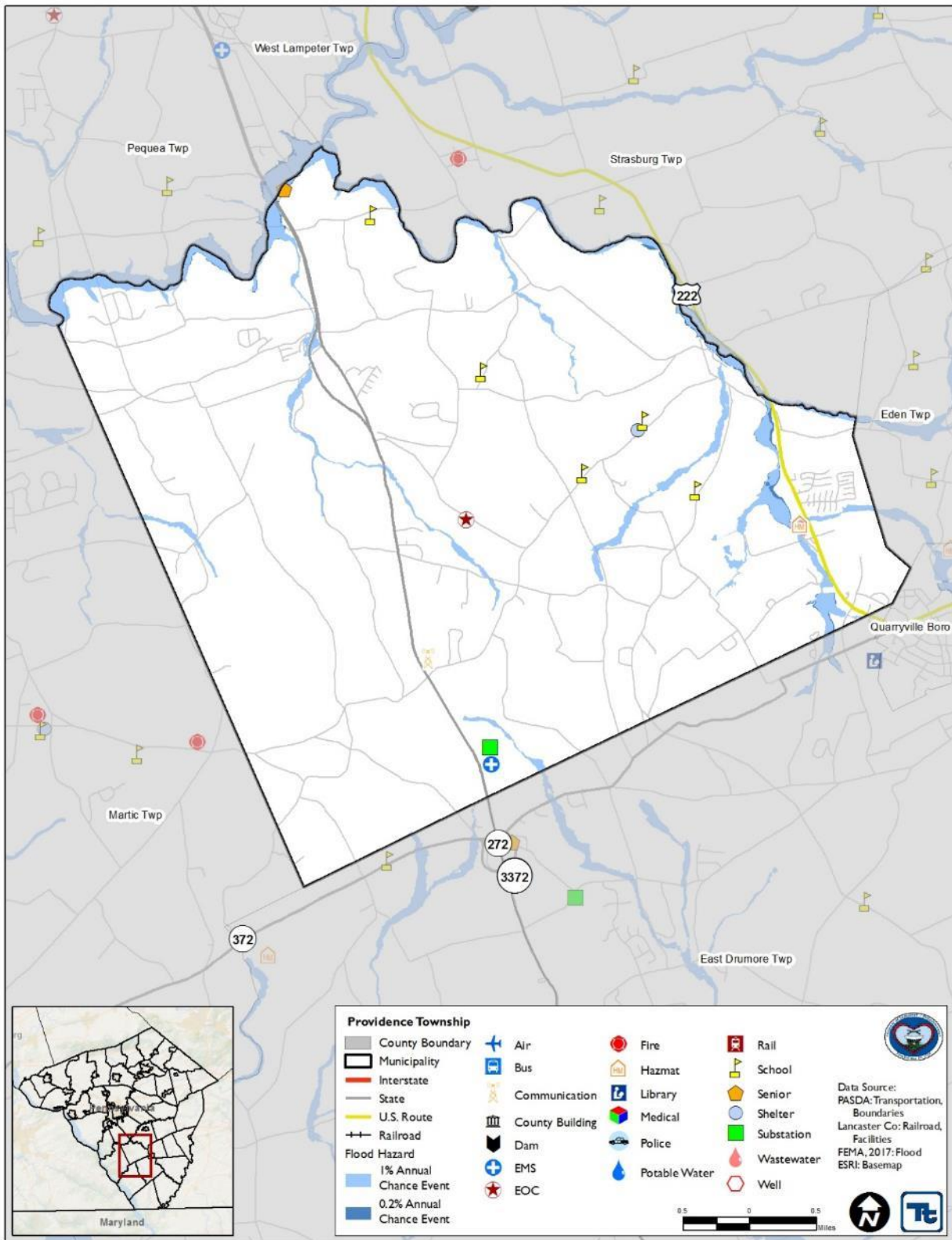
## Pequea Township





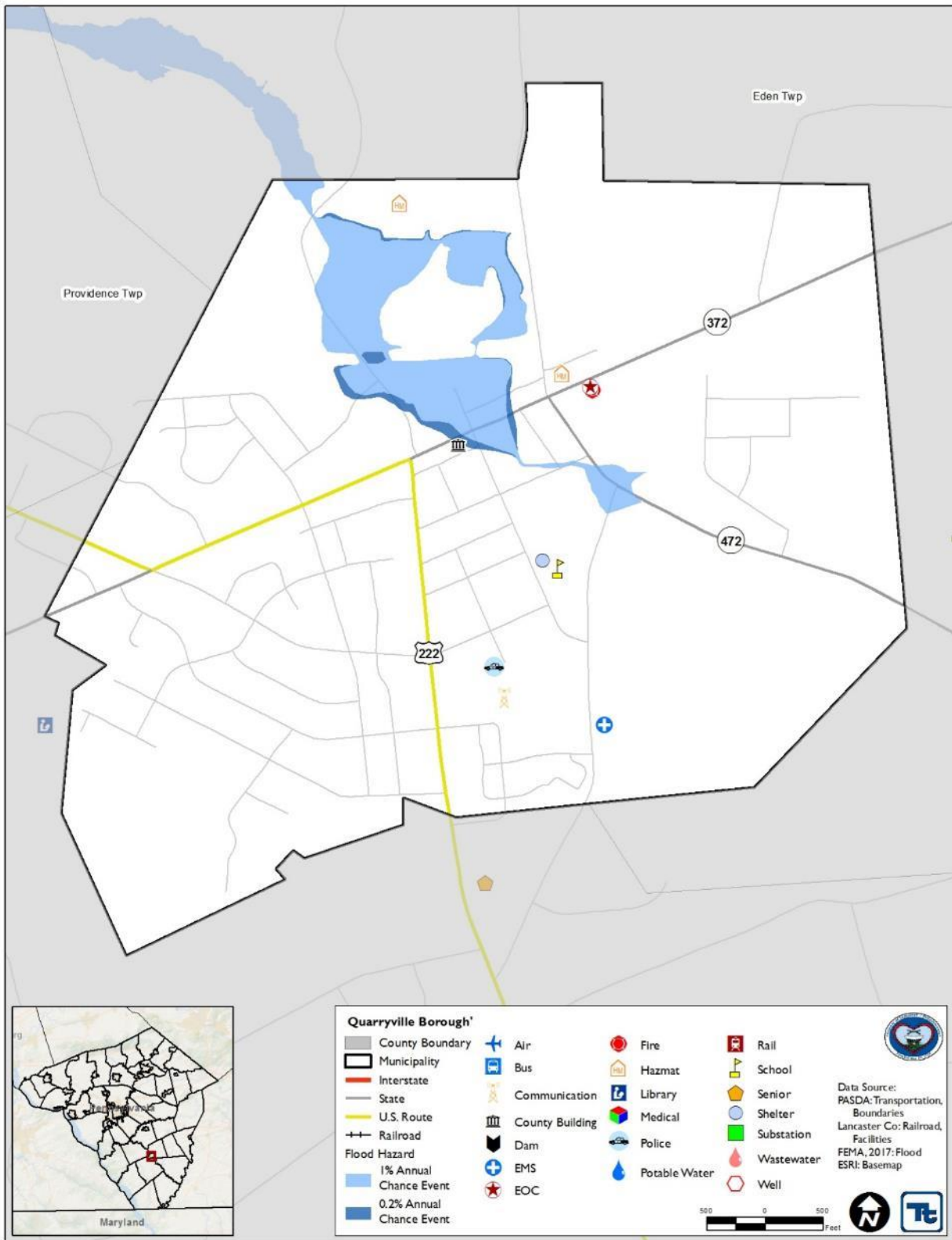


# Providence Township





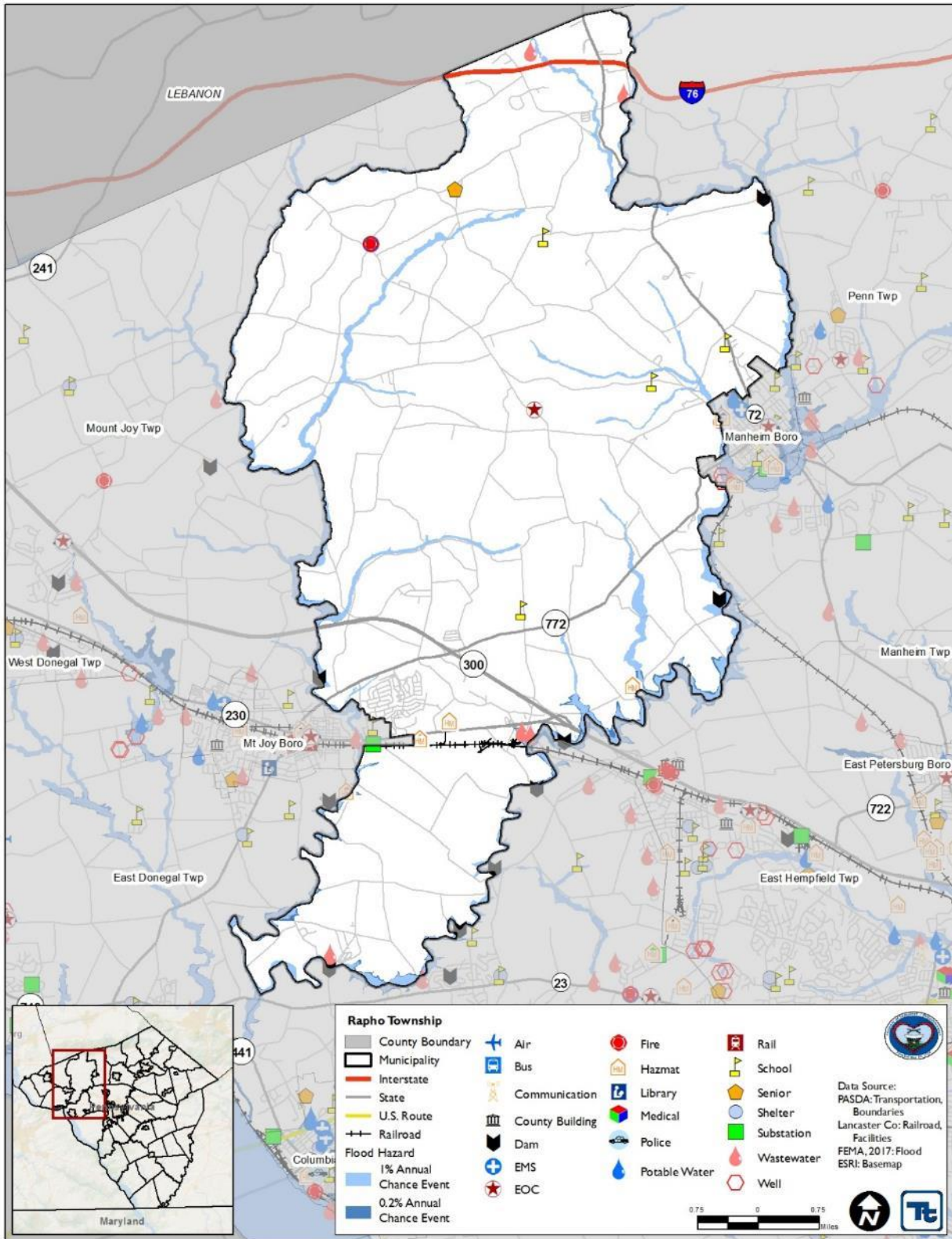
## Quarryville Borough





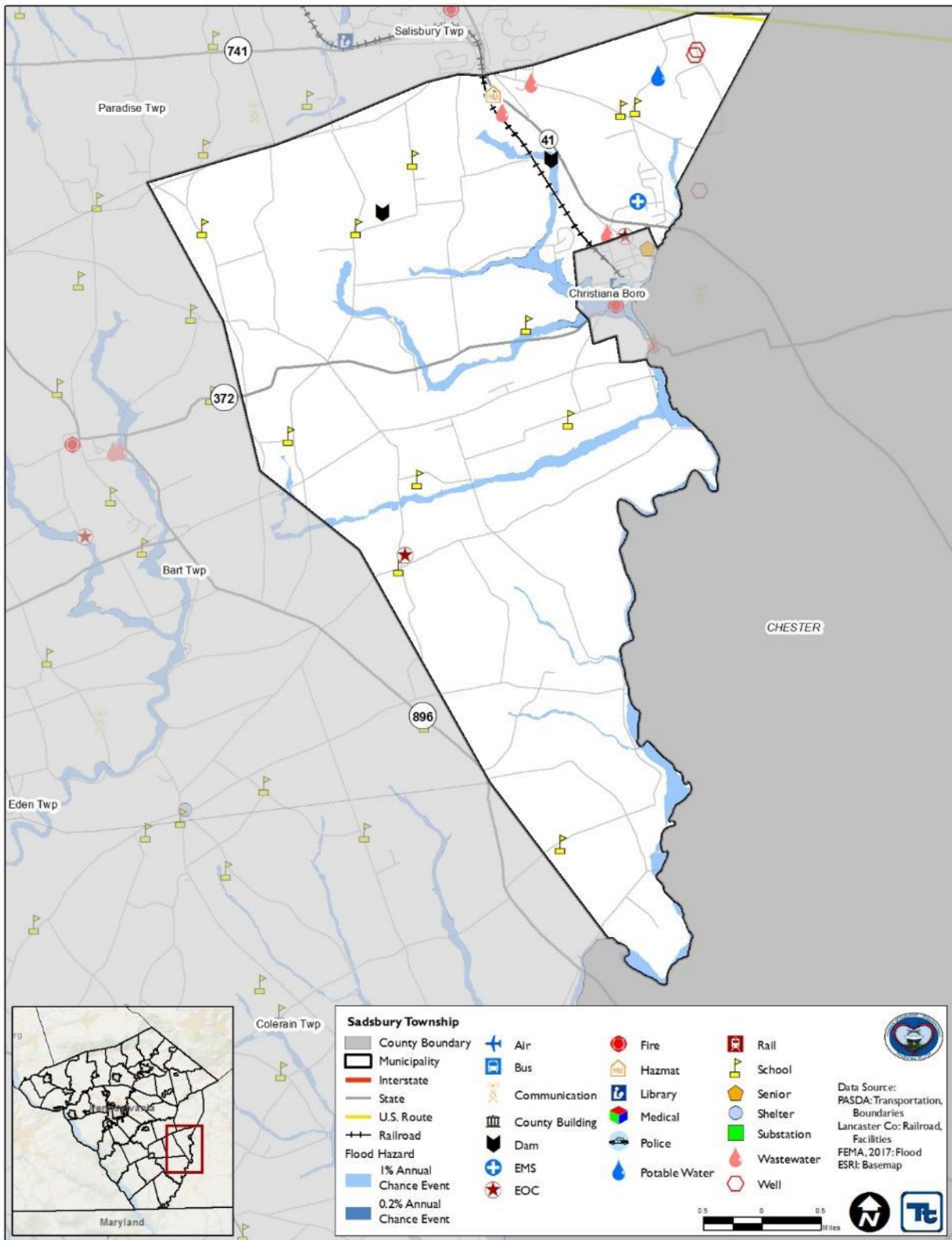


# Rapho Township





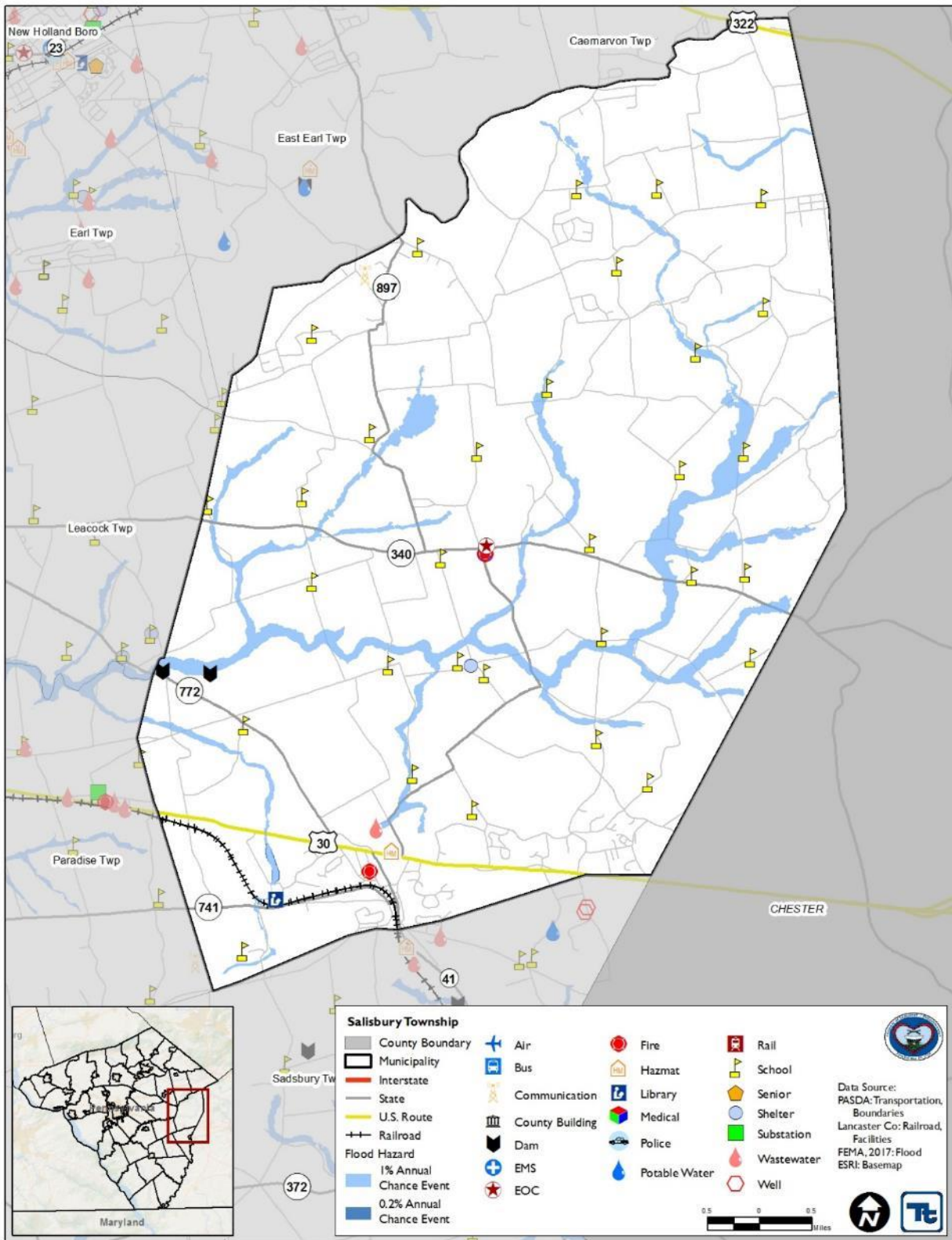
## Sadsbury Township





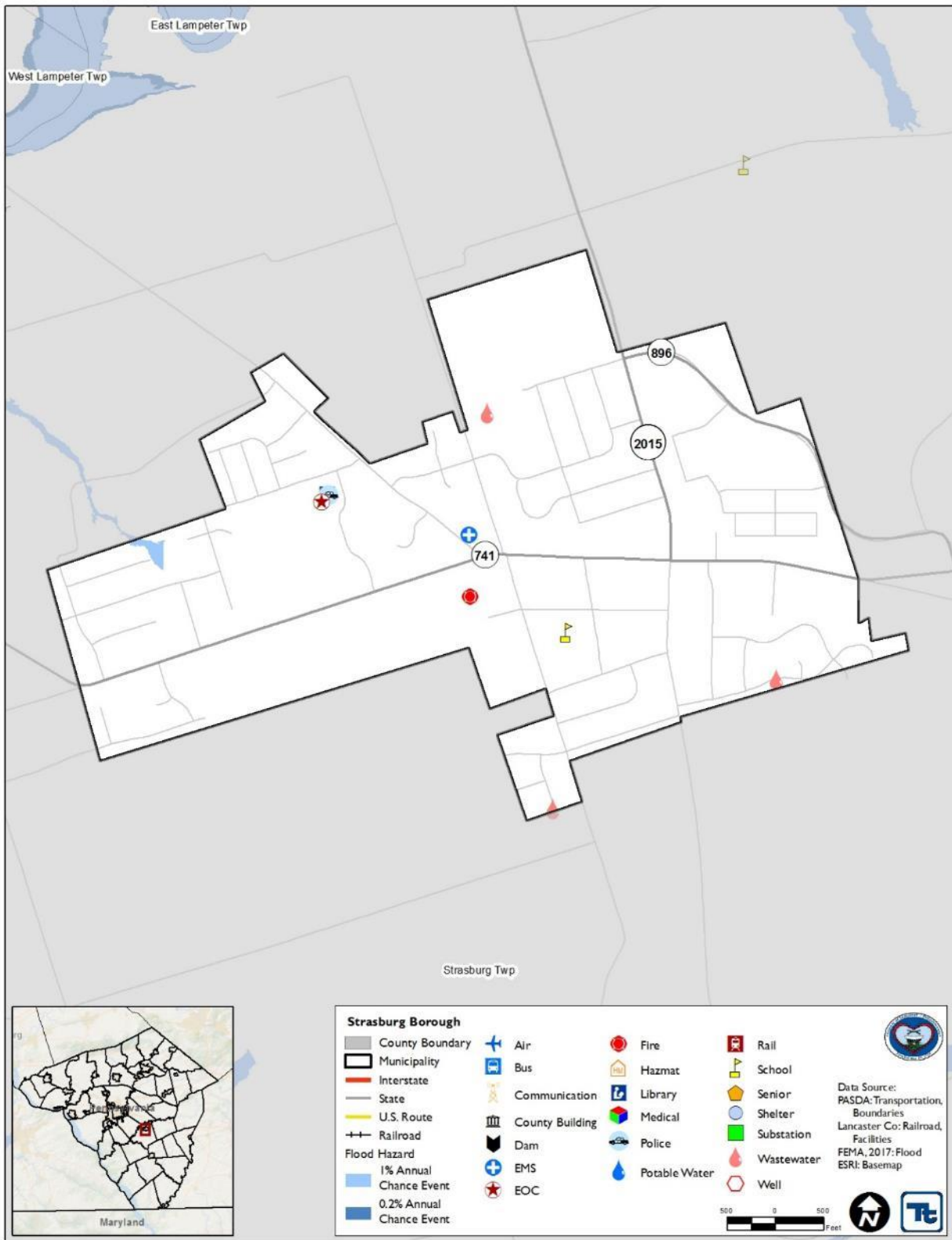


# Salisbury Township





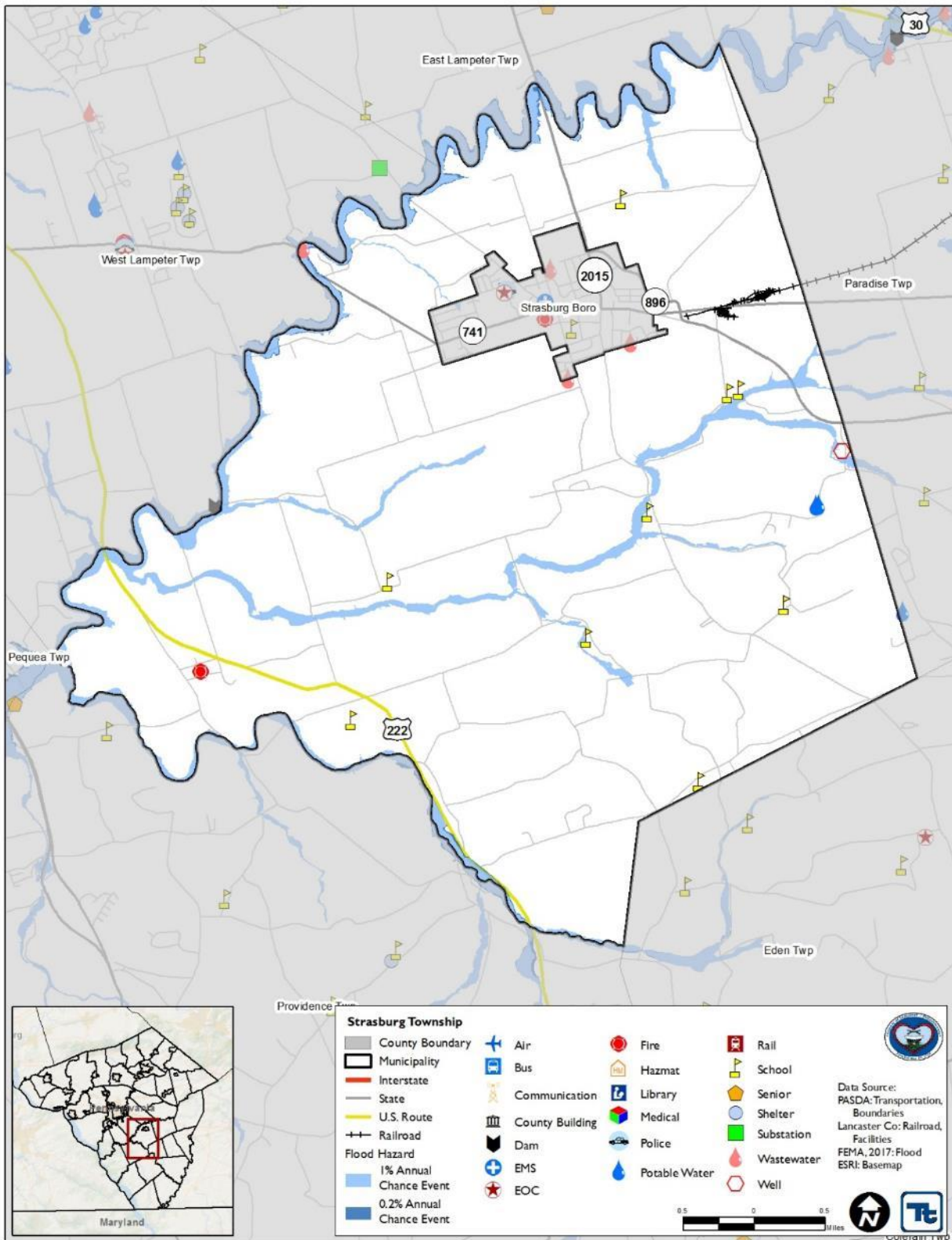
## Strasburg Borough





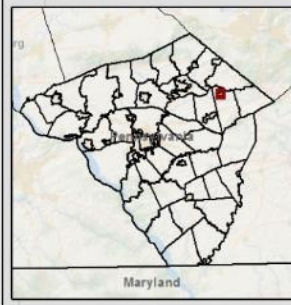
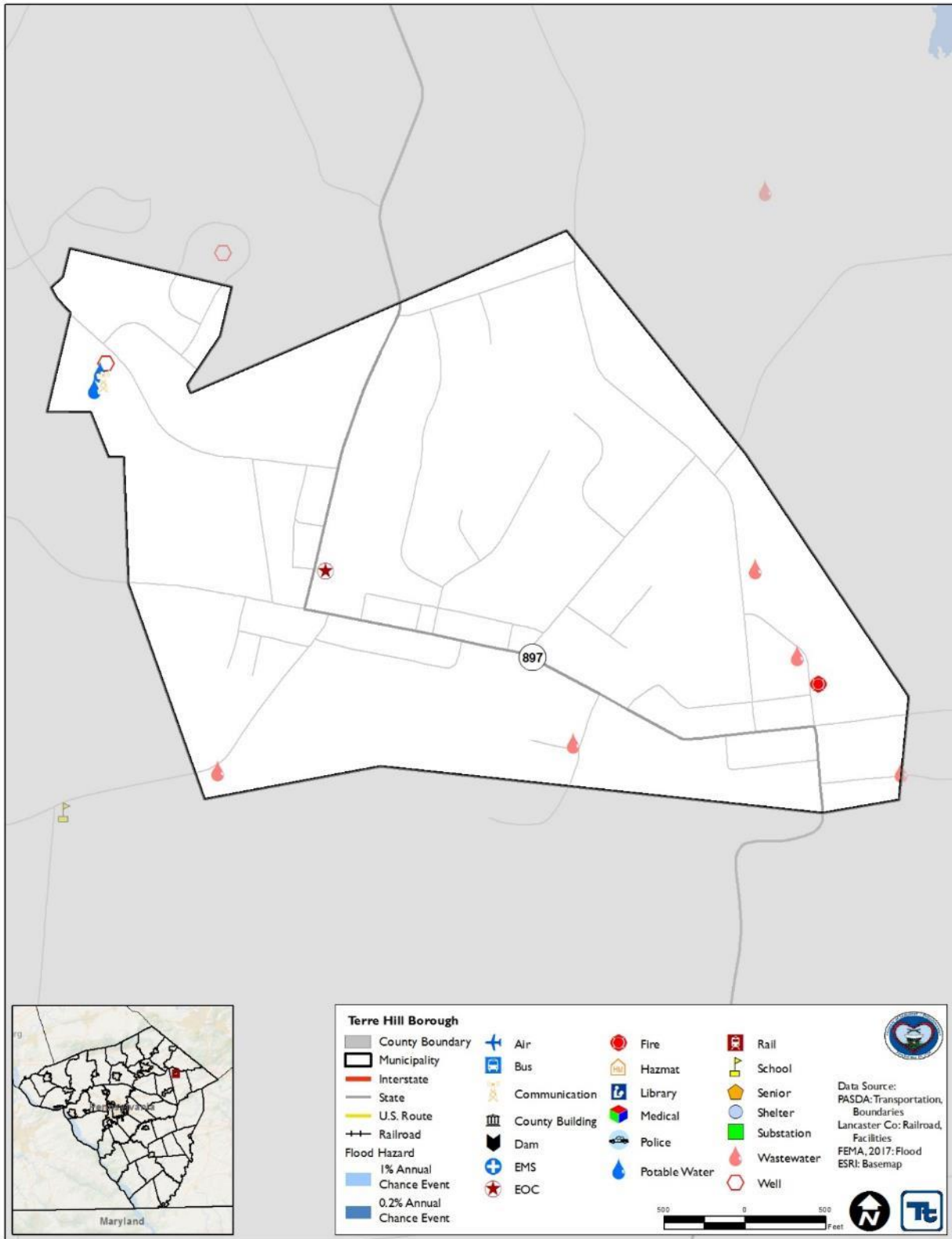


## Strasburg Township



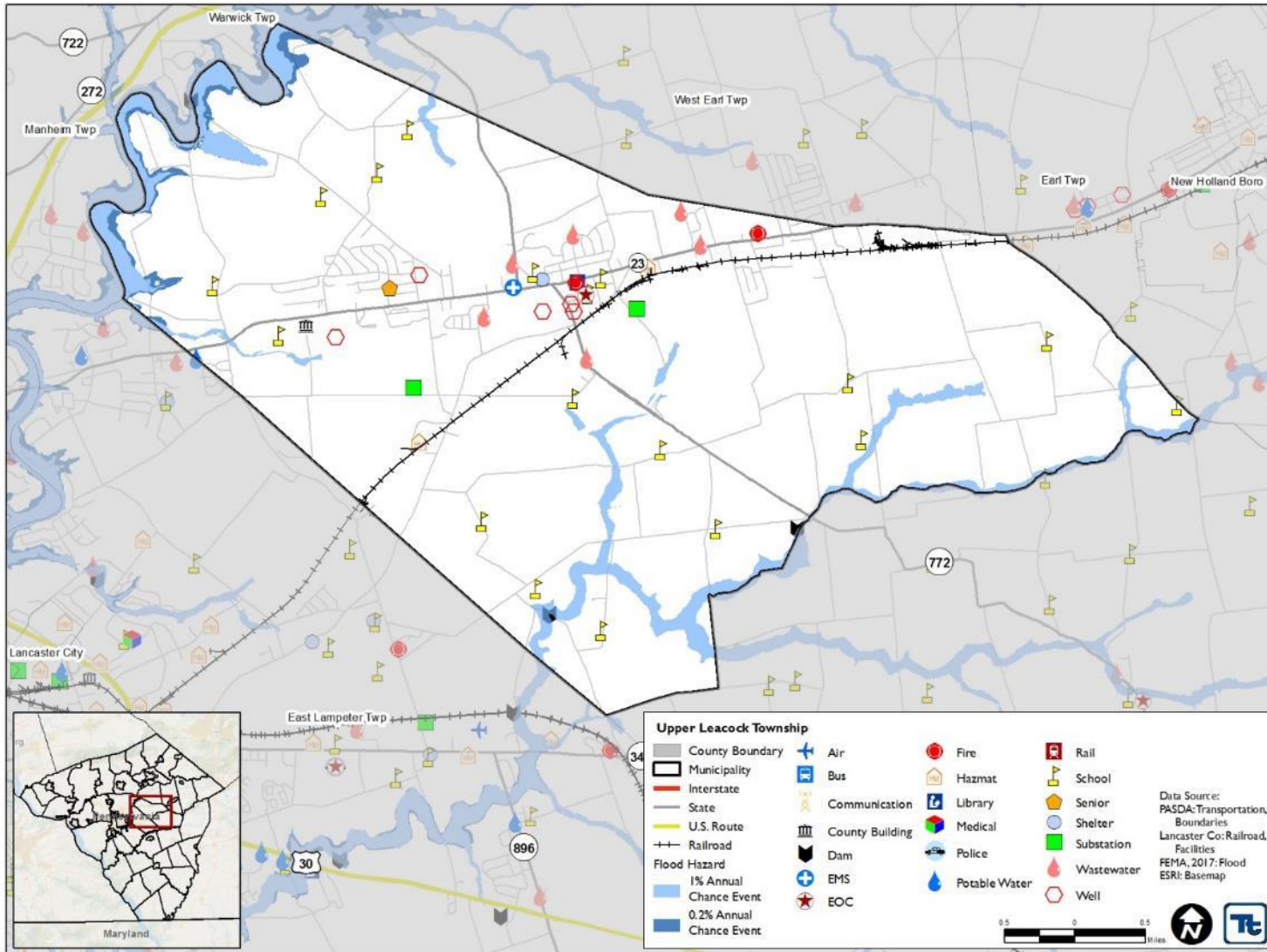


# Terre Hill Borough





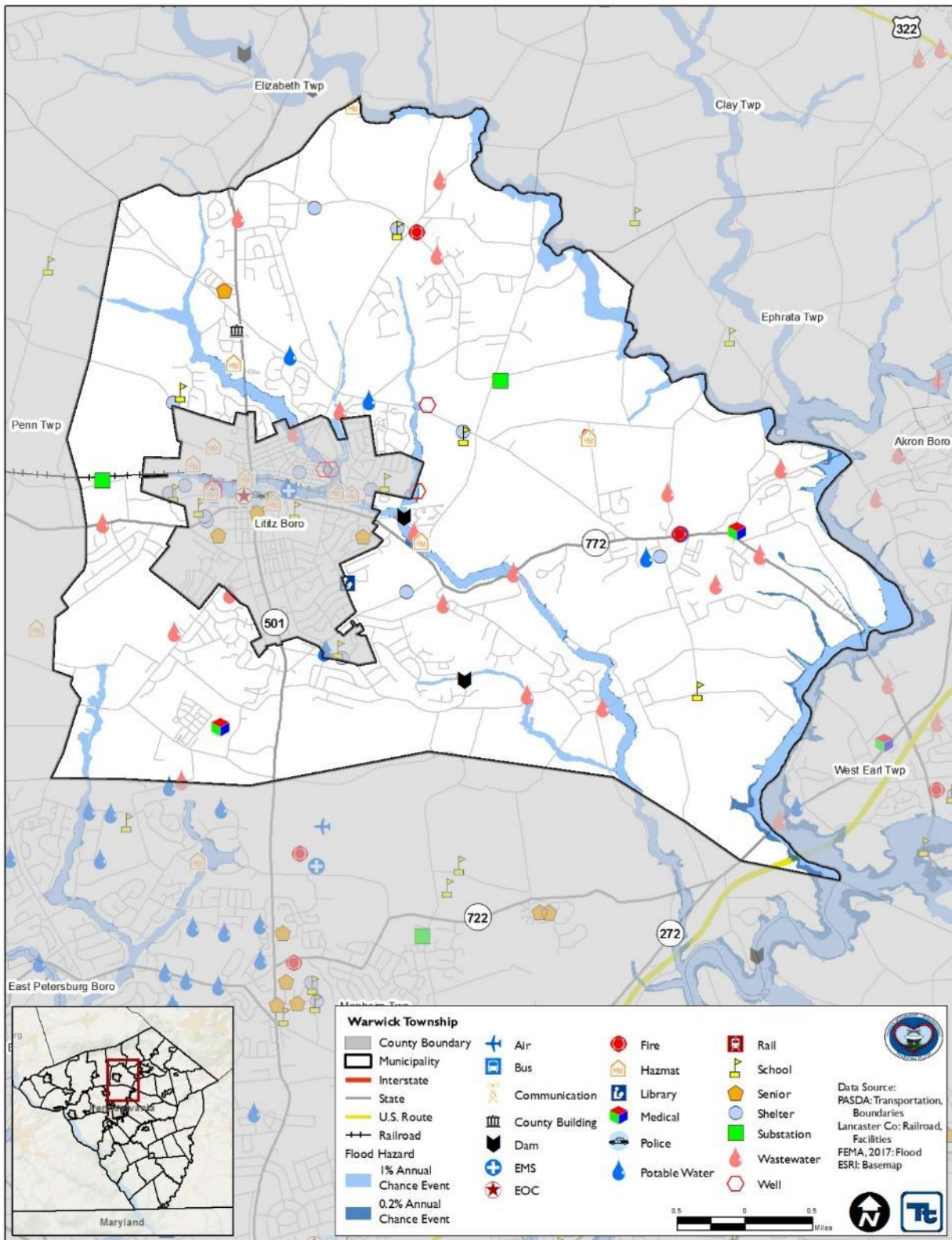
## Upper Leacock Township







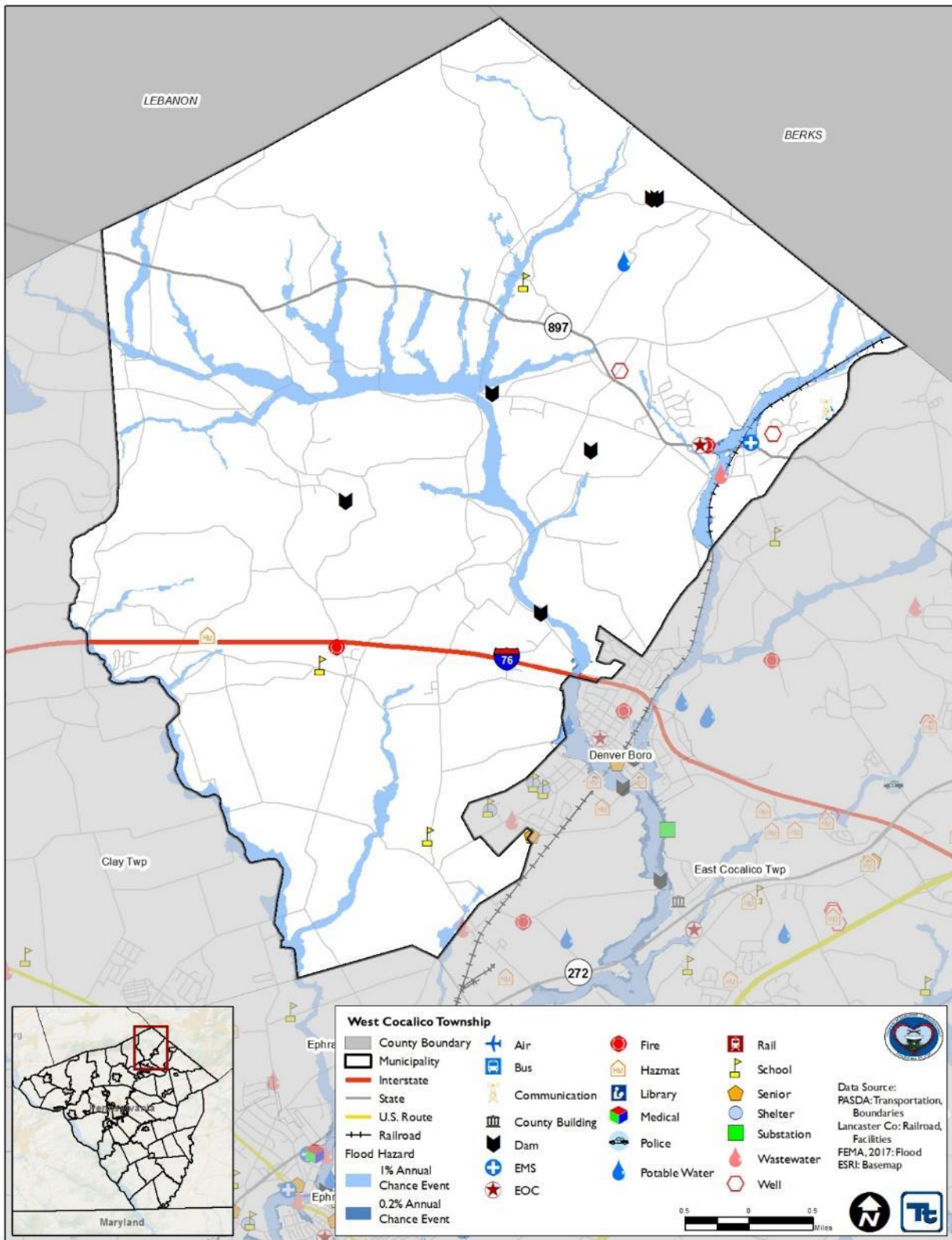
# Warwick Township





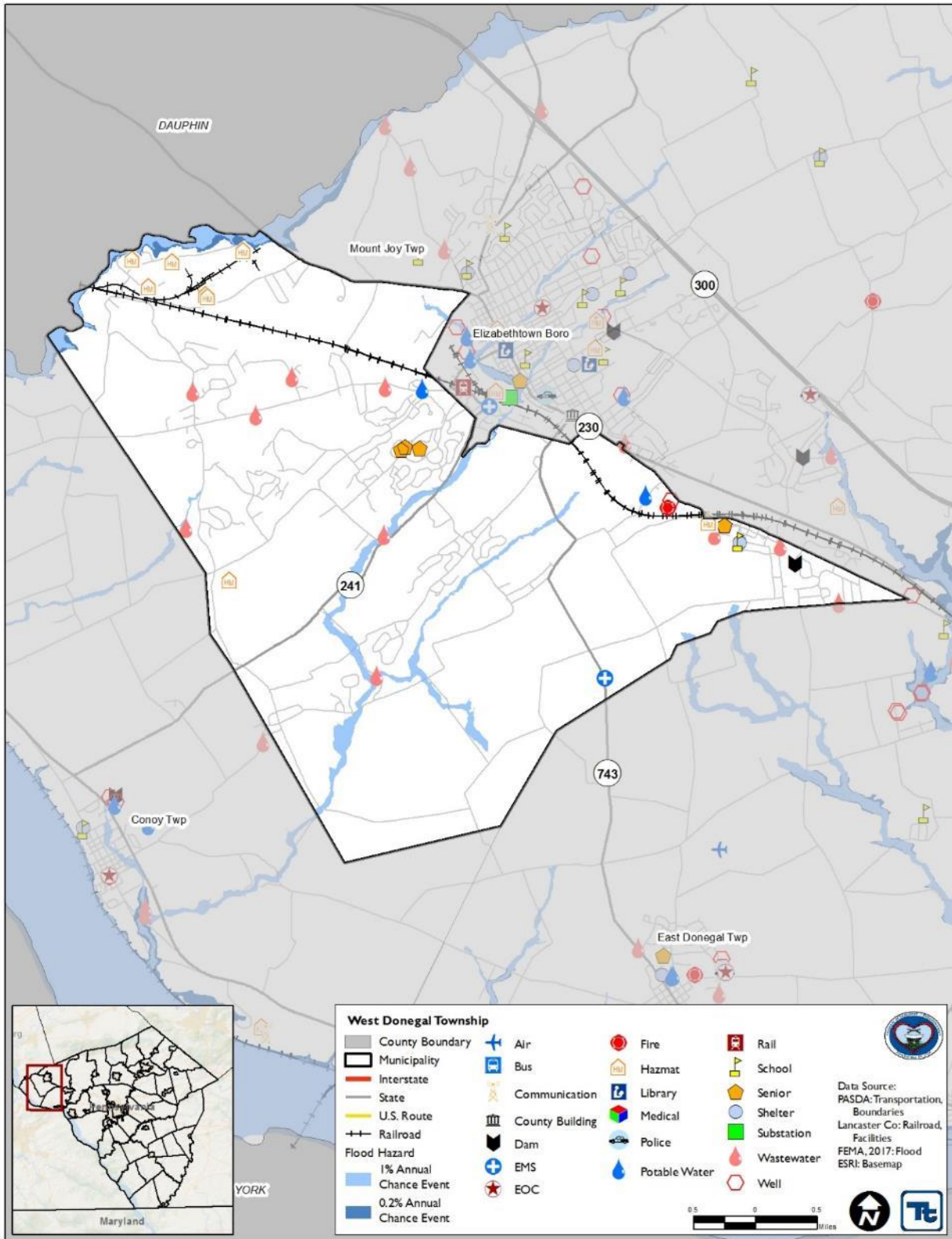


## West Cocalico Township





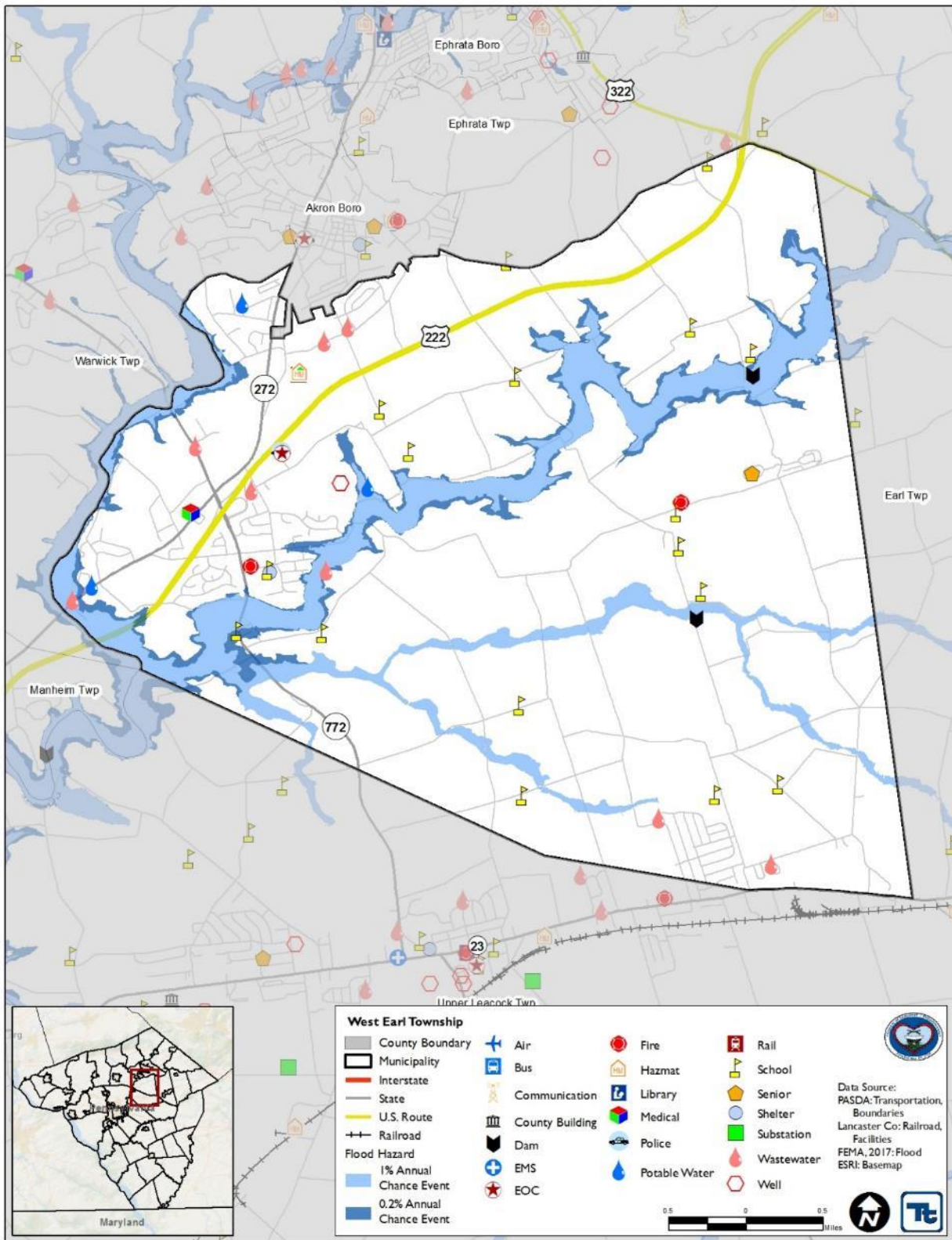
# West Donegal Township





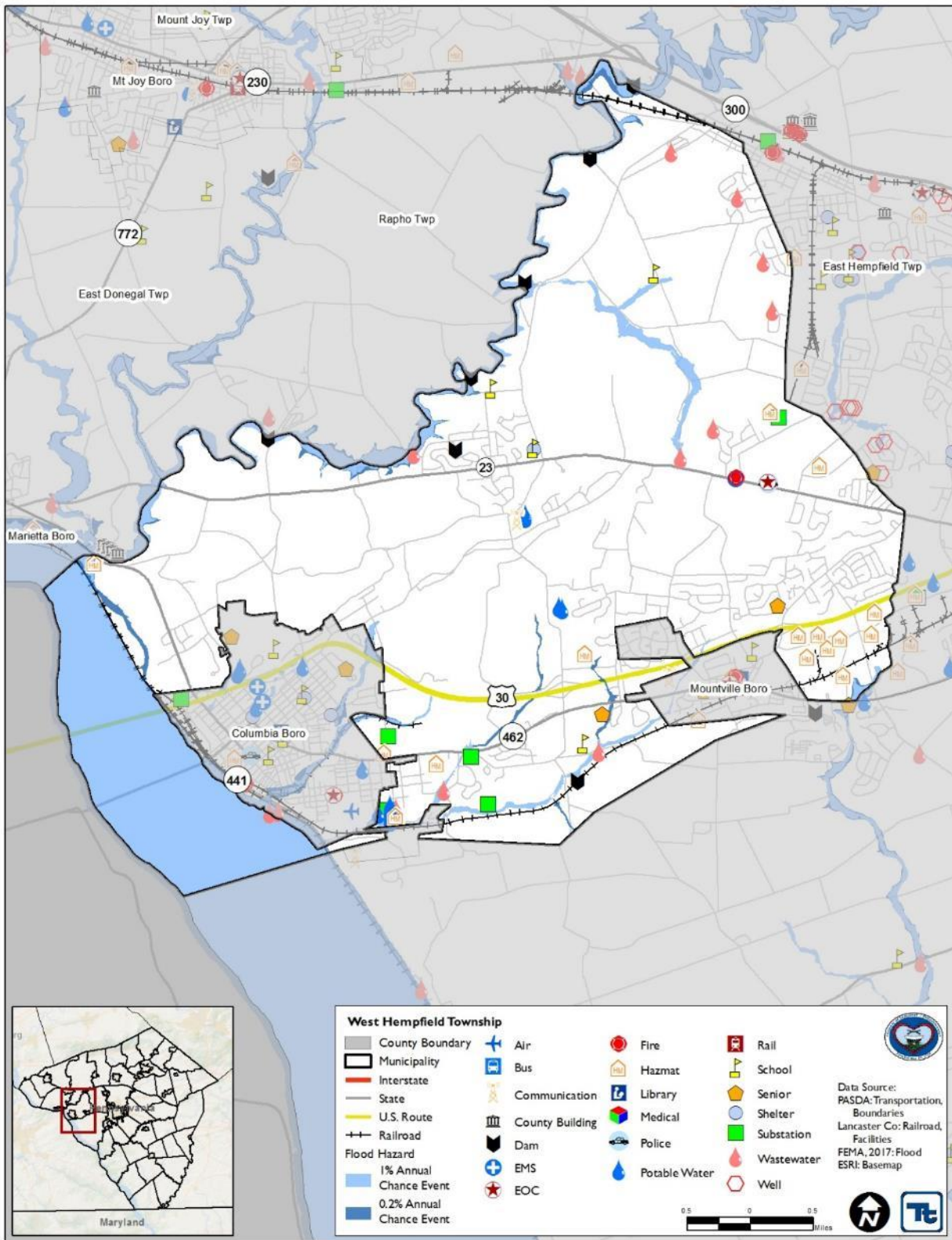


# West Earl Township





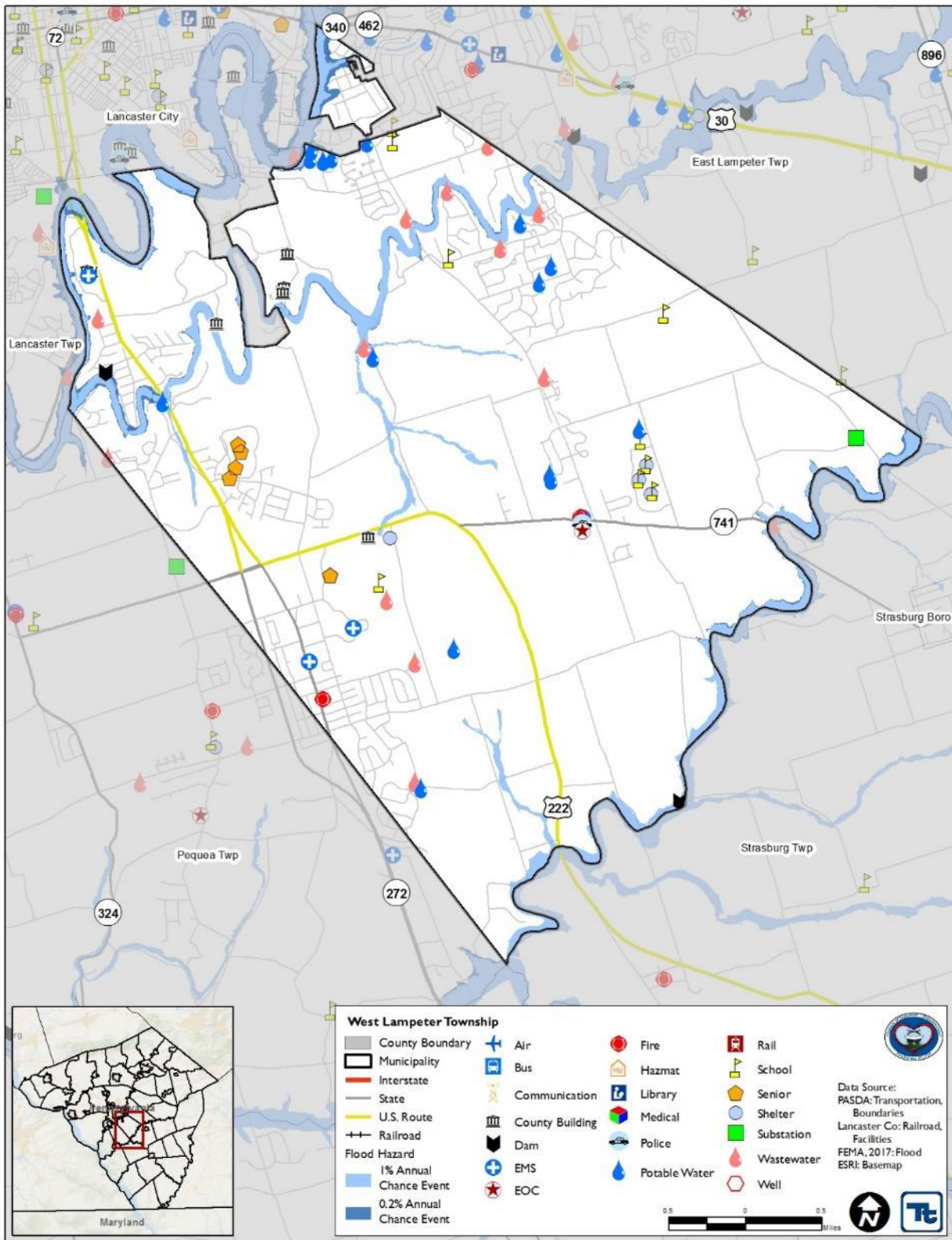
# West Hempfield Township







# West Lampeter Township





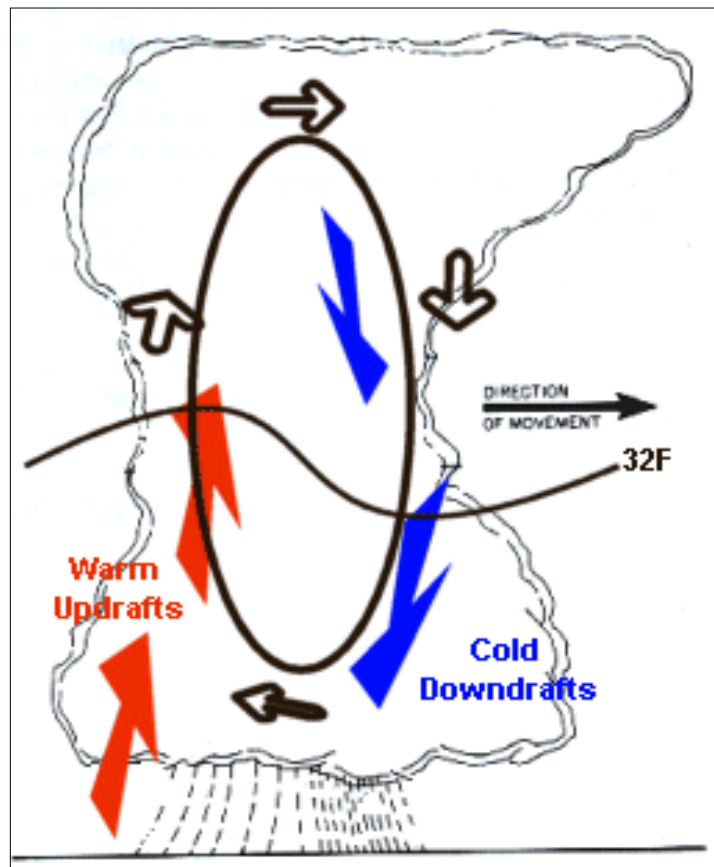
### 4.3.4 Hailstorm

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the hailstorm hazard for Lancaster County.

A hailstorm is a storm accompanied by hail, which is precipitation in the form of small balls or lumps of clear ice or compact snow (Merriam Webster, 2017). Hail forms inside a thunderstorm when strong updrafts of warm air and downdrafts of cold water are present. 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°F or colder. As the frozen droplet begins to fall, it may thaw as it moves into warmer air toward the bottom of the thunderstorm. However, the droplet may be picked up again by another updraft, carried back into the cold air, and re-frozen. The frozen droplet adds another layer of ice with each trip above and below the freezing level. The frozen droplet, with many layers of ice, falls to the ground as hail. Most hail is small and typically less than 2 inches in diameter (National Weather Service [NWS] 2009). Figure 4.3.4-1 illustrates the process that occurs in hail formulation.

The size of hailstones is a direct function of the size and severity of the storm. The higher the temperatures at the earth's surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended, giving them more time to increase in size. Damage to crops and vehicles is typically the most significant impact of hailstorms.

Figure 4.3.4-1. Hail Formation



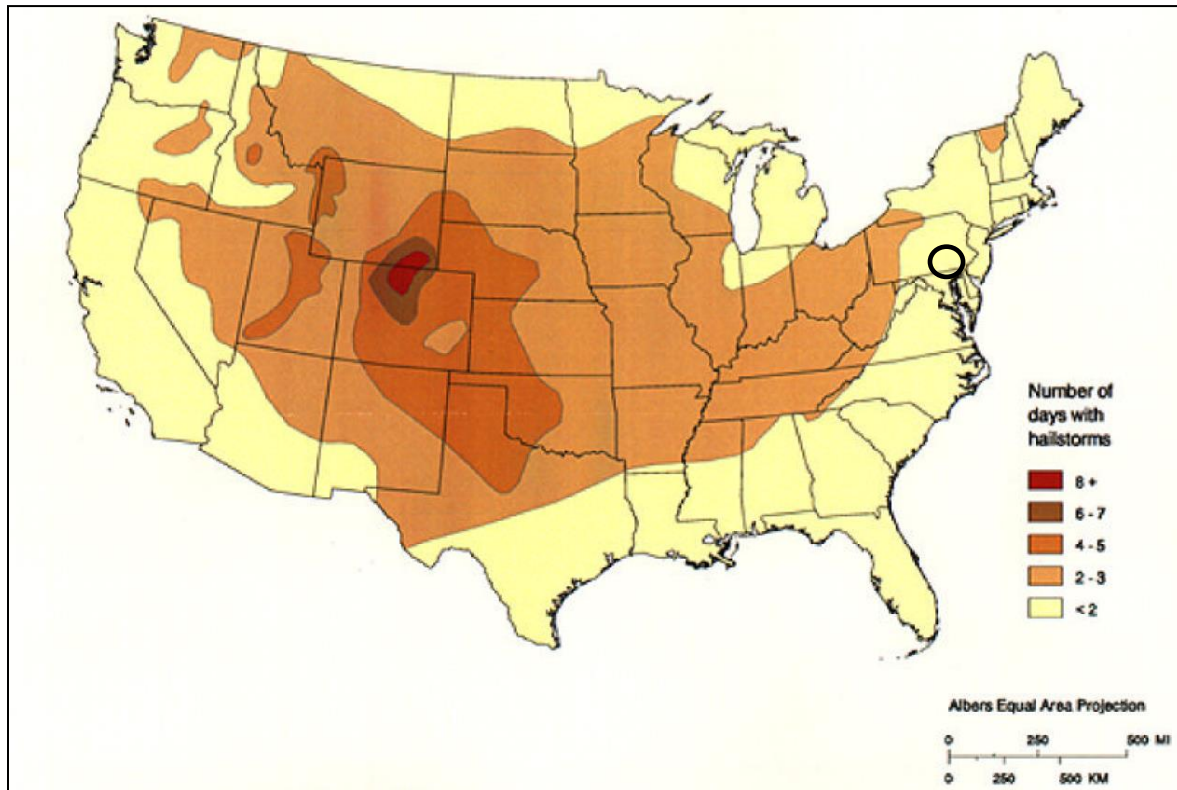
Source: National Oceanic and Atmospheric Administration (NOAA) 2012  
°F degrees Fahrenheit



### 4.3.5.1 Location and Extent

Hail causes nearly \$2 billion in crop and property damages, on average, each year in the United States. 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 (Federal Alliance for Safe Homes 2013). As indicated on Figure 4.3.4-2, Lancaster County undergoes fewer than two hailstorms a year, on average.

Figure 4.3.4-2. Annual Frequency of Hailstorms in the U.S.



Source: Federal Emergency Management Agency (FEMA) 1997

Note: The black oval indicates the approximate location of Lancaster County.

The National Oceanic and Atmospheric Administration’s (NOAA) National Severe Storms Laboratory (NSSL) started a project to estimate the likelihood of severe weather hazards in the United States. “Severe thunderstorms” were defined as having one or more of the following characteristics: associated tornados, gusts at least 58 miles per hour (mph), or hail at least 0.75 inch in diameter.

### 4.3.5.2 Range of Magnitude

Hail can vary in size from less than 1 inch to several inches in diameter and can cause significant damage to crops and property. 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. Effects of other hazards associated with thunderstorms (strong winds, intense precipitation, and lightning) often occur concurrently because hail precipitation usually occurs during thunderstorms.

Lancaster County has experienced hail ranging in size from 0.75 to 2.75 inches in diameter. No deaths or injuries due to hail have been recorded in the County. Lancaster County’s worst hailstorm occurred on April 9, 1980, when thunderstorms produced golf-ball- to baseball-sized hail across Central and Eastern Pennsylvania.



Based on reports from the National Climatic Data Center (NCDC) and Lancaster County residents, the worst-case scenario for a hailstorm would be a storm that dropped baseball-sized hail (the largest observed in the County) throughout the County. This hail would cause widespread damage to property and crops.

Hail can be produced during many different types of storms. Typically, hail occurs with thunderstorms. The size of hail is estimated by comparing it with a known object. During most hailstorms, hail is produced in a variety of sizes, and only the very largest hail stones pose serious risk to people who are exposed. Table 4.3.4-1 shows the various sizes of hail as compared to real-world objects.

**Table 4.3.4-1. Hail Size**

Size	Inches in Diameter
Pea	0.25
Marble/mothball	0.50
Dime/Penny	0.75
Nickel	0.875
Quarter	1.0
Ping-Pong Ball	1.5
Golf Ball	1.75
Tennis Ball	2.5
Baseball	2.75
Tea Cup	3.0
Grapefruit	4.0
Softball	4.5

Source: NOAA 2012

#### 4.3.5.3 Past Occurrence

Hailstorms occur as a routine part of severe weather in Lancaster County. The potential for hail storms 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, Lancaster County has a low potential for significant hail events based on previous records.

The Commonwealth of Pennsylvania 2013 All-Hazard Mitigation Plan (PA HMP) states that approximately 96 percent of hailstorm events throughout the Commonwealth have occurred during the months of April, May, June, July, August, and September. Moreover, approximately 87 percent of historical hailstorm events have occurred during the afternoon (noon to 5:00 p.m.) or evening (5:00 p.m. to 9:00 p.m.) hours. Both of these two preceding statements are consistent with historical hailstorm reports from Lancaster County.

According to the U.S. Department of Agriculture (USDA) Risk Management Agency, hailstorm events within Lancaster County between 1948 and 2017 have resulted in \$369,498 in crop insurance claims. Over half of the amount of crop loss dollars are due to hail events from only 2 years, 1986 and 2008. In 1986, the County experienced \$99,200 in loss claims, and in 2008, the County claimed \$64,091 in losses (USDA 2017a).

The NOAA-NCDC Storm Events database includes hail reported during storm incidents in Lancaster County from 1950 to July 31, 2017, as shown in Table 4.3.4-2. The database indicates that 90 separate reports were issued throughout the County from 1950 to 2017. Some reports specified different times of day or different localities regarding the same storm. According to these reports, Lancaster County has undergone hail ranging in size from 0.75 inch to 2.75 inches in diameter, with no reported deaths or injuries, and only one event contributing to property damages. This information differs from USDA records, as shown below.





**SECTION 4.3.4: RISK ASSESSMENT – HAILSTORM**

**Table 4.3.4-2. History of Hailstorms in Lancaster County, 1950 to 2017**

Date	Location	Diameter (in)	Deaths	Injuries	Property Damage (\$)	Crop Damage (\$)
5/20/1960	Countywide	1.75	0	0	0	0
6/24/1961	Countywide	1.75	0	0	0	0
7/5/1965	Countywide	1.75	0	0	0	0
7/31/1967	Countywide	0.75	0	0	0	0
6/4/1971	Countywide	1.75	0	0	0	0
6/5/1975	Countywide	1.75	0	0	0	0
6/1/1976	Countywide	1	0	0	0	0
6/29/1976	Countywide	0.75	0	0	0	0
7/5/1977	Countywide	1	0	0	0	0
11/17/1977	Countywide	2	0	0	0	0
6/19/1978	Countywide	1.75	0	0	0	0
6/22/1979	Countywide	2	0	0	0	0
4/9/1980	Countywide	2.75	0	0	0	0
5/12/1980	Countywide	1	0	0	0	0
6/28/1980	Countywide	1	0	0	0	0
7/29/1980	Countywide	1	0	0	0	0
5/19/1982	Countywide	1.75	0	0	0	0
5/26/1983	Countywide	0.75	0	0	0	0
6/16/1985	Countywide	1.75	0	0	0	0
8/7/1986	Countywide	1.75	0	0	0	0
8/10/1986	Countywide	2	0	0	0	0
7/26/1987	Countywide	1.75	0	0	0	0
5/10/1988	Countywide	0.75	0	0	0	0
7/26/1988	Countywide	1	0	0	0	0
6/25/1989	Countywide	1.75	0	0	0	0
6/12/1994	Lancaster	0.75	0	0	0	0
7/6/1994	Countywide	0.75	0	0	0	0
8/13/1994	Rohrerstown	1.75	0	0	0	0
5/29/1995	Topton, Rohrerstown	1.75	0	0	0	0
6/4/1996	Lancaster	1.75	0	0	0	0
6/12/1996	Lancaster	1.75	0	0	0	0
3/29/1997	Peach Bottom	0.75	0	0	0	0
5/1/1997	Safe Harbor, Mountville	0.88	0	0	0	0
3/9/1998	Centerville	0.88	0	0	0	0
5/6/1998	Millersville	0.8	0	0	0	0
6/26/1998	Neffsville	1.25	0	0	0	0
5/10/2000	Lancaster, Millersville	1.75	0	0	0	0
5/24/2000	Ephrata	0.88	0	0	0	0
6/25/2000	Lititz	0.75	0	0	0	0
7/14/2000	Holtwood	0.75	0	0	0	0
5/2/2002	Lititz	0.88	0	0	0	0
8/3/2002	Paradise, Gap, Lancaster	1	0	0	0	0
8/15/2002	Ephrata	0.75	0	0	0	0
7/21/2003	Landisville	0.75	0	0	0	0
7/1/2004	Lititz, Rothsville	2.5	0	0	0	0
7/14/2004	Lancaster	1	0	0	0	0
8/11/2004	Quarryville	1	0	0	0	0
6/6/2005	Lancaster, Lititz	1.75	0	0	0	0
4/24/2006	Strasburg, Lancaster	1	0	0	0	0



**SECTION 4.3.4: RISK ASSESSMENT – HAILSTORM**

Date	Location	Diameter (in)	Deaths	Injuries	Property Damage (\$)	Crop Damage (\$)
7/9/2006	Manheim, Ephrata, Adamstown, Columbia, Denver	1	0	0	0	0
7/12/2006	Manheim	0.75	0	0	0	0
7/18/2006	Terre Hill	1.75	0	0	0	0
7/27/2006	Elizabethtown, Gap	0.88	0	0	0	0
5/27/2007	Hamilton Park, Akron, Ephrata	1	0	0	0	0
6/2/2007	Marietta	0.88	0	0	0	0
6/13/2007	Hamilton Park, Elizabethtown	0.75	0	0	0	0
7/27/2007	Quarryville	1	0	0	0	0
7/28/2007	Lancaster	0.88	0	0	0	0
7/29/2007	Bainbridge	0.75	0	0	0	0
8/17/2007	Salunga, Hamilton Park	0.88	0	0	0	0
6/10/2008	Millersville, Hamilton Park, Leola, South Hermitage, Gap	1.75	0	0	0	0
7/27/2008	Quarryville, Christiana	1	0	0	0	0
8/2/2008	Bainbridge	0.88	0	0	0	0
8/10/2008	Quarryville, Terre Hill, Ninepoints	1.75	0	0	0	0
9/9/2008	Colemanville	0.75	0	0	0	0
3/29/2009	Marietta, Elizabethtown, Old Line, White Oak, Lititz, Ephrata, Manheim, Bausman	1.75	0	0	0	0
4/21/2009	Hamilton Park, Lititz	0.75	0	0	0	0
5/29/2009	Bird In Hand	1	0	0	5,000	0
6/9/2009	Ninepoints, Kinzers, Gap, Christiana, Quarryville	1.75	0	0	0	0
6/30/2009	East Petersburg	0.75	0	0	0	0
8/18/2009	Strasburg	0.88	0	0	0	0
5/14/2010	Marietta, Bainbridge, Columbia, Mountville, Millersville, West Lancaster	1.25	0	0	0	0
5/27/2010	Willow Street	0.88	0	0	0	0
5/31/2010	Lancaster, Millersville, Hamilton Park, Elizabethtown	1.25	0	0	0	0
6/3/2010	Hamilton Park	0.75	0	0	0	0
6/22/2010	Ephrata	1	0	0	0	0
7/25/2010	Manheim, Hamilton Park	1	0	0	0	0
6/5/2011	Ephrata	1	0	0	0	0
8/19/2011	Strasburg	0.88	0	0	0	0
8/21/2011	Elizabethtown, Newville	1	0	0	0	0
5/29/2012	Millersville	1	0	0	0	0
6/29/2012	Lancaster Airport, Penryn, Hamilton Park	1	0	0	0	0
7/7/2012	Hamilton Park, Strasburg	1.25	0	0	0	0
7/23/2012	Elizabethtown	0.88	0	0	0	0
8/14/2012	Elizabethtown	0.88	0	0	0	0
6/17/2013	Iva, Soudersburg, Leaman Place, Kinzers	1	0	0	0	0
6/24/2013	Fairland	1.25	0	0	0	0
9/2/2013	New Holland	1	0	0	0	0
7/23/2016	Hamilton Park	1	0	0	0	0
2/25/2017	Klinesville, Maytown, Florin, Mastersonville, Manheim, Lititz	1	0	0	0	0

Source: NCDC 2017



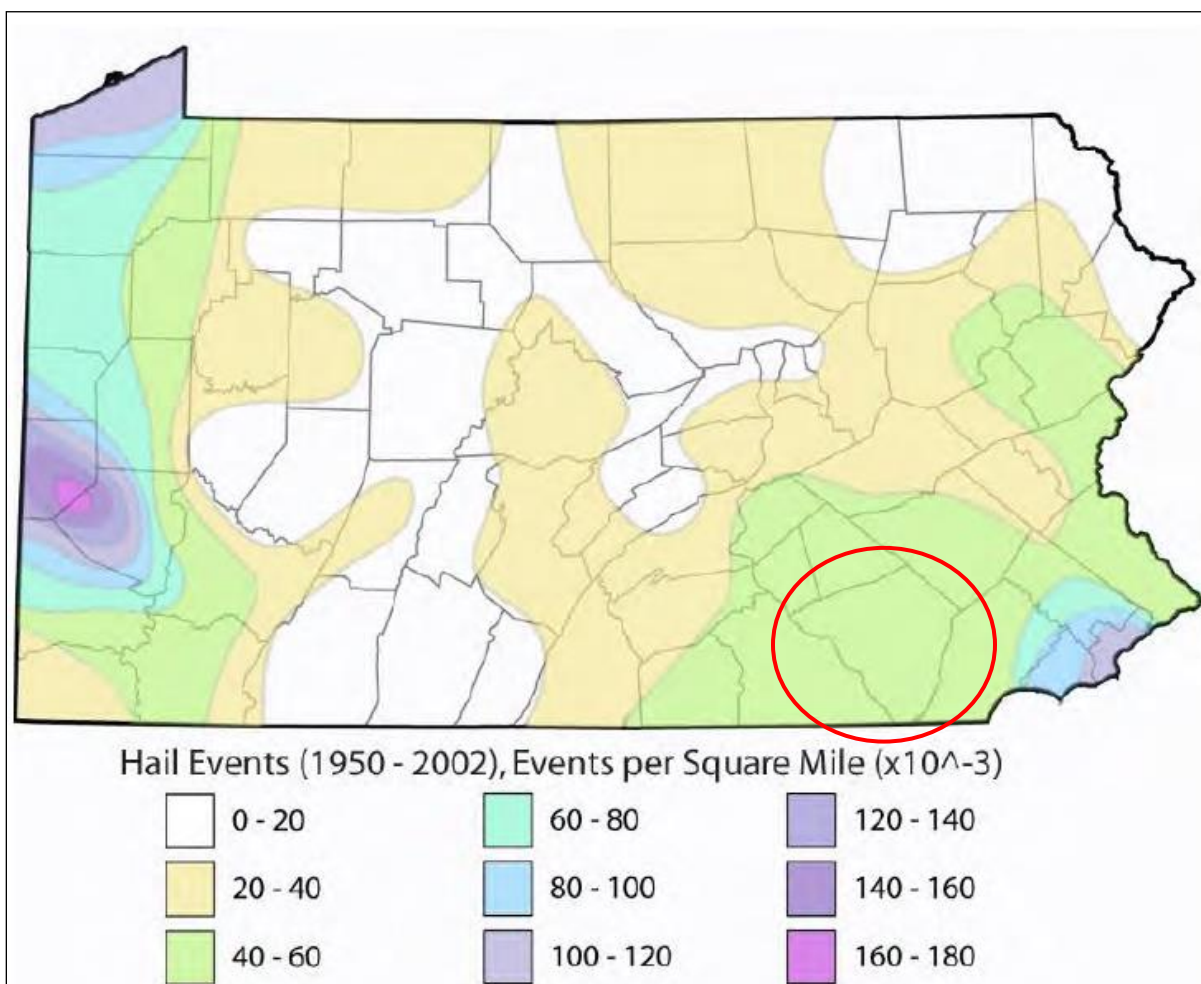


Pennsylvania has never received a federal disaster declaration because of a hail event. In the Pennsylvania Disaster History events list maintained by the Pennsylvania Emergency Management Agency (PEMA), Pennsylvania has experienced only three noteworthy hail events, none of which affected Lancaster County. Only two of these events were eligible for Small Business Administration (SBA) Economic Injury benefits, while the third was not eligible for any recovery actions.

#### 4.3.5.4 Future Occurrence

It is not possible to predict formation of a hailstorm with more than a few days' lead time. The past occurrences described above, however, indicate that hailstorm events in Lancaster County probably will occur every year throughout the months of May through September. Encompassing events between 1950 and 2002, Figure 4.3.4-3 below shows the number of hail events per square mile across Pennsylvania.

Figure 4.3.4-3. Hail Events per Square Mile in Pennsylvania



Source: PEMA 2013

Note: The red oval indicates the location of Lancaster County.

Future occurrences of hailstorms can be considered *likely* as defined by the Risk Factor Methodology probability criteria (further discussed in Section 4.4).



#### 4.3.5.5 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 Lancaster 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
- Data and methodology used for the evaluation
- Impacts on: (1) life, health, and safety of residents; (2) general building stock; (3) critical facilities; (4) economy; and (5) future growth and development
- Effect of climate change on vulnerability
- Collection of further data that will assist in understanding this hazard

##### Overview of Vulnerability

The entire County, including all critical infrastructure, is vulnerable to the effects of hail, as the storm cells that produce this hazard can develop over any part of the region. The area of damage caused by these storms is relatively small because a single storm does not cause widespread devastation, but may cause damage within a focused area.

Hail can cause serious damage to automobiles, aircraft, skylights, livestock, and crops. Areas of the County with large amounts of farmland and high agricultural yields are more likely to be affected by hailstorm hazards.

##### Data and Methodology

National weather databases, the PA HMP, the USDA Census of Agriculture, and local resources were referenced to collect and analyze data regarding hazard impacts on Lancaster County.

##### Impact on Life, Health, and Safety

The entire population of the County is considered exposed to the hail hazard. People outdoors (for example, pursuing recreational activities and farming) are considered most vulnerable to the hazard because they ordinarily would receive little to no warning, and shelter may not be available to them. Moving to a lower-risk location decreases a person's vulnerability.

##### Impact on General Building Stock, Critical Facilities, and the Economy

Hailstorms primarily affect agricultural products. The facilities most vulnerable to hailstorm threats are food- and agriculture-related producers and manufacturers. These facilities are present within both urban and rural areas and would be directly or indirectly affected by a hailstorm event. According to the PA HMP (PEMA 2013), Lancaster County has 18 food or agricultural-related Commonwealth facilities within its borders.

As discussed earlier in the Past Occurrence subsection, Lancaster County has experienced some historical hailstorm property damage and significant crop damage (\$5,000 in property damage claims from only one event [per NCDC records] and \$369,498 in USDA crop damage claims [per USDA records, which differ from the NCDC records]). However, given the unpredictability of hailstorms, significant property and crop damage is possible during any hailstorm event. Jurisdictional loss estimation is based on lost agricultural revenues throughout the County. The USDA Census of Agriculture enumerates farmland acreage by county, as well as the annual market value of all agricultural products sold by county, from year 2012. If a hailstorm would eliminate the entire agricultural yield in Lancaster County, total losses on the County's 439,481 acres of farmland could reach nearly \$1.5 billion.





### **Future Growth and Development**

Areas targeted for potential future growth and development within the next 5 to 10 years have been identified across Lancaster 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.

### **Effect of Climate Change on Vulnerability**

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 (U.S. Environmental Protection Agency [EPA] 2006).

As directed by the Climate Change Act (Act 70 of 2008), Pennsylvania’s Department of Environmental Protection (PA DEP) initiated a study of potential impacts of global climate change on the Commonwealth. The June 2009 Pennsylvania Climate Impact Assessment’s 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 (Shortle et al. 2009).

### **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 Lancaster County’s vulnerability assessment.



### 4.3.5 Invasive Species

This section provides a profile and vulnerability assessment for the invasive species hazard. An invasive species is a species that is not indigenous to a given ecosystem and that, when introduced to a non-native environment, is likely to cause economic or environmental harm or pose a hazard to human health.

#### 4.3.5.1 Location and Extent

The Commonwealth of Pennsylvania plays host to a number of invasive pathogens, insects, plants, invertebrates, fish, and higher mammals. These species have largely been 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 (Pennsylvania Invasive Species Council [PISC] 2010). Invasive species threats are generally divided into two main subsets, as described below.

- 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 the infested waters; human health and safety; or commercial, agriculture, aquaculture, or recreational activities dependent on such waters.
- 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.

The PISC, the lead organization for invasive species threats, has identified over 100 species threats that are or could potentially become significant in Pennsylvania. Of these threats, Lancaster 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. *Greenscapes: The Green Infrastructure Element of the Lancaster County Comprehensive Plan* recognizes the importance of preserving natural resources, promoting native species, and maintaining agricultural productivity for the County's cultural heritage and economic stability (Lancaster County 2016). The potential impact of invasive species on agriculture is significant since Lancaster County was identified as having Pennsylvania's highest agricultural production with 18.5 percent of state total sales (PEMA 2013).

In Pennsylvania, the insects and diseases that have caused the most damage in terms of defoliation and mortality during recent years include the emerald ash borer, gypsy moth, hemlock woolly adelgid, beech bark disease, and oak wilt. These species also pose a threat to Lancaster County. Additionally, Lancaster County officials and municipal leaders identified a number of invasive insects, diseases, and plants that are of particular concern.

Invasive insects of concern in Lancaster County include the spotted lanternfly, thousand cankers disease, cankerworms, emerald ash borer, and the Asian longhorned beetle (Martin 2017). First found in Lancaster County in 2016, cankerworm larvae can cause complete defoliation of common Lancaster County hardwood trees including ash, beech, birch, dogwood, elm, hickory, and oaks. If defoliation occurs two years in a row, tree mortality is likely (Hoover and Haydt 2010).

The spotted lanternfly was first observed in Berks County in 2014. Since then, the pests have been found in 13 southeastern Pennsylvania counties, including Lancaster County (Yanisko 2017). As a result, the movement of firewood in Lancaster County and the other impacted counties is restricted. Spotted lanternflies threaten agricultural crops, including apples, grapes, and hardwoods (PADA 2017), and would impact farms, orchards, and wineries. An infestation has the potential to cause \$18 billion worth of crop loss (Bresswein 2017).

Despite thousand cankers disease currently being absent from Lancaster County, the potential for introduction is high. Thousand cankers disease was first identified in Bucks County in August 2011 and spread to Chester County in 2014. A quarantine order was imposed on July 22, 2014 restrict the movement of walnut material from Bucks, Chester, Delaware, Montgomery, and Philadelphia counties. This disease is transmitted to black



walnut trees when walnut twig beetles carrying the fungus *Geosmithia morbida* tunnel beneath the bark, causing cankers to form. After repeated attacks, the cankers impede water and nutrient movement through the tree, resulting in tree death. Although thousand cankers disease has not been confirmed in Lancaster County, the disease still posed a threat to the walnut tree population and industry. Black walnut lumber is highly valued for woodworking and furniture-making, and the tree nuts are consumed by humans (PADA 2017b).

Asian longhorned beetles have not been confirmed within Lancaster County but pose a threat to hardwood trees, including maples, birch, elm, willow, ash, and poplar trees. As they feed, larval beetles bore holes into the hardwood trees, eventually killing the tree (USDA 2017b).

A number of invasive plants also pose a significant threat to ecosystem biodiversity and agricultural productivity because of their ability to out-compete native species. Pennsylvania has identified 10 Class A noxious weeds as part of the Controlled Plant and Noxious Weed Act. These plants include Palmer amaranth, waterhemp, animated oat, dodder, goatsrue, giant hogweed, hydrilla, wavyleaf basketgrass, broomrape, and kudzu (PA Agricultural Code Title 7). Some species (e.g., Palmer amaranth and waterhemp) are prolific seed producers and have developed a potential resistance to traditional herbicides, making them challenging and expensive to manage. Others, like kudzu, grow rapidly and prevent slower growing, native plants from establishing.

The location and extent of these invasive threats depends on the preferred habitat of the species as well as the species' ease of movement and establishment.

#### **4.3.5.2 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. Other invasive species can cause significant changes in the composition of Pennsylvania's ecosystems. Forest or crop-impacting invasive species could have a significant economic impact in Lancaster County because the County hosts both forest-based recreation and the largest agricultural sector in the state. Still more invasive species can cause widespread illness or death in humans.

Invasive species contribute to a broad range of environmental impacts. The aggressive nature of 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.

Beyond causing human, animal, and plant harm, there are secondary impacts of invasive species in that they also cause harm to host species and ecosystems, particularly in the case of invasive species that attack forests or agricultural crops. Forests prevent soil degradation and erosion, protect watersheds, stabilize slopes, and absorb carbon dioxide emissions. The key role of forests in the hydrologic system means that if forest land is wiped out, the effects of erosion and flooding will be amplified. Invasive species would also negatively impact the County's agricultural economy by increasing the cost of pest control measures, and decreasing harvest yields. Overall, invasive species reduce the productivity and profitability of agricultural land. Invasive species that affect the health of hardwood trees can have particularly damaging secondary 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 more easily succumb to an infestation. An example of a possible worst-case invasive species scenario is if the spotted lanternfly would continue to spread across Lancaster County and significantly destroy the County's crops. With the high mortality rate associated with the spotted lanternfly, crops including grapes and apples would be devastated. Farms, orchards, and wineries could experience an \$18 billion loss (Bresswein 2017). Such significant crop loss could cause farms to collapse, resulting in the loss of jobs and valuable income to the County. If the land is no longer agriculturally profitable, arable land could be developed for residential or business use.



### 4.3.5.3 Past Occurrence

Invasive species have been entering Pennsylvania since the arrival of early European settlers. The presence of the emerald ash borer in Lancaster County was first confirmed in 2015. Lancaster County is part of the emerald ash borer infestation zone, along with 61 other Pennsylvania counties (USDA 2017c). Additionally, the hemlock woolly adelgid has been present in Pennsylvania since 1967, and was first detected in Lancaster County between 1967 and 2010. DCNR continues to monitor the westerly progression of the invasive species, and since 2010, has detected a general movement west. Within the past two years, cankerworms and spotted lanternflies have been observed in Lancaster County and have the potential to cause significant crop and forest damage. Lancaster County is also part of the quarantine zone for the emerald ash borer and spotted lanternfly (USDA 2017c). This means it is legal to move firewood, ash, and the insect between counties, but it is not legal to move non-compliant items out of the state, nor is it legal to move non-compliant firewood into the state.

### 4.3.5.4 Future Occurrence

According to the 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. Expanded global trade has created opportunities for many organisms to be transported to and establish themselves in new countries and regions. Furthermore, climate change is contributing 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 the favor of non-native species.

In order to combat the increase in future occurrences, the PISC, which is a collaboration of state agencies, public organizations, and federal agencies, released the Invasive Species Management Plan in May 2009. This plan outlines the Commonwealth's goals for the management of the spread of non-native invasive species, and creates a framework for responding to threats through research, action, and public outreach and communication. More information on the Species Management Plan can be found online at [www.invasivespeciescouncil.com](http://www.invasivespeciescouncil.com). It is reasonable to assume that current threats, including the emerald ash borer, hemlock woolly adelgid, Asian longhorned beetle, spotted lanternfly, cankerworms, and thousand cankers disease, will continue to directly impact or threaten Lancaster County. Plants currently identified as part of the Noxious Weed Act including Palmer amaranth, waterhemp, animated oat, dodder, goatsrue, giant hogweed, hydrilla, wavyleaf basketgrass, broomrape, and kudzu are also likely to threaten Lancaster County.

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).

### 4.3.5.5 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 invasive species hazard on Lancaster County, including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on (1) life, (2) health and safety, (3) general building stock and critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Additional data and next steps





### Overview of Vulnerability

Lancaster 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:

- 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 (University of Arizona 2006)

Estimated losses are difficult to quantify; however, infestation can impact Lancaster County’s population and economy. Direct effects of infestation lead to cascading indirect impacts. As vegetation dies or becomes stressed and weakened by pests such as the emerald ash borer, available fuel and high-intensity wildfires increase. As species compositions change due to infestation outbreaks, whole fire regimes can shift. Physical stresses on trees may also affect how trees respond to other natural hazards such as hurricanes, drought, and ice storms (Kurtz 2007).

Due to the current presence of invasive species in Lancaster County, it is clear that the County is vulnerable to invasive species. Despite quarantine and control efforts, invasive species movement occurs across county lines through anthropogenic and natural modes, including freight shipping, transplantation, and animal movement. Considering the extent of the current infestations and neighboring county infestations, it is reasonable to project that the County’s vulnerability will increase.

### Data and Methodology

Because of lack of quantifiable loss information, a qualitative assessment has been used to evaluate assets exposed to this hazard and potential impacts associated with this hazard.

### Impact on Life, Health, and Safety

The entire population of Lancaster County is vulnerable to invasive species to some extent, but direct impacts to life, health, and safety are minor.

### Impact on General Building Stock and Critical Facilities

No structures are anticipated to be affected directly by infestation or invasive species; however, the emerald ash borer may cause a catastrophic loss of the ash tree throughout state forests, which could result in stream bank instability, erosion, and increased sedimentation. In addition, a preponderance of dead tree limbs could increase the occurrence of downed trees on roadways and utility lines during storms with heavy winds.

### Impact on 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 Lancaster County have not been quantified in available documentation. Only losses from spotted lanternflies have been estimated for Lancaster County, and an infestation has the potential to cause \$18 billion worth of crop loss to farms, orchards, and wineries (Bresswein 2017).

Although the economic impact has not been quantified for Lancaster County, state-wide agricultural losses due to invasive species were estimated at \$5,808,803,000 (PEMA 2013). The potential impact of invasive species on agriculture is significant since Lancaster County was identified as having Pennsylvania’s highest agricultural production with 18.5 percent of state total sales (PEMA 2013). Based on these figures, the potential agricultural loss from invasive species impacts could be billions of dollars.



### **Impact of Future Growth and Development**

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As discussed in Section 2, areas targeted for future growth and development have been identified across Lancaster County. Any areas of growth could be impacted by the infestation hazard because the entire planning area is exposed and vulnerable.

### **Change of Vulnerability**

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Invasive species were not profiled in the 2014 HMP, so the change in vulnerability to this hazard cannot be determined.

### **Additional Data and Next Steps**

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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 and local efforts.



### 4.3.6 Pandemic Disease

Pandemics are large-scale disease outbreaks, defined by the way in which a disease spreads, not by the number of fatalities associated with it. 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 (Flu.gov 2015). Pandemics typically result from infectious diseases. An infectious disease, as defined by the World Health Organization (WHO), is caused by pathogenic organisms (e.g., bacteria, viruses, fungus, or parasites) that spread from one person to another, whether through direct or indirect contact. Zoonotic disease, a type of infectious disease, occurs when animals transmit a disease to humans (WHO 2015). Although any infectious disease can reach pandemic levels, influenza (flu) has the greatest likelihood of causing the next pandemic.

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the pandemic disease hazard for the Lancaster County Hazard Mitigation Plan (HMP).

#### 4.3.6.1 Location and Extent

Pandemic events cover a wide geographic area and can affect large populations, which can include multiple countries or continents. Size and extent of an infected population depends on how easily the illness is spread, mode of transmission, and amount of contact between infected and uninfected individuals. Locations with higher-density populations are more susceptible to pandemic outbreaks, as the disease can be transmitted more easily. Additionally, vulnerable populations, especially the young and the elderly (who have weaker immune systems), are at greater risk for both contracting a disease and suffering fatal or severe consequences. Flu most frequently spreads through the air or by touch; when an infected person coughs, infected droplets go into the air or onto their hands, facilitating transmission of the disease to other people (WHO 2015).

When a pandemic or disease outbreak occurs, WHO and other public health institutions begin tracking the disease outbreak, treatment, and more. Ebola was a significant pandemic concern for American public health officials in 2014; however, the disease has primarily remained in Africa to date. Should a pandemic take hold in the United States, the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) would be actively involved in managing the outbreak and treatment of the disease.

Although Ebola is still recognized as a global health threat, Lancaster County is primarily concerned with the possibility of a pandemic flu outbreak. Influenza viruses with the potential to reach pandemic levels include the avian influenza A (H5N1) and avian influenza H7N9 (CDC 2015). Several years ago, the swine influenza (H1N1) was of particular concern. H1N1 was first detected in people in the United States in April 2009. On June 11, 2009, WHO signaled that a pandemic of 2009 H1N1 flu was underway (CDC 2009).

#### 4.3.6.2 Range of Magnitude

Severity of a pandemic disease depends on a number of 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, the 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 4.3.6.5.



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 4.3.6-1 lists key differences between pandemic and seasonal flus.

**Table 4.3.6-1. Seasonal Flu vs. Pandemic Flu**

Pandemic Flu	Seasonal Flu
Rarely happens (three times in 20 <sup>th</sup> 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 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 U.S. 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 2010). 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) (CDC FluView 2016).

In 1999, WHO described a series of pandemic phases (revised in 2005 and 2009) to provide a global framework and aid in pandemic preparedness and response planning. In addition to facilitating implementation of preparedness recommendations, the phases also help provide greater understanding of when an event is considered to have reached pandemic levels. The six phases are described as follows:

- Phase 1: No viruses circulating among animals have been reported among humans.
- Phase 2: An animal influenza virus circulating among domesticated or wild animals has caused known infection in humans and is now considered a potential pandemic threat.
- Phase 3: An animal or human-animal influenza reassortment virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain



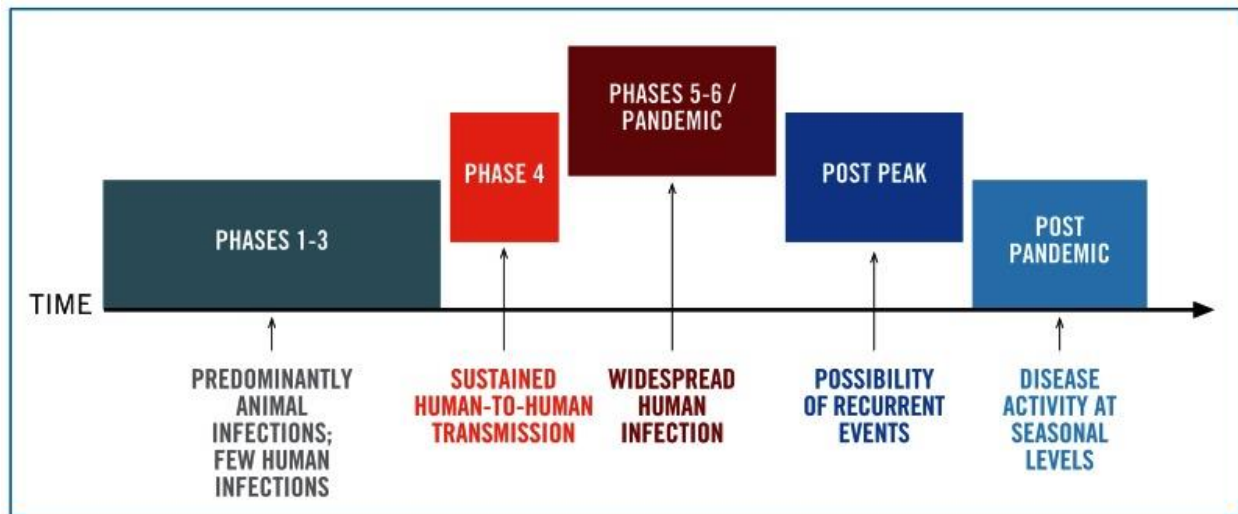


community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, such as close contact between an infected person and an unprotected caregiver.

- Phase 4: Verified human-to-human transmission of an animal or human-animal influenza reassortment virus is able to cause “community-level outbreaks.” The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk of a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed and a decision can be made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.
- Phase 5: There has been human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent, and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.
- Phase 6: The pandemic phase is characterized by community-level outbreaks in at least one other country in a different WHO region, in addition to the criteria defined in Phase 5. Phase 6 indicates a global pandemic is underway.

Conclusion of Phase 6 leads to the post-peak period, wherein pandemic levels decrease in most countries with surveillance capabilities. 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 phase (WHO 2009). Figure 4.3.6-1 shows the six phases of pandemic influenza described by WHO.

Figure 4.3.6-1 Pandemic Influenza Phases



Source: WHO 2009

### 4.3.6.3 Past Occurrence

Several pandemic influenza outbreaks have occurred worldwide over the past 100 years, as listed in Table 4.3.6-2. Deaths occurred in the United States as a result of Spanish Flu, Asian flu, and Hong Kong Flu outbreaks. Spanish Flu (1918-1920) claimed 500,000 lives in the United States, with 350,000 cases reported in



Pennsylvania. 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 (Global Security 2009). As of August 2010, H1N1 was in a post-pandemic period.

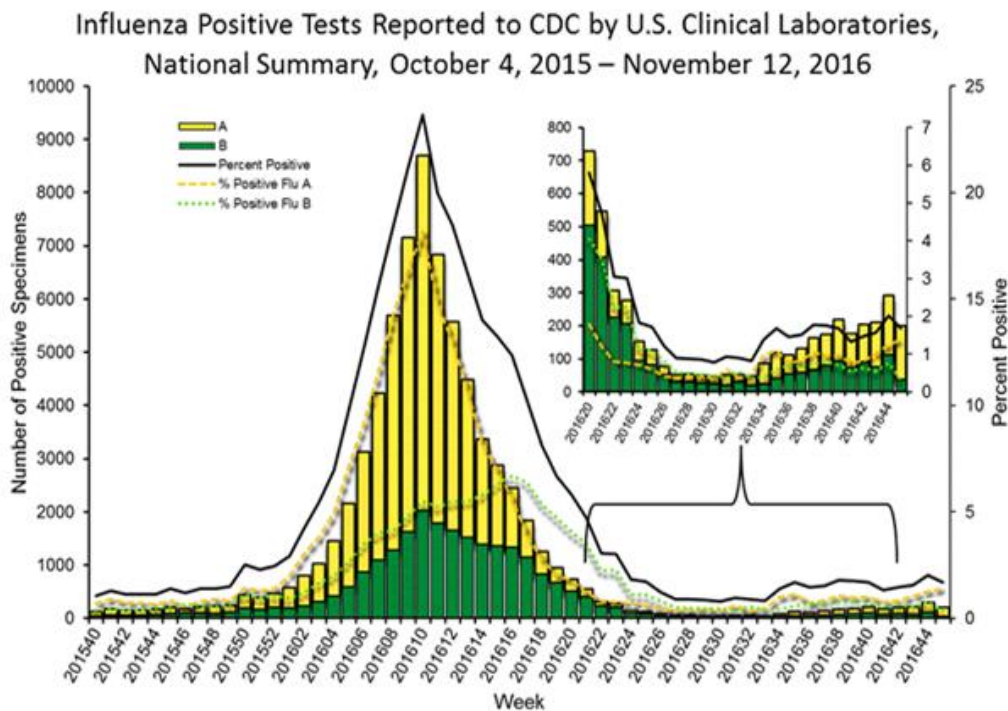
**Table 4.3.6-2. Previous Pandemic Outbreaks**

Date	Pandemic/Subtype	Worldwide Deaths (Approx.)
1918-1920	Spanish Flu/H1N1	50 Million
1957-1958	Asian Flu/H2N2	1.5-2 Million
1968-1969	Hong Kong Flu/H3N2	1 Million
2009-2010	Swine Flu/H1N1	> 18,000

Source: CDC 2010

Epidemiologists and public health officials consistently track the rate of influenza or influenza-like illnesses (ILI) to monitor potential pandemic threats. This also allows them to provide annual data on ILI seasonal outbreaks. Figure 4.3.6-2 below shows the national number of cases of ILI during the 2014-2015 season, distinguishing each type of ILI by a unique color.

**Figure 4.3.6-2 ILI Cases in the United States, 2015-2016 Season**



Source: CDC Weekly Flu 2016



In the mid-Atlantic region, which includes the State of Pennsylvania and Lancaster County, the following numbers of positive ILI tests were reported:

- A – 2,494
- B – 938
- H3N2v – 0

#### 4.3.6.4 Future Occurrence

Based on historical data, Lancaster County is expected to undergo pandemic influenza outbreaks every 11 to 41 years. Exact timing of pandemic influenza outbreaks is unpredictable, and complete avoidance is impossible (U.S. Department of Health and Human Services [DHHS] 2009). Future occurrence is considered *possible*, as defined by the Risk Factor Methodology probability criteria (shown in Table 4.4-1 in Section 4.4 of this HMP).

#### 4.3.6.5 Vulnerability Assessment

Depending on the characteristics of the disease or virus, certain population groups can be at higher risk of infection than others. Regarding seasonal influenza, about 60 percent of hospitalizations 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. As with seasonal flu, people with underlying health conditions faced a much higher probability of contracting H1N1. Schools, convalescent centers, and other institutions are highly conducive to faster transmission of pandemic diseases (CDC 2010).

Table 4.3.6-3 shows the demographic change in children and the elderly from 2000 through 2016 in Lancaster County. Lancaster County has seen population increases in both individuals under 65 years of age as well as individuals over 65 years of age. Therefore, Lancaster County is more vulnerable to both seasonal influenza and pandemic influenza, such as the H1N1 pandemic.

**Table 4.3.6-3. Demographic Trends for Vulnerable Populations**

Vulnerable Population	2000 Census	2010 Census	2016 Census Estimate	2000 to 2016 Change
Under 18 years	125,291	129,015	128,457	3,166
Under 65 years	404,598	441,665	446,411	41,813
65 years and over	66,060	77,780	92,089	26,029

Source: U.S. Census Bureau 2016



### 4.3.7 Radon Exposure

Radon is a natural gas that cannot be seen, smelled, or tasted. It is a noble gas that originates from natural radioactive decay of uranium and thorium. Radon is a large component of the natural radiation to which humans are exposed and can pose a serious threat to public health when it accumulates in poorly ventilated residential and occupation settings. According to the U.S. Environmental Protection Agency (EPA), radon causes more than 20,000 lung cancer deaths per year, second only to smoking as the leading cause of lung cancer (EPA 2013). An estimated 40 percent of the homes in Pennsylvania are believed to have elevated radon levels (Pennsylvania Department of Environmental Protection [PADEP] 2017c).

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the radon exposure hazard for the Lancaster County Hazard Mitigation Plan (HMP).

#### 4.3.7.1 Location and Extent

Radioactivity caused by airborne radon has been recognized for many years as an important component in the natural background radioactivity exposure of humans. However, it was not until the 1980s that the wide geographic distribution of elevated radon levels in houses and the possibility of extremely high radon concentrations in houses were recognized. In 1984, routine monitoring of employees leaving the Limerick nuclear power plant near Reading, PA, showed that readings from one employee frequently exceeded expected radiation levels, yet only natural, non-fission product radioactivity was detected on him. Radon levels in his home were detected around 2,500 picoCuries per liter (pCi/L), much higher than the 4 pCi/L guideline set by EPA or even the 67 pCi/L limit for uranium miners. As a result of this event, the Reading Prong section of Pennsylvania where this person lived became the focus of the first large-scale radon scare in the world.

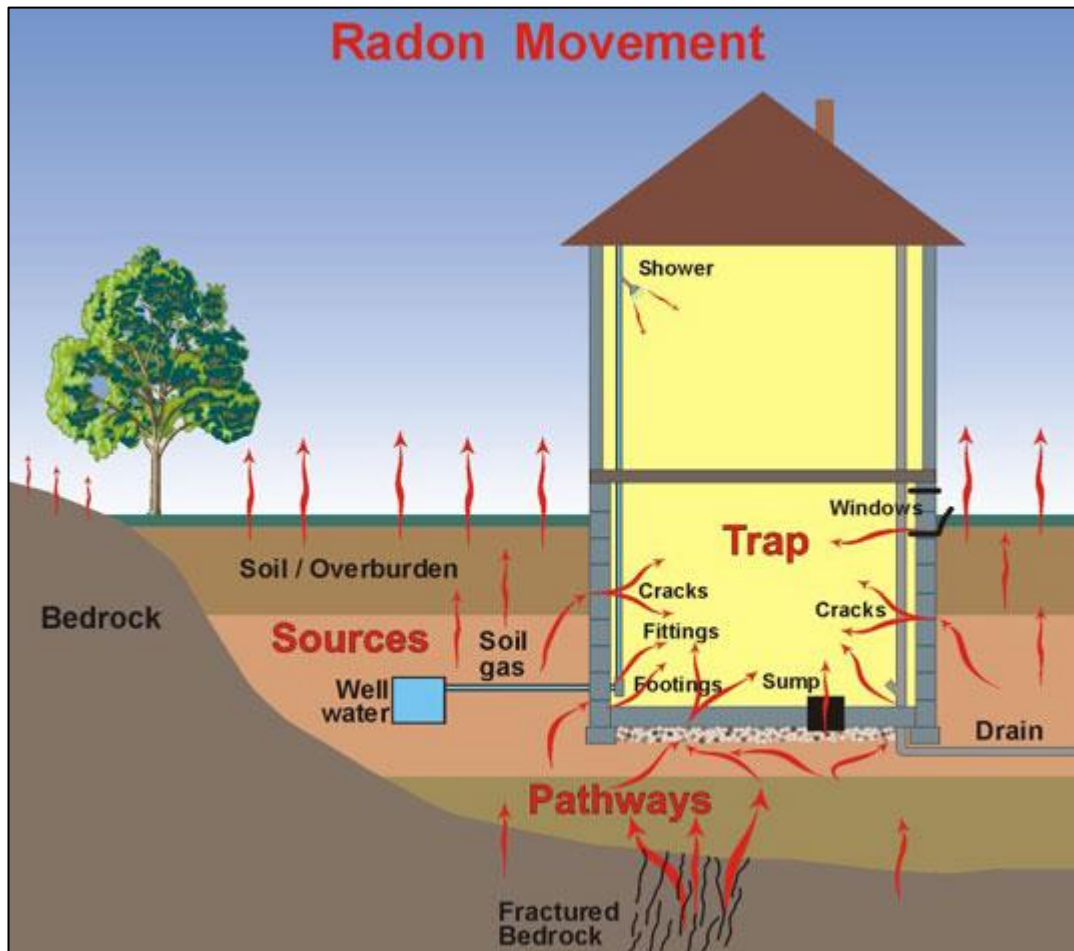
Radon (Rn-222), which has a half-life of 3.8 days, is a widespread hazard. The distribution of radon correlates with the distribution of radium (Ra-226), its immediate radioactive parent, and with uranium, its original ancestor. Because of the short half-life of radon, the distance radon atoms travel from their parent before they decay is generally limited to extents of feet or tens of feet. Three sources of radon in houses are now recognized:

- Radon in soil air flows into the house.
- Radon dissolved in water from private wells and exsolved during water usage; this source is rarely a problem in Pennsylvania.
- Radon emanating from uranium-rich building materials (such as concrete blocks or gypsum wallboard); this source also is not known to be a problem in Pennsylvania (PEMA 2013).

Figure 4.3.7-1 illustrates radon entry points into a home.



Figure 4.3.7-1. Sketch of Radon Entry Points into a House

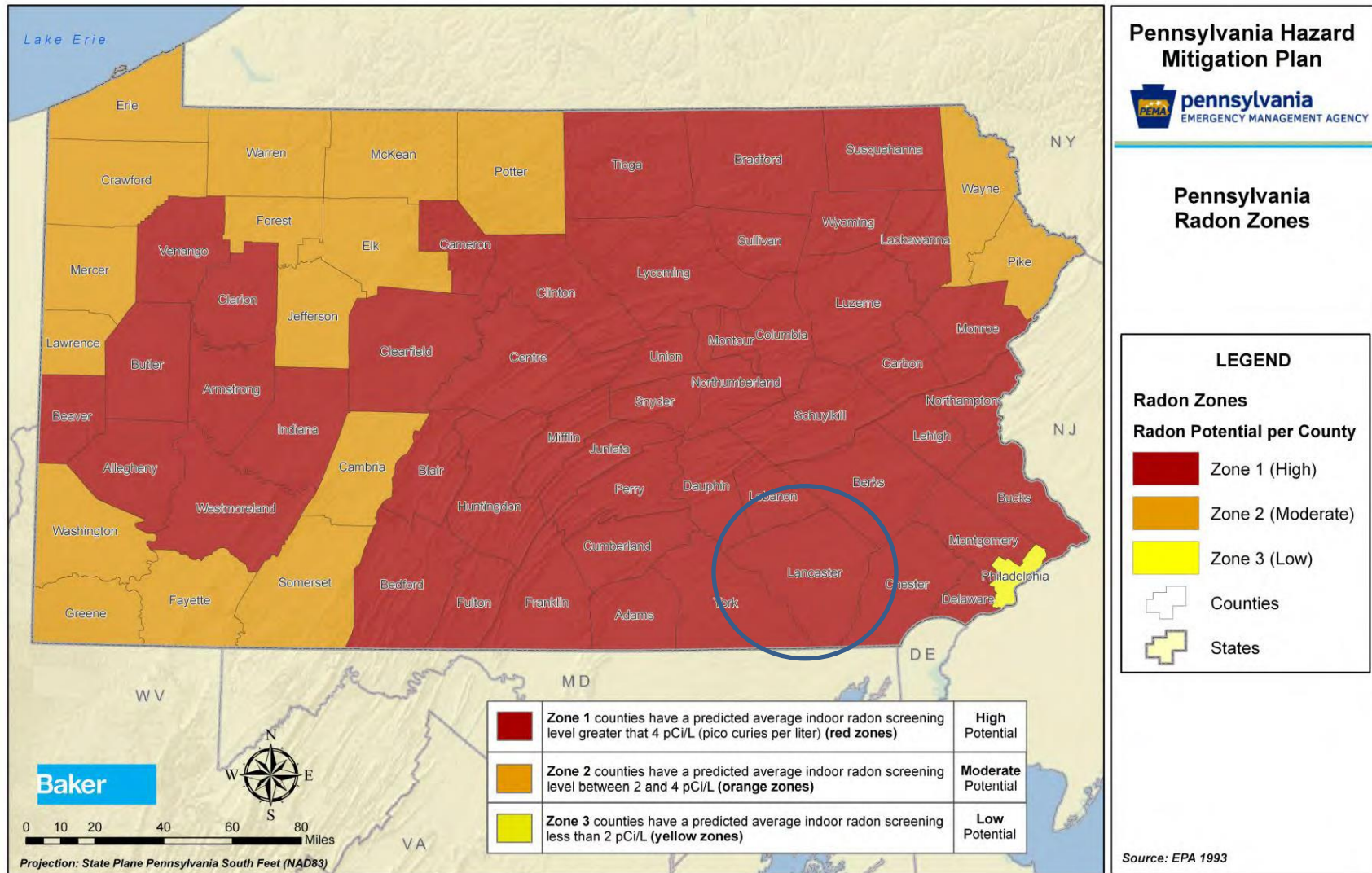


Sources: PEMA 2013

Each county in Pennsylvania is classified as having a low, moderate, or high radon hazard potential. A majority of counties across the Commonwealth, particularly counties in eastern Pennsylvania, have a high hazard potential. Western Pennsylvania counties, however, are not completely immune from the threat of radon, as high potential for radon exposure exists within nine western counties. The average indoor radon screening level within high-exposure counties exceeds 4 pCi/L. Lancaster County is in Zone 1 – High Radon Potential, as noted on Figure 4.3.7-2 below.



Figure 4.3.7-2. Radon Hazard Zones in Pennsylvania



Sources: PEMA 2013 (blue highlight added)





High radon levels were initially thought to be exacerbated in tightly sealed houses, although it is now recognized that rates of airflow into and out of houses, plus the location of air inflow and the radon content of air in the surrounding soil, are key factors affecting radon concentrations. Air must be drawn into a house to compensate for outflows of air from the house caused by a furnace, fan, thermal “chimney” effect, or wind effects. If the upper part of the house is tight enough to impede influx of outdoor air (radon concentration generally below 0.1 pCi/L), an appreciable fraction of the air may be drawn in from the soil or fractured bedrock through the foundation and slab beneath the house, or through cracks and openings for pipes, sumps, and similar features. Soil gas typically contains from a few hundred to a few thousand pCi/L of radon; therefore, even a small rate of soil gas inflow can lead to elevated radon concentrations in a house.

Radon concentration in soil gas depends on a number of soil properties, the importance of which are still being evaluated. In general, 10 to 50 percent of newly formed radon atoms escape the host mineral of their parent radium and gain access to the air-filled pore space. The radon content of soil gas clearly tends to be higher in soils containing higher levels of radium and uranium, especially if the radium occupies a site on or near the surface of a grain from which the radon can easily escape. The amount of pore space in the soil and its permeability for airflow, including cracks and channels, are important factors determining radon concentration in soil gas and its rate of flow into a house. Soil depth and moisture content, mineral host and form for radium, and other soil properties may also be important. Fractured zones may supply air having radon concentrations similar to those in deep soil for houses built on bedrock.

Areas where houses have high levels of radon can be divided into three groups in terms of uranium content in rock and soil:

- Areas of very elevated uranium content (above 50 parts per million [ppm]) around uranium deposits and prospects: Although very high levels of radon can occur in these areas, the hazard normally is restricted to within a few hundred feet of the deposit. In Pennsylvania, these localities occupy an insignificant area.
- Areas of common rocks having higher than average uranium content (5 to 50 parts per million [ppm]): In Pennsylvania, these rock types include granitic and felsic alkali igneous rocks and black shales. High uranium values in rock or soil and high radon levels in houses in the Reading Prong are associated with Precambrian granitic gneisses commonly containing 10 to 20 ppm uranium, but locally containing more than 500 ppm uranium. Elevated uranium occurs in black shales of the Devonian Marcellus Formation and possibly the Ordovician Martinsburg Formation in Pennsylvania. High radon values are locally present in areas underlain by these formations.
- Areas of soil or bedrock that have normal uranium content but properties that promote high radon levels in houses: This group is incompletely understood at present. Relatively high soil permeability can lead to high radon concentrations, the clearest example being houses built on glacial eskers. Limestone-dolomite soils also appear to be predisposed for high radon levels in houses, perhaps because of the deep clay-rich residuum where radium is concentrated by weathering on iron oxide or clay surfaces, coupled with moderate porosity and permeability. The importance of carbonate soils is indicated by exceedance of 4 pCi/L in 93 percent of a sample of houses built on limestone-dolomite soils near State College, Centre County, and exceedance of 20 pCi/L in 21 percent of that sample of houses, even though uranium levels in the underlying bedrock are all within the normal range of 0.5 to 5 ppm (PEMA 2013).

According to the State HMP, radon tends to exist as a gas or as a dissolved atomic component in groundwater. The most problematic source of radon in houses in Pennsylvania is radon in soil gas that flows into the house. Even a small rate of soil gas inflow can lead to elevated radon concentrations in a house. The State HMP indicates that current data on abundance and distribution of radon in Pennsylvania homes are incomplete and biased, but the plan identifies general patterns (PEMA 2013).



**4.3.7.2 Range of Magnitude**

Exposure to radon is the second-leading cause of lung cancer after smoking, and the leading cause of lung cancer among non-smokers. As stated earlier, radon is responsible for more than 20,000 lung cancer deaths every year. Lung cancer is the only known effect on human health from exposure to radon in air and, thus far, no evidence indicates that children are at greater risk of lung cancer than adults (EPA 2013). The main hazard is actually from the radon daughter products (polonium-218, lead-214, bismuth-214), which may become attached to lung tissue and induce lung cancer by their radioactive decay. Table 4.3.7-1 lists (1) cancer risks from exposure to radon at various levels for smokers and non-smokers, (2) lung cancer risks from radon exposure compared to cancer risks from other hazards for smokers and non-smokers, and (3) action thresholds.

**Table 4.3.7-1. Radon Risk for Smokers and Non-Smokers**

Radon Level (picoCuries per liter [pCi/L])	Cancer Rate per 1,000 People with Lifetime Exposure	Comparative Cancer Risk of Radon Exposure	ACTION THRESHOLD
<b>SMOKERS</b>			
20	About 260 people could get lung cancer	250 times the risk of drowning	Fix structure
10	About 150 people could get lung cancer	200 times the risk of dying in a home fire	
8	About 120 people could get lung cancer	30 times the risk of dying in a fall	
4	About 62 people could get lung cancer	5 times the risk of dying in a car crash	
2	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider fixing structure between 2 and 4 pCi/L
1.3	About 20 people could get lung cancer	(Average indoor radon level)	Reducing radon levels below 2 pCi/L is difficult
0.4	About 3 people could get lung cancer	(Average outdoor radon level)	
<b>NON-SMOKERS</b>			
20	About 36 people could get lung cancer	35 times the risk of drowning	Fix structure
10	About 18 people could get lung cancer	20 times the risk of dying in a home fire	
8	About 15 people could get lung cancer	4 times the risk of dying in a fall	
4	About 7 people could get lung cancer	The risk of dying in a car crash	
2	About 4 people could get lung cancer	The risk of dying from poison	Consider fixing structure between 2 and 4 pCi/L
1.3	About 2 people could get lung cancer	(Average indoor radon level)	Reducing radon levels below 2pCi/L is difficult
0.4	-	(Average outdoor radon level)	
Note: Risk may be lower for former smokers. * Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003). ** Comparison data calculated using the Centers for Disease Control and Prevention’s 1999-2001 National Center for Injury Prevention and Control Reports.			

Source: EPA 2013

According to EPA, the average radon concentration in the indoor air in homes in the United States is about 1.3 pCi/L. EPA recommends that homes be repaired if the radon level is 4 pCi/L or more. However, EPA also





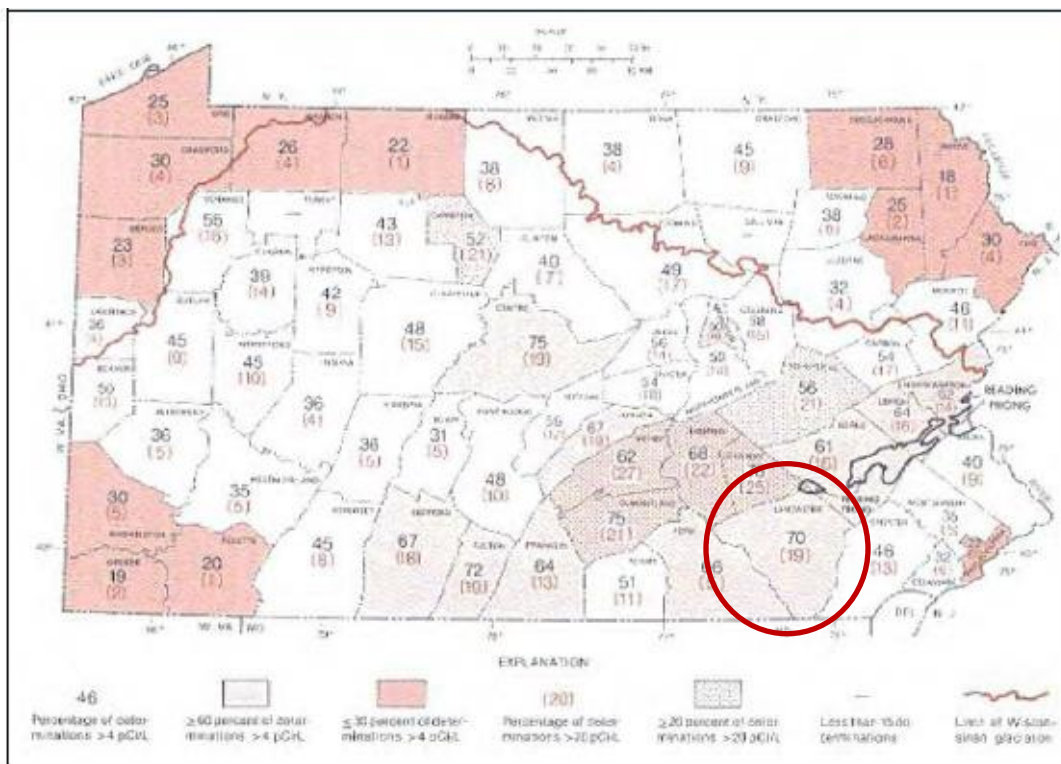
recommends that Americans consider fixing their home if radon levels are between 2 and 4 pCi/L because there is no known safe level of exposure to radon. As listed in Table 4.3.7-1, a smoker exposed to radon has a much higher risk of lung cancer.

The worst-case scenario for radon exposure would be a large area of tightly sealed homes inducing high levels of exposure to residents over a prolonged period of time, without awareness of this by the residents. This worst-case scenario exposure then could lead to a large number of people contracting cancer attributed to the radon exposure (PEMA 2013). The most likely scenario is a single household exposed to a very low concentration of radon, with no adverse health effects.

### 4.3.7.3 Past Occurrence

Current data on abundance and distribution of radon in Pennsylvania houses are considered incomplete and potentially biased, but some general patterns are evident (shown in Figure 4.3.7-3).

Figure 4.3.7-3. Percentage of Pennsylvania Homes with Radon Levels Exceeding 4 pCi/L



Source: PEMA 2013 (red highlight added)

PADEP Bureau of Radiation Protection (Bureau) provides information for homeowners on how to test for radon in their houses. If results of a test reported to the Bureau exceed 4 pCi/L, the Bureau works to help the homeowner repair the house so as to mitigate high radon levels. The total number of tests reported to the Bureau since 1990 and test results by zip code are accessible on the Bureau’s website. However, to best approximate the average for an area, this information is provided only if more than 30 tests within that area were reported.

The Bureau collected the sufficient number of radon results from residences in 40 zip codes within Lancaster County to allow them to report the findings (summarized in Table 4.3.7-2). PADEP does not publish results unless a zip code has had at least 30 tests conducted. PADEP only publishes the average and maximum results for a zip code; it does not offer a range of results for a zip code, municipality, or region. The PADEP Radon Division recommends that **all** homeowners test for radon, regardless of test results within their respective zip



codes. Despite a low average test result within a zip code, many homes in that zip code may have elevated radon levels.

**Table 4.3.7-2. Radon Level Tests and Results by Zip Codes**

ZIP Code	Location	Area in Home	Number of Tests	Maximum Result (pCi/L)	Average Result (pCi/L)
17022	Elizabethtown	Basement	1,101	157.4	8.4
		First Floor	69	70	5.9
17501	Akron	Basement	124	173.4	21
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17502	Bainbridge	Basement	36	85.4	11.5
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17508	Brownstown	Basement	59	65.2	17.5
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17509	Christiana	Basement	135	381	17.4
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17512	Columbia	Basement	395	403	14
		First Floor	37	72.6	10.5
17516	Conestoga	Basement	153	127.9	13.8
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17517	Denver	Basement	452	97.1	7.3
		First Floor	30	5.6	1.7
17519	East Earl	Basement	79	55.3	9.5
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17520	East Petersburg	Basement	271	98.8	12.7
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17522	Ephrata	Basement	825	225.2	13.1
		First Floor	63	40.2	6.1
17527	Gap	Basement	150	228	18.9
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17532	Holtwood	Basement	122	226.3	28.4
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17535	Kinzers	Basement	32	33.6	7.8
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17536	Kirkwood	Basement	113	317	22
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17538	Landisville	Basement	454	111.3	11.6
		First Floor	40	18.7	4.4
17540	Leola	Basement	247	121.5	11.1
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17543	Lititz	Basement	2,803	369.6	18
		First Floor	254	70.1	8.6
17545	Manheim	Basement	1,336	471.1	24
		First Floor	119	66.8	8.6
17547	Marietta	Basement	294	209.7	11.1
		First Floor	36	28.6	4
17550	Maytown	Basement	33	20.5	6.7
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17551	Millersville	Basement	472	113.3	9
		First Floor	44	21.2	4.7
17552	Mount Joy	Basement	671	332.4	15.6
		First Floor	52	22.1	5.1
17554	Mountville	Basement	343	199.9	11.4
		First Floor	35	39.7	7.7
17555	Narvon	Basement	155	119.1	10.5
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17557	New Holland	Basement	325	115.6	9.7
		First Floor	31	69.5	6.7



ZIP Code	Location	Area in Home	Number of Tests	Maximum Result (pCi/L)	Average Result (pCi/L)
17560	New Providence	Basement	142	206.8	22.8
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17562	Paradise	Basement	64	320.8	24.2
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17563	Peach Bottom	Basement	48	87.1	12.5
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17565	Pequea	Basement	111	967	44.4
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17566	Quarryville	Basement	386	355.2	16.8
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17569	Reinholds	Basement	198	55.9	5.7
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17572	Ronks	Basement	50	30.5	8.3
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17578	Stevens	Basement	109	95.6	7.1
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17579	Strasburg	Basement	268	113.2	9.7
		First Floor	31	63.4	6.7
17582	Washington Boro	Basement	39	72.4	16.6
		First Floor	Insufficient Data	Insufficient Data	Insufficient Data
17584	Willow Street	Basement	366	615.3	15.9
		First Floor	36	32.9	5.1
17601	Lancaster	Basement	4,127	403	10.8
		First Floor	472	40.7	5.3
17602	Lancaster	Basement	1,387	90.5	7.7
		First Floor	141	38.8	3.8
17603	Lancaster	Basement	2,600	96.1	6.9
		First Floor	273	82	3.9

Source: PADEP 2017c

#### 4.3.7.4 Future Occurrence

Radon exposure is inevitable given present soil, geologic, and geomorphic factors across Pennsylvania. Residents who live in developments within areas where radon levels previously have been found to be significantly high will continue to be more susceptible to exposure. However, new incidents of concentrated exposure may occur with future development or deterioration of older structures. Exposure can be limited by conducting proper testing within both existing and future developments, and implementing appropriate mitigation measures (PEMA 2013). As part of a 2014 initiative to raise awareness, EPA implemented the “Test, Fix, Save a Life” radon action campaign to highlight radon testing and mitigation as a simple and affordable step to significantly reduce the risk of lung cancer. Through this initiative, the “Test, Fix, Save a Life” mantra specifies activities and facts for the public regarding radon poisoning, as indicated below:

- **Test:** All homes with or without basements should be tested for radon. Affordable, do-it-yourself radon test kits are available online and at home improvement and hardware stores, or you can hire a qualified radon tester.
- **Fix:** EPA recommends taking corrective action to fix radon levels at or above 4 pCi/L and contacting a qualified radon-reduction contractor. In most cases, a system with a vent pipe and fan is used to reduce radon. Addressing high radon levels often costs the same as other minor home repairs.
- **Save a Life:** More than 20,000 Americans die from radon-related lung cancer each year. By decreasing elevated levels in the home, residents can help prevent lung cancer while creating a healthier home (EPA 2013).

Future occurrences of radon exposure can be considered *likely* as defined by the Risk Factor Methodology probability criteria (discussed in to Section 4.4).



#### 4.3.7.5 Vulnerability Assessment

To understand risk, a community must evaluate the assets that are exposed or vulnerable within the identified hazard area. This section evaluates and estimates the potential impact of the radon exposure hazard on Lancaster County in the following sections:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impacts 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
- Further data collections that will assist in understanding this hazard over time

##### Overview of Vulnerability

Radon exposure is of particular concern in Lancaster County because of the County's location within a High Potential (Level 1) EPA Radon Zone. While structural factors (such as building construction and engineered mitigation measures) can influence the level of radon exposure, all residents and structures within Lancaster County are vulnerable to radon exposure.

##### Data and Methodology

The 2010 U.S. Census data and the Hazards U.S. - Multi Hazard (HAZUS-MH) building inventory for Lancaster County were referenced to support an evaluation of assets exposed to this hazard and potential impacts associated with this hazard. Per the 2013 Pennsylvania State HMP, an average radon mitigation system cost of \$1,200 was applied to 20 percent of the building stock to evaluate economic vulnerability (PEMA 2013).

##### Impact on Life, Health, and Safety

For the purposes of this plan, the entire population of the County is assumed exposed to risk of radon exposure. Radon is responsible for more than 20,000 of lung cancer deaths every year. Lung cancer is the only known effect on human health from exposure to radon in air, and thus far, no evidence indicates that children are at greater risk of lung cancer than are adults (EPA 2013).

As shown in Figure 4.3.7-3 above, 70 percent of homes in Lancaster County have measured radon levels exceeding 4 pCi/L. Excess human cancer risk posed by radon exposure at this elevated level is identified in Table 4.3.7-1.

##### Impact on General Building Stock and Critical Facilities

While the entire general building stock and critical facility inventory in Lancaster County is exposed to radon, radon does not result in direct damage to structures and facilities. Rather, engineering methods installed to mitigate human exposure to radon in structures results in economic costs described in the following subsection.

##### Impact on the Economy

EPA has concluded that an average radon mitigation system costs \$1,200. EPA also states that current State surveys indicate one home in five with elevated radon levels. By use of this information, radon loss estimation is factored by assuming that 20 percent of the residential buildings within High Potential (Level 1) counties have elevated radon levels, and each would require a radon mitigation system installed at the EPA estimated average of \$1,200 (PEMA 2013). Therefore, estimated radon mitigation costs for residential structures in Lancaster County could exceed \$41 million. However, 70 percent of households in the County have measured basement-level average radon levels exceeding 4 pCi/L (shown on Figure 4.3.7-3), indicating that the cost of radon mitigation may be higher than the estimate based on the above-cited information from EPA, whereby only 20 percent of structures are considered for mitigation.





### **Impact on the Environment**

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Radon exposure exerts minimal environmental impacts. Because of the relatively short half-life of radon, it tends to affect only living and breathing organisms such as humans or pets that are routinely within contained areas (basement or house) where the gas is released (PEMA 2013).

### **Future Growth and Development**

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Because the entirety of Lancaster County has been determined at risk for the radon exposure hazard, any new development will be exposed to this risk. Measures to reduce human exposure to radon in structures are readily available and can be incorporated during new construction at significantly lower cost and greater effectiveness than cost and effectiveness of retrofitting existing structures to implement these measures.

### **Additional Data and Next Steps**

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The assessment above identifies human health and economic losses associated with this hazard of concern; however, these estimates are based on national epidemiological statistics and generalized estimates of costs to mitigate structures in Lancaster County. Because specific structural conditions affect human exposure to radon, direct radon measurements within facilities are necessary to properly assess the level of health risk and indicate need for mitigation measures. Furthermore, EPA recommends consideration of radon exposure risk and installation of mitigation measures as appropriate during all new construction.



### 4.3.8 Subsidence and Sinkholes

This section provides a profile and vulnerability assessment for the subsidence and sinkhole hazard for Lancaster County. Subsidence and sinkholes may be natural or related to underground mining activities. The predominant cause of subsidence and sinkholes in Lancaster County is its underlying carbonate bedrock composition, which can include limestone and dolomite. Although underground mining is not considered the primary cause of sinkholes or subsidence in the County, subsidence/sinkholes may still occur in the future because of mining activity. Thus, information will be presented to highlight this hazard cause and its potential impacts. Although underground mining is not considered a geologic hazard, it will be treated as such in this document, due to its relation with the potential for subsidence events.

Land subsidence can be defined as the sudden sinking or gradual downward settling of the earth's surface with little or no horizontal motion, owing to the subsurface movement of earth materials (U.S. Geological Survey [USGS] 2007). Subsidence often occurs through the loss of subsurface support due to mining or in karst terrain, which may result from a number of natural and human-caused occurrences. Karst is a distinctive topography, in which the landscape is largely shaped by the dissolving action of water on carbonate bedrock (usually limestone, dolomite, or marble).

Karst features are defined as pockets of limestone or dolomite bedrock located within more stable geological formations that could cause subsidence or sinkholes. The density of karst features ranges from 0 to 600 features per square mile, with wide variations in size. Fewer karst features have been mapped in existing urban areas; however, this is likely a result of development activities that disguise, cover, or fill existing features rather than an absence of the features themselves (Pennsylvania Emergency Management Agency [PEMA] 2013).

Sinkholes are a natural and common geologic feature in areas with underlying limestone, carbonate rock, salt beds, or other rocks that are soluble in water. Over periods of time measured in thousands of years, the carbonate bedrock can be dissolved through acidic rainwater moving through fractures or cracks in the bedrock. This creates larger openings in the rock through which water and overlying soil materials travel. Over time, the deposited soils compromise the strength of the bedrock until it is unable to support the land surface above, causing a collapse or sinkhole. In this example the sinkhole occurs naturally; however, in other cases, the root causes of a sinkhole are anthropogenic, especially those that involve 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. These actions can also serve to accelerate the natural processes of bedrock degradation, which can directly impact sinkhole creation.

Both natural and manmade sinkholes can occur without warning. Specific signs that a sinkhole is forming include slumping or falling fence posts, trees, or foundations; sudden formation of small ponds; wilting vegetation; discolored well water; and/or structural cracks in walls and floors. Sinkholes can form into steep-walled holes or into bowl- or cone-shaped depressions. When sinkholes occur in developed areas, they can cause severe property damage, injury, and loss of life; disruption of utilities; and damage to roadways. In urban and suburban areas, sinkholes can destroy highways and buildings.

Two common causes of subsidence in Pennsylvania are (1) dissolution of carbonate rock, such as limestone or dolomite; and (2) mining activity. 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 features associated with karst topography include sinkholes, linear depressions, and caves. Often, subsurface 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 2013).

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 Lancaster County.



#### 4.3.8.1 Location and Extent

Approximately 28.3 percent of Lancaster County (277.98 square miles) is underlain by carbonate bedrock (e.g., limestone). Lancaster County has no susceptibility to subsidence and sinkholes attributable to abandoned mines; however, there are surface mines around the County.

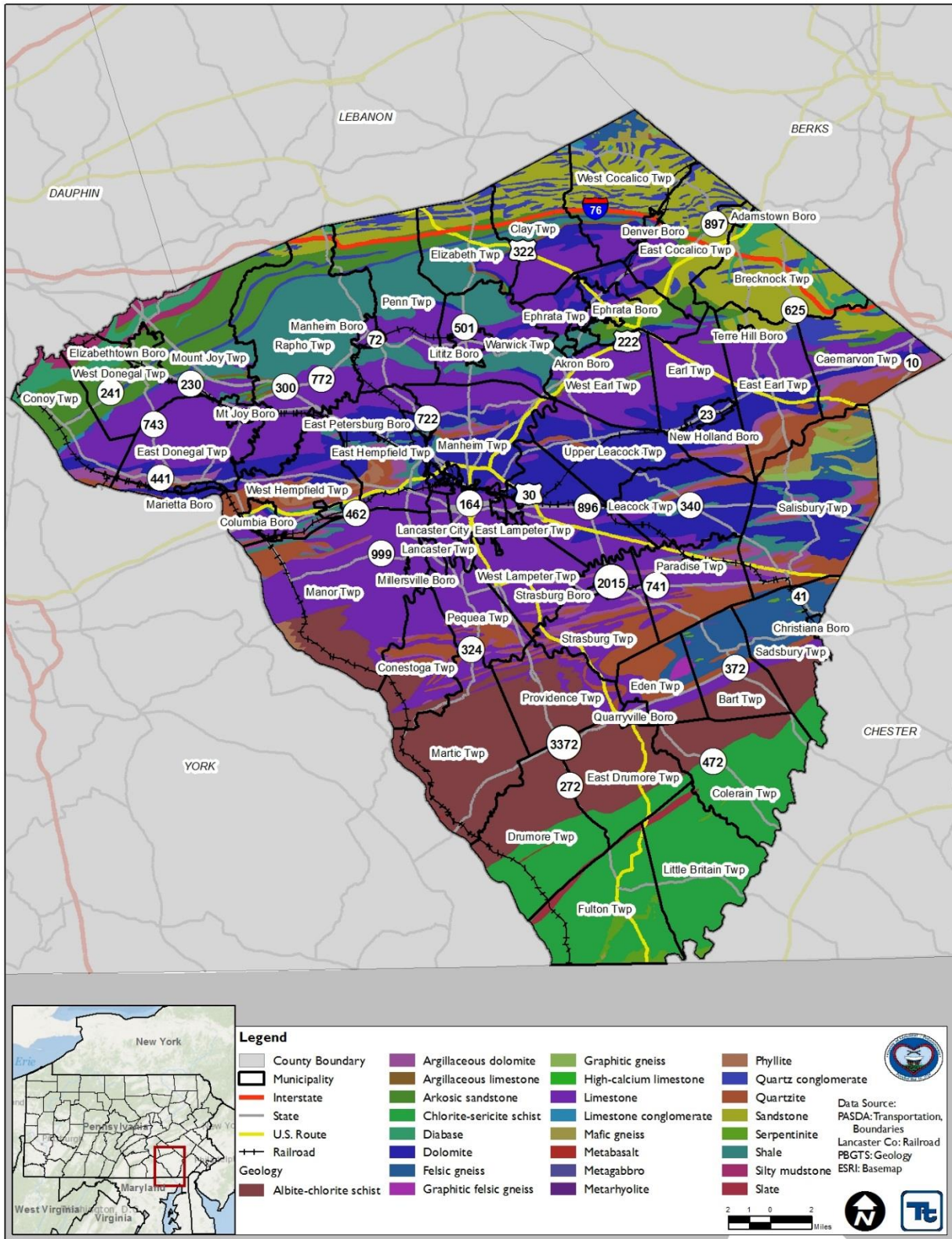
Figure 4.3.8-1 illustrates the bedrock geology of Lancaster County. Figure 4.3.8-2 highlights the areas of Pennsylvania subject to natural subsidence caused by the presence of limestone bedrock, and Figure 4.3.8-3 more specifically illustrates the limestone bedrock across Lancaster County. The following municipalities have identified near-surface limestone:

- Akron Borough
- Bart Township
- Caernarvon Township
- Christiana Borough
- Clay Township
- Columbia Borough
- Conestoga Township
- Conoy Township
- Denver Borough
- Earl Township
- East Cocalico Township
- East Donegal Township
- East Drumore Township
- East Earl Township
- East Hempfield Township
- East Lampeter Township
- East Petersburg Borough
- Eden Township
- Elizabeth Township
- Ephrata Borough
- Ephrata Township
- Lancaster City
- Lancaster Township
- Leacock Township
- Lititz Borough
- Manheim Borough
- Manheim Township
- Manor Township
- Marietta Borough
- Martic Township
- Millersville Borough
- Mountville Borough
- Mt. Joy Borough
- Mt. Joy Township
- Paradise Township
- Penn Township
- Pequea Township
- Providence Township
- Quarryville Borough
- Rapho Township
- Sadsbury Township
- Salisbury Township
- Strasburg Borough
- Strasburg Township
- Terre Hill Borough
- Upper Leacock Township
- Warwick Township
- West Cocalico Township
- West Donegal Township
- West Earl Township
- West Hempfield Township
- West Lampeter Township

According to a subset of data contained in the Office of Surface Mining Reclamation and Enforcement (OSMRE) Abandoned Mine Land Inventory, there are no abandoned mines located in Lancaster County.



Figure 4.3.8-1. Lancaster County Geology



Source: Pennsylvania Bureau of Topographic and Geologic Survey 2001

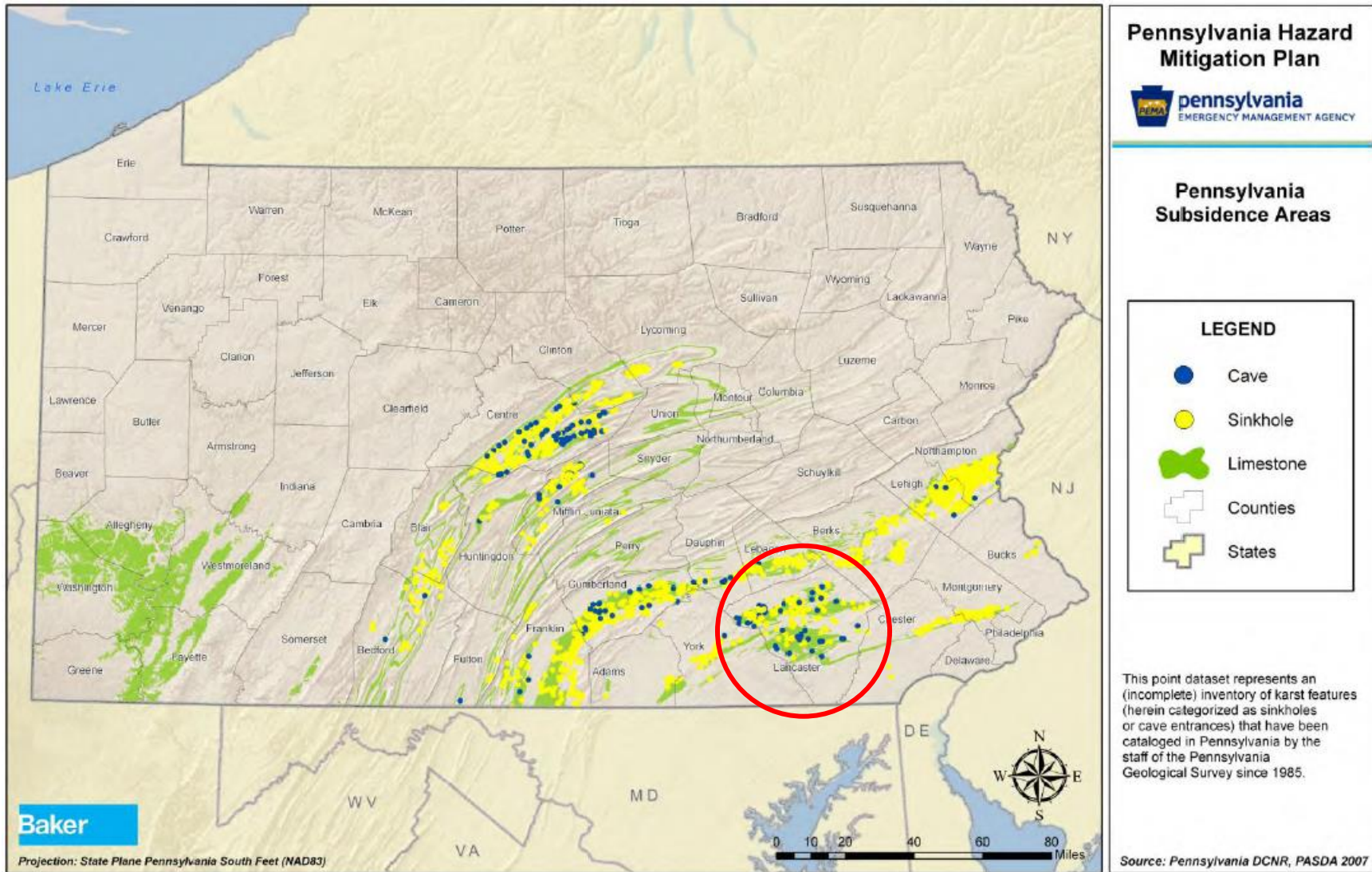
Note: The numbers shown in circles on the map are local roadway designations.







Figure 4.3.8-2. Areas of Pennsylvania Subject to Natural Subsidence Due to the Presence of Limestone Bedrock

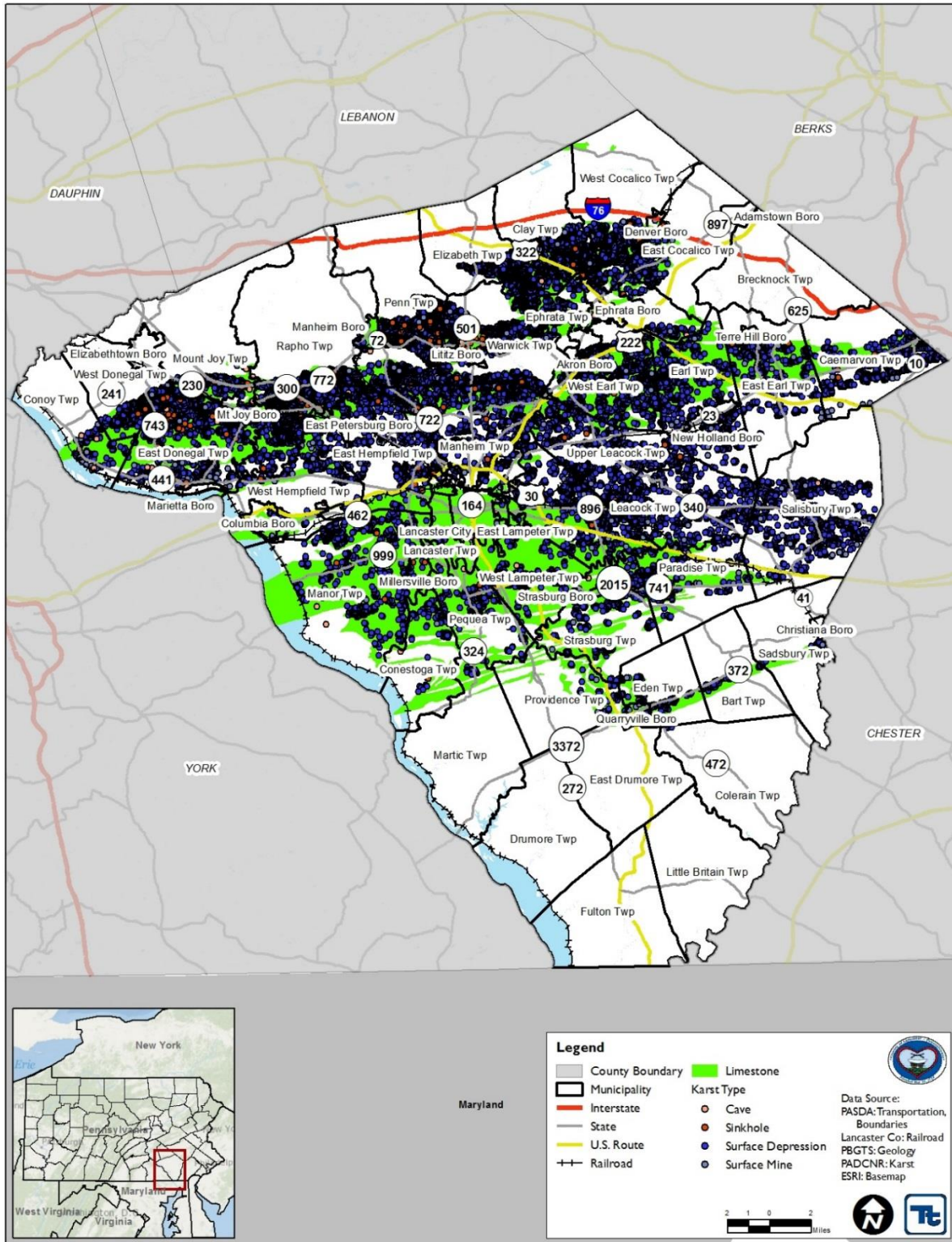


Source: PEMA 2013 (highlight added)





Figure 4.3.8-3. Lancaster County Limestone Bedrock Geology



Source: Pennsylvania Bureau of Topographic and Geologic Survey 2001  
PA Department of Conservation and Natural Resources 2014







While fewer karst features have been mapped in existing urban areas, human activity can often be the cause of a subsidence area or sinkhole. Leaking water pipes or structures that convey stormwater runoff may also result in areas of subsidence as the water dissolves substantial amounts of rock over time. In some cases, construction, land grading, or earth-moving activities that cause changes in stormwater flow can trigger sinkhole events. Subsidence or sinkhole events may occur during mining activities, especially in areas where the cover of a mine is thin, or in areas where bedrock is not necessarily conducive to their formation. In their article titled “Sinkholes are Bad,” authors Piggott and Eynon indicated that sinkhole development normally occurs where the interval to the ground surface is less than three to five times the thickness of the extracted seam, and the maximum interval is up to ten times the thickness of the extracted seam. Subsurface (i.e., underground) extraction of materials such as oil, gas, coal, metal ores (i.e., copper, iron, and zinc), clay, shale, limestone, or water may result in slow-moving or abrupt shifts in the ground surface (Piggott and Eynon 1978).

#### **4.3.8.2 Range of Magnitude**

Based on the geologic formations underlying parts of Lancaster County, subsidence and sinkhole events may occur gradually or abruptly. Events could result in minor elevation changes or deep, gaping holes in the ground surface. Abrupt subsidence and sinkhole events can cause severe damage in urban environments; 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.

Sinkholes also may have negative effects on local groundwater. Groundwater in limestone and other similar carbonate rock formations can be easily polluted, because water moves readily from the earth’s surface down through solution cavities and fractures, thus undergoing very little filtration. Contaminants such as sewage, fertilizers, herbicides, pesticides, or industrial products are of concern.

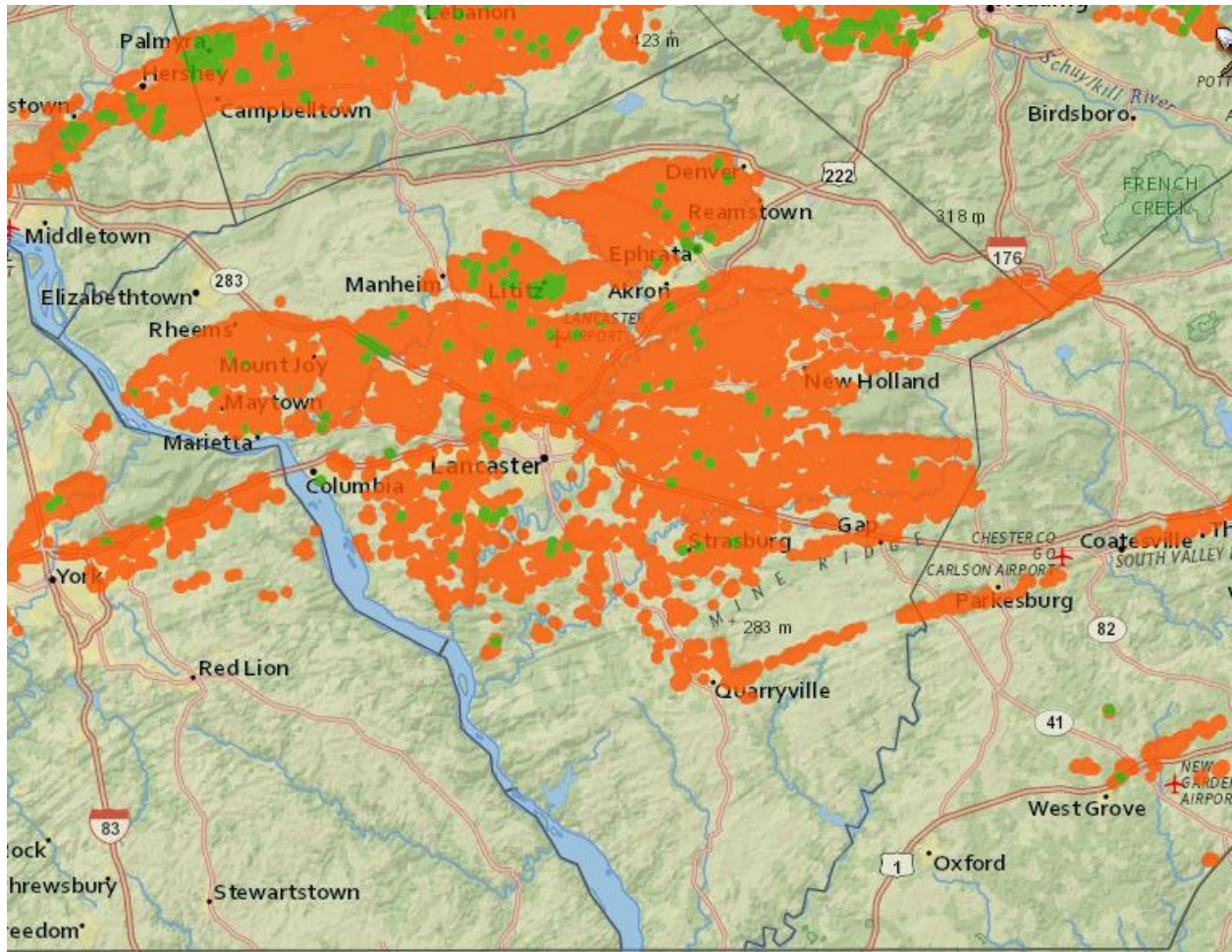
The worst-case scenario for the subsidence/sinkhole hazard in Lancaster County would be a series of large sinkholes opening in Lancaster City. The majority of the City has near-surface limestone, making it vulnerable to sinkholes. The city is home to 116 critical infrastructure facilities and 57,307 people residing over limestone bedrock. A sinkhole in Lancaster City could potentially cause significant property damage. This series of sinkholes could close roads, cause power outages, prevent the delivery of emergency services, cause injuries or death to residents, and could cost millions of dollars in property damage (\$9.8 billion of replacement cost value for structures and contents built on limestone bedrock). Additionally, all of Lancaster Township, Millersville Borough, and Strasburg Borough is exposed to near-surface limestone; although the total amount of affected people, structures, or critical facilities is not as severe as it is for Lancaster City.

#### **4.3.8.3 Past Occurrence**

The Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Interactive Map (Figure 4.3.8-4) shows dozens of sinkholes and hundreds of surface depressions in Lancaster County (PA DCNR Date Unknown). In addition, local officials reported a sinkhole near Pine Street in Ephrata Borough in the spring of 2017, and along a French drain along Harrisburg Pike at North Berry Street and Pine Street in Lancaster City.



Figure 4.3.8-4. Sinkholes and Surface Depressions in Lancaster County



Source: PA DCNR Date Unknown  
Sinkholes are shown with green dots; surface depressions are shown with orange dots.

Because large-scale or fast-moving subsidence events can trigger landslides, landslides can be an indication of a potentially greater or secondary hazard.

#### 4.3.8.4 Future Occurrence

Although sinkhole occurrence will continue to be a possibility in Lancaster County, the probability of a sinkhole or subsidence event is difficult to predict due to the low number of previous events. Areas to monitor for future sinkhole and subsidence events due to their geologic bedrock are listed above in Section 4.3.8.1.

Potential losses caused by sinkhole formation are difficult to calculate for all existing buildings, critical facilities, and infrastructure, because the hazard area may affect so much of the County. However, the future occurrence of subsidence areas and sinkholes is considered *likely* as defined by the Risk Factor Methodology probability criteria (further discussed in Section 4.4).





**4.3.8.5 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 subsidence and sinkhole hazard on Lancaster County in the following subsections:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on (1) life, health and safety, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effects of climate change on vulnerability

**Overview of Vulnerability**

Approximately 28.3 percent of Lancaster County (278 square miles) is underlain by carbonate bedrock. For the purposes of this planning effort, the area underlain by carbonate (limestone) bedrock is considered exposed to this hazard. Table 4.3.8-1 summarizes the municipalities potentially vulnerable to sinkholes and subsidence events based on the presence of limestone bedrock and/or abandoned mines.

**Table 4.3.8-1. Municipalities Vulnerable to Sinkholes/Subsidence Events**

Municipality	Carbonate Rock	Municipality	Carbonate Rock
Adamstown Borough		Lititz Borough	X
Akron Borough	X	Little Britain Township	
Bart Township	X	Manheim Borough	X
Brecknock Township		Manheim Township	X
Caernarvon Township	X	Manor Township	X
Christiana Borough	X	Marietta Borough	X
Clay Township	X	Martic Township	X
Colerain Township		Millersville Borough	X
Columbia Borough	X	Mount Joy Borough	
Conestoga Township	X	Mount Joy Township	
Conoy Township	X	Mountville Borough	X
Denver Borough	X	New Holland Borough	
Drumore Township		Paradise Township	X
Earl Township	X	Penn Township	X
East Cocalico Township	X	Pequea Township	X
East Donegal Township	X	Providence Township	X
East Drumore Township	X	Quarryville Borough	X
East Earl Township	X	Rapho Township	X
East Hempfield Township	X	Sadsbury Township	X
East Lampeter Township	X	Salisbury Township	X
East Petersburg Borough	X	Strasburg Borough	X
Eden Township	X	Strasburg Township	X
Elizabeth Township	X	Terre Hill Borough	X
Elizabethtown Borough		Upper Leacock Township	X
Ephrata Borough	X	Warwick Township	X
Ephrata Township	X	West Cocalico Township	X



Municipality	Carbonate Rock	Municipality	Carbonate Rock
Fulton Township		West Donegal Township	X
Lancaster City	X	West Earl Township	X
Lancaster Township	X	West Hempfield Township	X
Leacock Township	X	West Lampeter Township	X

Source: Pennsylvania Bureau of Topographic and Geologic Survey 2001; Pennsylvania Department of Environmental Protection (PADEP) 2014

Data and Methodology

Unlike the flood, wind, and earthquake hazards, no standard loss estimation models or methodologies exist for the subsidence/sinkhole hazard. To estimate the County’s vulnerability, the portion of the region underlain by limestone bedrock is considered exposed to natural subsidence and sink holes. To determine the assets that are exposed to this hazard, available and appropriate bedrock geology spatial data (generated by the Pennsylvania Bureau of Topographic and Geologic Survey) were overlaid upon the assets. Because of the recognized limitations of this analysis, data are only used to provide a general estimate. Over time, additional data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided in the sections below.

Impact on Life, Health, and Safety

To estimate the population exposed to the hazard, the approximate hazard area (limestone bedrock) was overlaid upon the 2010 U.S. Census population data. The Census blocks with their center (centroid) within the boundary were used to calculate the estimated population exposed to this hazard. Table 4.3.8-2 summarizes the Lancaster County population exposed to this hazard by municipality (U.S. Census 2010). (Please note: U.S. Census blocks do not align with the limestone bedrock polygon in the spatial data, and these estimates are for planning purposes only.)

Table 4.3.8-2. Estimated Population Located over Limestone Bedrock (U.S. Census 2010)

Municipality	Total Population (2010 U.S. Census)	Estimated Population Exposed	Percent of Total
Adamstown Borough	1,772	0	0.0%
Akron Borough	3,876	615	15.9%
Bart Township	3,094	209	6.8%
Brecknock Township	7,199	0	0.0%
Caernarvon Township	4,748	715	15.1%
Christiana Borough	1,168	0	0.0%
Clay Township	6,308	3,023	47.9%
Colerain Township	3,635	0	0.0%
Columbia Borough	10,400	8,541	82.1%
Conestoga Township	3,776	1,586	42.0%
Conoy Township	3,194	938	29.4%
Denver Borough	3,861	1,903	49.3%
Drumore Township	2,560	0	0.0%
Earl Township	7,024	2,338	33.3%
East Cocalico Township	10,310	1,206	11.7%
East Donegal Township	7,755	5,081	65.5%
East Drumore Township	3,791	81	2.1%
East Earl Township	6,507	1,230	18.9%
East Hempfield Township	23,522	4,893	20.8%





**SECTION 4.3.8: RISK ASSESSMENT – SUBSIDENCE/SINKHOLES**

<b>Municipality</b>	<b>Total Population (2010 U.S. Census)</b>	<b>Estimated Population Exposed</b>	<b>Percent of Total</b>
East Lampeter Township	16,424	10,413	63.4%
East Petersburg Borough	4,506	301	6.7%
Eden Township	2,094	248	11.8%
Elizabeth Township	3,886	268	6.9%
Elizabethtown Borough	11,545	0	0.0%
Ephrata Borough	13,394	7,111	53.1%
Ephrata Township	9,400	3,395	36.1%
Fulton Township	3,074	0	0.0%
Lancaster City	59,322	57,307	96.6%
Lancaster Township	16,149	16,143	100.0%
Leacock Township	5,220	294	5.6%
Lititz Borough	9,369	8,383	89.5%
Little Britain Township	4,106	0	0.0%
Manheim Borough	4,858	4,363	89.8%
Manheim Township	38,133	9,100	23.9%
Manor Township	19,612	16,008	81.6%
Marietta Borough	2,588	0	0.0%
Martic Township	5,190	637	12.3%
Millersville Borough	8,168	8,165	100.0%
Mount Joy Borough	7,410	6,590	88.9%
Mount Joy Township	9,873	1,412	14.3%
Mountville Borough	2,802	46	1.6%
New Holland Borough	5,378	0	0.0%
Paradise Township	5,131	1,884	36.7%
Penn Township	8,789	1,650	18.8%
Pequea Township	4,605	3,186	69.2%
Providence Township	6,897	1,588	23.0%
Quarryville Borough	2,576	2,395	93.0%
Rapho Township	10,442	2,983	28.6%
Sadsbury Township	3,395	207	6.1%
Salisbury Township	11,062	38	0.3%
Strasburg Borough	2,809	2,809	100.0%
Strasburg Township	4,182	1,947	46.6%
Terre Hill Borough	1,295	0	0.0%
Upper Leacock Township	8,708	210	2.4%
Warwick Township	17,783	7,049	39.6%
West Cocalico Township	7,280	305	4.2%
West Donegal Township	8,260	2,039	24.7%
West Earl Township	7,868	5,594	71.1%
West Hempfield Township	16,153	3,073	19.0%
West Lampeter Township	15,209	14,782	97.2%
<b>Lancaster County</b>	<b>519,445</b>	<b>234,282</b>	<b>45.1%</b>

Source: U.S. Census 2010; Pennsylvania Bureau of Topographic and Geologic Survey 2001





Impact on General Building Stock

As noted above, no standard loss estimation models exist for the subsidence/sinkhole hazard. In general, the built environment located on limestone is exposed to this hazard. In an attempt to estimate the general building stock potentially vulnerable to this hazard, the associated building replacement values (buildings and contents) were determined for the identified U.S. Census blocks within the approximate hazard area. The County-provided spatial layer for building structures was also used to determine the number of structures located within the hazard area. Table 4.3.8-3 lists the replacement cost value (RCV) (structure and contents) of general building stock (GBS) and number of structures located within the defined hazard area.

Table 4.3.8-3. Estimated General Building Stock Located over Limestone Bedrock

Municipality	Total Number of Buildings	Total RCV	Limestone Hazard Area			
			Number of Buildings	% of Total	RCV	% of Total
Adamstown Borough	980	\$450,258,000	0	0.0%	\$0	0.0%
Akron Borough	1,788	\$616,236,000	189	10.6%	\$95,880,000	15.6%
Bart Township	2,567	\$335,836,000	167	6.5%	\$23,207,000	6.9%
Brecknock Township	6,071	\$998,227,000	0	0.0%	\$0	0.0%
Caernarvon Township	3,438	\$622,129,000	623	18.1%	\$112,173,000	18.0%
Christiana Borough	523	\$198,673,000	2	<1%	\$0	0.0%
Clay Township	4,686	\$862,268,000	2,230	47.6%	\$469,275,000	54.4%
Colerain Township	3,125	\$385,028,000	0	0.0%	\$0	0.0%
Columbia Borough	3,338	\$1,749,096,000	2,482	74.4%	\$1,158,415,000	66.2%
Conestoga Township	2,871	\$541,954,000	1,202	41.9%	\$210,441,000	38.8%
Conoy Township	2,590	\$434,872,000	673	26.0%	\$128,515,000	29.6%
Denver Borough	1,679	\$688,940,000	880	52.4%	\$438,853,000	63.7%
Drumore Township	2,418	\$316,735,000	0	0.0%	\$0	0.0%
Earl Township	5,209	\$1,817,500,000	2,302	44.2%	\$364,808,000	20.1%
East Cocalico Township	7,002	\$1,793,707,000	921	13.2%	\$224,786,000	12.5%
East Donegal Township	4,176	\$1,240,941,000	2,982	71.4%	\$739,597,000	59.6%
East Drumore Township	2,958	\$713,496,000	96	3.2%	\$25,200,000	3.5%
East Earl Township	5,337	\$1,049,169,000	1,204	22.6%	\$238,917,000	22.8%
East Hempfield Township	10,748	\$5,931,760,000	2,746	25.5%	\$1,735,365,000	29.3%
East Lampeter Township	7,998	\$3,533,820,000	4,758	59.5%	\$1,876,447,000	53.1%
East Petersburg Borough	1,923	\$709,918,000	148	7.7%	\$34,747,000	4.9%
Eden Township	1,738	\$259,861,000	272	15.7%	\$42,106,000	16.2%
Elizabeth Township	3,088	\$656,622,000	293	9.5%	\$38,570,000	5.9%
Elizabethtown Borough	3,963	\$1,800,576,000	0	0.0%	\$0	0.0%
Ephrata Borough	5,744	\$2,476,959,000	2,829	49.3%	\$1,422,587,000	57.4%
Ephrata Township	5,503	\$1,733,746,000	1,725	31.3%	\$745,536,000	43.0%
Fulton Township	3,138	\$450,131,000	0	0.0%	\$0	0.0%
Lancaster City	10,200	\$9,943,057,000	9,317	91.3%	\$8,918,123,000	89.7%
Lancaster Township	4,936	\$2,401,153,000	4,936	100.0%	\$2,401,153,000	100.0%
Leacock Township	4,262	\$775,791,000	175	4.1%	\$38,673,000	5.0%
Lititz Borough	3,710	\$2,117,828,000	3,460	93.3%	\$1,948,613,000	92.0%
Little Britain Township	3,559	\$533,035,000	0	0.0%	\$0	0.0%





**SECTION 4.3.8: RISK ASSESSMENT – SUBSIDENCE/SINKHOLES**

Municipality	Total Number of Buildings	Total RCV	Limestone Hazard Area			
			Number of Buildings	% of Total	RCV	% of Total
Manheim Borough	2,613	\$894,777,000	2,395	91.7%	\$829,380,000	92.7%
Manheim Township	14,400	\$8,574,727,000	3,595	25.0%	\$1,937,396,000	22.6%
Manor Township	10,385	\$3,404,670,000	8,610	82.9%	\$2,914,595,000	85.6%
Marietta Borough	1,228	\$381,645,000	1	<1%	\$0	0.0%
Martic Township	4,438	\$627,819,000	453	10.2%	\$92,161,000	14.7%
Millersville Borough	2,286	\$1,110,119,000	2,286	100.0%	\$1,110,119,000	100.0%
Mount Joy Borough	3,347	\$1,429,747,000	2,927	87.5%	\$1,305,073,000	91.3%
Mount Joy Township	5,754	\$1,663,039,000	574	10.0%	\$291,841,000	17.5%
Mountville Borough	1,068	\$407,896,000	26	2.4%	\$8,409,000	2.1%
New Holland Borough	2,421	\$972,312,000	0	0.0%	\$0	0.0%
Paradise Township	4,218	\$751,377,000	1,617	38.3%	\$294,000,000	39.1%
Penn Township	5,981	\$1,728,870,000	1,260	21.1%	\$432,015,000	25.0%
Pequea Township	3,479	\$703,142,000	2,420	69.6%	\$475,311,000	67.6%
Providence Township	5,278	\$809,633,000	1,526	28.9%	\$182,399,000	22.5%
Quarryville Borough	1,277	\$475,281,000	1,162	91.0%	\$448,647,000	94.4%
Rapho Township	8,411	\$1,796,999,000	1,885	22.4%	\$580,666,000	32.3%
Sadsbury Township	2,691	\$399,547,000	141	5.2%	\$16,991,000	4.3%
Salisbury Township	8,123	\$1,280,883,000	45	<1%	\$2,047,000	<1%
Strasburg Borough	1,480	\$530,296,000	1,480	100.0%	\$530,296,000	100.0%
Strasburg Township	3,600	\$664,574,000	1,894	52.6%	\$403,920,000	60.8%
Terre Hill Borough	759	\$233,620,000	3	<1%	\$0	0.0%
Upper Leacock Township	5,215	\$1,707,208,000	213	4.1%	\$24,844,000	1.5%
Warwick Township	8,372	\$3,253,969,000	2,228	26.6%	\$1,477,419,000	45.4%
West Cocalico Township	5,679	\$1,032,223,000	325	5.7%	\$48,207,000	4.7%
West Donegal Township	4,112	\$1,435,727,000	1,157	28.1%	\$326,353,000	22.7%
West Earl Township	5,151	\$1,368,975,000	3,737	72.5%	\$1,000,367,000	73.1%
West Hempfield Township	8,384	\$2,702,751,000	1,837	21.9%	\$670,288,000	24.8%
West Lampeter Township	6,607	\$2,857,346,000	6,344	96.0%	\$2,818,303,000	98.6%
<b>Lancaster County</b>	<b>268,023</b>	<b>\$91,338,494,000</b>	<b>96,753</b>	<b>36.1%</b>	<b>\$41,653,034,000</b>	<b>45.6%</b>

Source: HAZUS-MH 3.1; Pennsylvania Bureau of Topographic and Geologic Survey 2001; Lancaster County 2017

Notes: GBS = General building stock  
RCV = Replacement cost value

**Impact on Critical Facilities**

A number of critical facilities and utility assets are located in the hazard area, and are also exposed to subsidence and sinkholes. Table 4.3.8-4 summarizes the number of critical facilities that are located within the identified hazard area, as identified by participants in the Lancaster County Hazard Mitigation Plan (HMP) planning process.





Table 4.3.8-4. Number of Critical Facilities Located in the Identified Hazard Area (Limestone Bedrock)

Municipality	Facility Types																								
	Airport	Bus	Communication	County Building	Dam	Dosing Tank	EMS	EOC	Fire Station	Hazmat	Library	Medical	Outflow	Police Station	Potable Facility	Potable Pump	Potable Tank	Rail	School	Senior	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Adamstown Borough	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
Akron Borough	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
Bart Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Brecknock Township	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
Caernarvon Township	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Christiana Borough	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
Clay Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	5	0
Colerain Township	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
Columbia Borough	1	0	0	1	0	0	1	1	2	1	1	0	1	1	0	1	1	0	4	0	5	0	0	0	1
Conestoga Township	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Conoy Township	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Denver Borough	0	0	0	0	1	0	0	1	1	2	0	0	0	0	0	0	0	0	3	2	3	0	0	1	0
Drumore Township	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
Earl Township	0	0	0	0	3	0	0	0	1	3	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0
East Cocalico Township	0	0	0	0	1	0	1	1	2	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
East Donegal Township	1	0	1	5	1	0	1	1	1	1	1	0	0	1	1	1	2	0	4	1	2	0	6	5	1
East Drumore Township	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
East Earl Township	0	0	0	0	4	0	0	0	1	1	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0
East Hempfield Township	0	0	0	0	1	0	1	0	1	11	0	1	0	0	0	3	0	0	3	1	1	0	0	1	0
East Lampeter Township	1	0	0	0	2	0	1	1	1	5	3	0	0	2	0	8	1	0	9	1	2	1	0	5	0
East Petersburg Borough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0



SECTION 4.3.8: RISK ASSESSMENT – SUBSIDENCE/SINKHOLES

Municipality	Facility Types																									
	Airport	Bus	Communication	County Building	Dam	Dosing Tank	EMS	EOC	Fire Station	Hazmat	Library	Medical	Outflow	Police Station	Potable Facility	Potable Pump	Potable Tank	Rail	School	Senior	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility	
Eden Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	
Elizabeth Township	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
Elizabethtown Borough	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
Ephrata Borough	0	0	1	0	1	0	0	2	1	3	1	0	0	1	0	0	0	0	6	2	4	1	1	2	1	1
Ephrata Township	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1
Fulton Township	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
Lancaster City	0	1	4	13	0	0	2	1	3	8	7	2	0	4	0	3	1	0	35	4	8	2	0	0	0	0
Lancaster Township	0	0	0	2	1	0	2	1	2	1	1	0	0	1	0	3	0	0	4	8	2	1	0	8	1	1
Leacock Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Lititz Borough	0	0	1	0	0	0	1	2	1	7	0	0	0	1	0	0	1	0	5	3	7	0	6	1	0	0
Little Britain Township	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
Manheim Borough	0	0	1	1	0	0	1	1	1	3	1	0	0	1	0	2	0	0	3	0	0	1	0	1	0	0
Manheim Township	1	0	0	0	0	0	1	0	1	4	0	0	0	0	0	9	0	0	4	2	0	1	0	3	0	0
Manor Township	0	0	0	0	3	0	1	1	2	2	0	0	0	1	0	5	1	0	5	3	4	3	0	17	2	2
Marietta Borough	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
Martic Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Millersville Borough	0	0	1	0	0	0	1	1	1	2	1	0	0	2	0	0	1	0	3	1	2	0	0	2	0	0
Mount Joy Borough	0	0	1	1	0	0	1	1	1	3	0	0	0	1	0	1	2	1	1	1	0	1	0	4	0	0
Mount Joy Township	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0
Mountville Borough	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 Holland Borough	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
Paradise Township	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	8	1	0	0	0	4	1	1



**SECTION 4.3.8: RISK ASSESSMENT – SUBSIDENCE/SINKHOLES**

Municipality	Facility Types																								
	Airport	Bus	Communication	County Building	Dam	Dosing Tank	EMS	EOC	Fire Station	Hazmat	Library	Medical	Outflow	Police Station	Potable Facility	Potable Pump	Potable Tank	Rail	School	Senior	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Penn Township	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	2	2
Pequea Township	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	2	0	1	1	0	1	0
Providence Township	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	1	0	0	0	0	1
Quarryville Borough	0	0	1	1	0	0	1	1	1	2	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0
Rapho Township	0	0	0	0	3	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Sadsbury Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Salisbury Township	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
Strasburg Borough	0	0	0	0	0	0	1	2	1	0	1	0	0	1	0	0	0	0	1	0	0	0	0	3	0
Strasburg Township	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0
Terre Hill Borough	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 Leacock Township	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Warwick Township	0	0	0	1	0	0	0	0	0	2	1	1	0	0	0	2	0	0	2	0	2	2	3	8	0
West Cocalico Township	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
West Donegal Township	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	2	1	0	0	5	0
West Earl Township	0	0	0	0	2	0	0	1	2	1	0	1	0	1	1	0	0	0	13	0	1	1	1	5	1
West Hempfield Township	0	0	0	0	1	0	0	0	0	8	0	0	0	0	0	4	1	0	2	1	1	4	0	3	0
West Lampeter Township	0	0	1	7	2	0	4	1	2	0	1	0	0	1	0	13	3	0	8	6	4	1	0	12	0
<b>Lancaster County</b>	<b>4</b>	<b>1</b>	<b>12</b>	<b>34</b>	<b>34</b>	<b>1</b>	<b>23</b>	<b>22</b>	<b>34</b>	<b>81</b>	<b>19</b>	<b>5</b>	<b>2</b>	<b>20</b>	<b>2</b>	<b>56</b>	<b>14</b>	<b>1</b>	<b>170</b>	<b>40</b>	<b>54</b>	<b>22</b>	<b>20</b>	<b>103</b>	<b>13</b>

Source: Pennsylvania Bureau of Topographic and Geologic Survey 2001; Lancaster County







### **Impact on the Economy**

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Subsidence and sinkholes can severely impact roads and infrastructure. As noted earlier, limestone formations underlie almost 28.3 percent of the County. Major roadways that serve the County include Interstate I-76; Routes US-222, US-30, and US-322; and multiple State Routes, including PA-72, PA-272, PA-283, PA-372, and PA-501. Portions of each of these roadways are located in the identified subsidence/sinkhole hazard area. It is not possible to estimate potential future economic losses caused by subsidence/sinkhole events at this time.

### **Future Growth and Development**

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Areas targeted for potential future growth and development in the next 5 to 10 years have been identified across the County at the municipal level and are described in Section 2.4 of this Plan. New development occurring within the identified hazard areas may be exposed to risks associated with the subsidence and sinkhole hazard.

### **Effect of Climate Change on Vulnerability**

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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 (U.S. Environmental Protection Agency [EPA] 2006).

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 Lancaster County’s vulnerability to subsidence/sinkhole events will need to be considered as more information develops regarding regional climate change impacts.



### 4.3.9 Tornado, Windstorm

This section provides a profile and vulnerability assessment for the tornado and windstorm hazard.

Wind is air moving from high to low pressure. It is the rough horizontal movement of air (as opposed to an air current) caused by uneven heating of the earth’s surface. Wind 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 (Federal Emergency Management Agency [FEMA] 1997). There are different types of damaging winds: straight-line wind, downdraft, downburst, microburst, gust front, derecho, bow echo, and hook echo. Each wind type is described below:

- **Straight-line wind** is a term used to define any thunderstorm wind that is not associated with rotation. Straight-line winds are the movement of air from areas of higher pressure to areas of lower pressure – the greater the difference in pressure, the stronger the winds. It is used mainly to differentiate from tornadic winds.
- A **downdraft** is a small-scale column of air that rapidly sinks toward the ground and usually results in a downburst.
- 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 rain storms too weak to produce thunder.
- 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 5 to 10 minutes, with maximum wind speeds of up to 168 miles per hour (mph).
- 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 out ahead of a thunderstorm (National Severe Storms Laboratory [NSSL] 2015a).
- A **derecho** is a widespread and long-lived windstorm associated with thunderstorms that are often curved (Johns and others 2011). The two major influences on the atmospheric circulation are the differential heating between the equator and the poles, and the rotation of the planet (FEMA 1997).
- 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). A bow echo can be more than 300 kilometers long, last for several hours, and produce extensive swaths of wind damage at the ground (NSSL 2015a).
- A **hook echo** is a radar echo that is the most recognized and well-known radar signature for tornadic supercells. 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 (Provic 2013).

High winds, other than tornadoes, are experienced in all parts of the United States. Areas that experience the highest wind speeds are coastal regions from Texas to Maine and the Alaskan coast; however, exposed mountain areas experience winds at least as high as those along the coast (FEMA 1997; Robinson 2013). Wind begins with differences in air pressures, and is essentially the horizontal movement of air caused by uneven heating of the earth. Wind occurs everywhere. Effects from high winds can include downed trees and power lines, and damaged roofs and windows. Table 4.3.9-1 describes wind classifications used by the National Weather Service (NWS).



Table 4.3.9-1. NWS Wind Descriptions

Descriptive Term	Sustained Wind Speed (mph)
Strong, dangerous, or damaging	≥40
Very windy	30-40
Windy	20-30
Breezy, brisk, or blustery	15-25
None	5-15 or 10-20
Light, or light and variable wind	0-5

Source: NWS 2009  
mph Miles per hour

Extreme windstorm events are associated with extra-tropical and tropical cyclones, winter cyclones, severe thunderstorms, and accompanying mesoscale offspring such as tornadoes and downbursts. Wind speeds vary from 0 mph at ground level to 200 mph in the upper atmospheric jet stream 6 to 8 miles above the earth’s surface (FEMA 1997).

A derecho is type of windstorm that can occur during a rapidly moving thunderstorm. A derecho is a long-lived windstorm associated with a moving squall line of thunderstorms. It produces straight-line winds gusts of at least 58 mph and often has isolated gusts exceeding 75 mph. As a result, trees generally fall and debris is blown in one direction. To be considered a derecho, these conditions must continue along a path of at least 240 miles. Derechos are more common in the Great Lakes and Midwest regions of the United States, though, on occasion, can persist into the mid-Atlantic and northeast United States (Office of the New Jersey State Climatologist [ONJSC] Rutgers University 2015).

Tornadoes are nature’s most violent storms and can cause fatalities and devastate neighborhoods in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 250 mph. Damage paths can be greater than 1 mile wide and 50 miles long. 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 internal winds exceeding 300 mph. The lifespan of a tornado rarely is longer than 30 minutes (FEMA 1997). Tornadoes cause high wind velocity generating wind-blown debris, along with lightning or hail, resulting in additional damage. Destruction caused by tornadoes depends on the size, intensity, and duration of the storm. Tornadoes cause the greatest damage to structures that are light, such as residential and mobile homes, and tend to remain localized during impact (Northern Virginia Regional Commission [NVRC] 2006).

The following sections discuss the location and extent, range of magnitude, previous occurrence, future occurrence, and vulnerability assessment associated with the wind and tornado hazard for Lancaster County.

#### 4.3.9.1 Location and Extent

Tornadoes and windstorms can occur throughout Pennsylvania. Tornadoes are usually localized; however, severe thunderstorms can result in conditions favorable to the formation of numerous or long-lived tornadoes. Straight-line winds and windstorms are experienced on a region-wide scale (Pennsylvania Emergency Management Agency [PEMA] 2013).

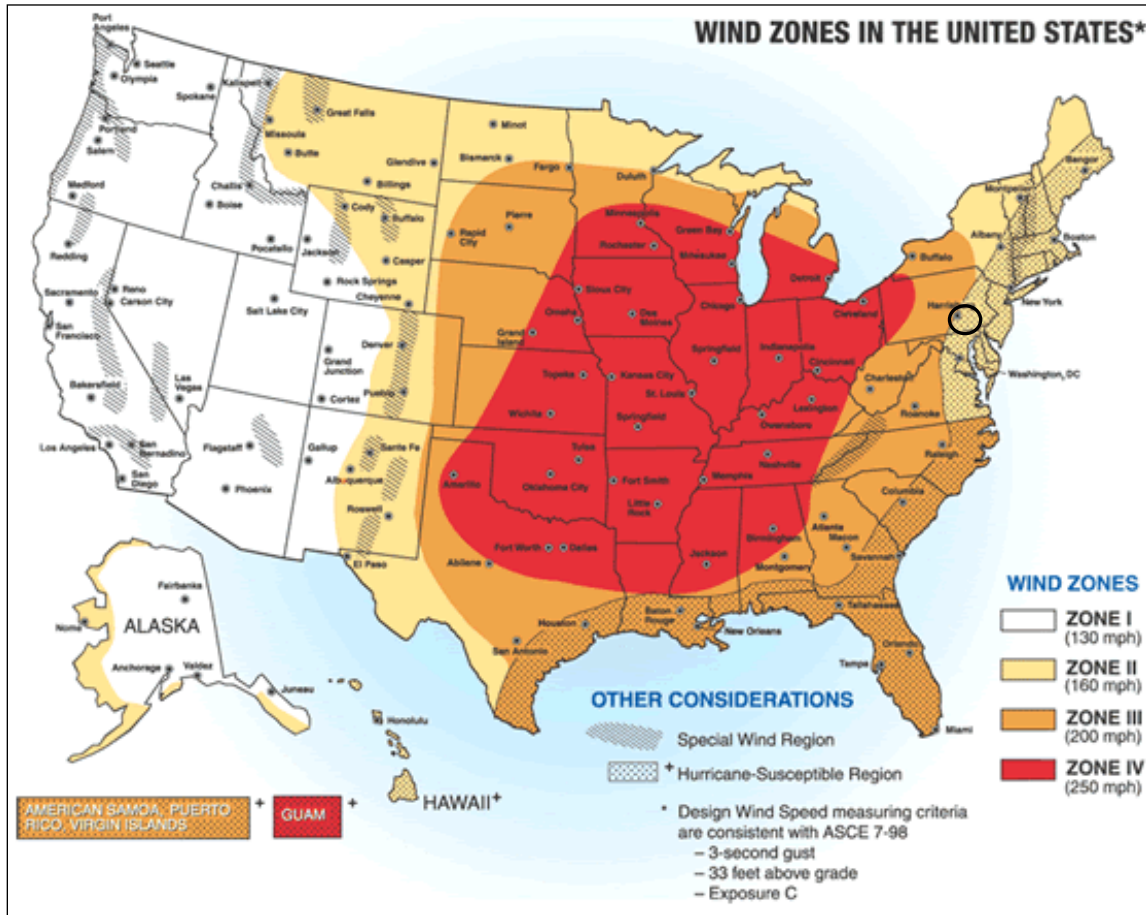
#### Windstorms

Figure 4.3.9-1 illustrates the ways in which the frequency and strength of windstorms affect the United States and indicates the general locations of wind activity. This figure is based on 40 years of tornado history and 100 years of hurricane history collected by FEMA. States located in Wind Zone IV have experienced the greatest number of tornadoes and the strongest tornadoes (NVRC 2006). Lancaster County is located in Wind Zone II,



and has experienced tornadoes with speeds up to 160 mph. Table 4.3.9-2 describes the areas within the various wind zones of the United States.

Figure 4.3.9-1. Wind Zones in the United States



Source: FEMA 2012

Note: The black oval indicates the approximate location of Lancaster County.

Table 4.3.9-2. Wind Zones in the United States

Wind Zones	Areas Affected
Zone I (130 mph)	All of Washington, Oregon, California, Idaho, Utah, and Arizona. Western parts of Montana, Wyoming, Colorado, and New Mexico. Most of Alaska, except the east and south coastlines.
Zone II (160 mph)	Eastern parts of Montana, Wyoming, Colorado, and New Mexico. Most of North Dakota. Northern parts of Minnesota, Wisconsin, and Michigan. Western parts of South Dakota, Nebraska, and Texas. All New England States. Eastern parts of New York, Pennsylvania, Maryland, and Virginia. Washington DC.
Zone III (200 mph)	Areas of Minnesota, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, Kentucky, Pennsylvania, New York, Michigan, and Wisconsin. Most or all of Florida, Georgia, South Carolina, North Carolina, Virginia, and West Virginia. All of American Samoa, Puerto Rico, and Virgin Islands.
Zone IV (250 mph)	Mid United States, including all of Iowa, Missouri, Arkansas, Illinois, Indiana, and Ohio and parts of adjoining states of Minnesota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, Kentucky, Pennsylvania, Michigan, and Wisconsin. Guam.





Wind Zones	Areas Affected
Special Wind Region	Isolated areas in the following states: Washington, Oregon, California, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, and New Mexico. The borders between Vermont and New Hampshire; between New York, Massachusetts, and Connecticut; between Tennessee and North Carolina.
Hurricane Susceptible Region	Southern United States coastline from Gulf Coast of Texas eastward to include entire State of Florida. East coastline from Maine to Florida, including all of Massachusetts, Connecticut, Rhode Island, Delaware, and Washington DC. All of Hawaii, Guam, American Samoa, Puerto Rico, and Virgin Islands.

Source: FEMA 2012  
mph Miles per hour

### **Tornadoes**

The United States experiences more tornadoes than any other country with approximately 1,000 occurring in a typical year. The peak of the U.S. tornado season is April through June, with the highest concentration of tornadoes in the central United States, although tornadoes can occur at any time of year (NWS 2011). Tornadoes tend to strike in the afternoons and evening, the warmest hours of the day, with approximately 80 percent of all tornadoes striking between noon and 9:00 p.m. (PEMA 2013).

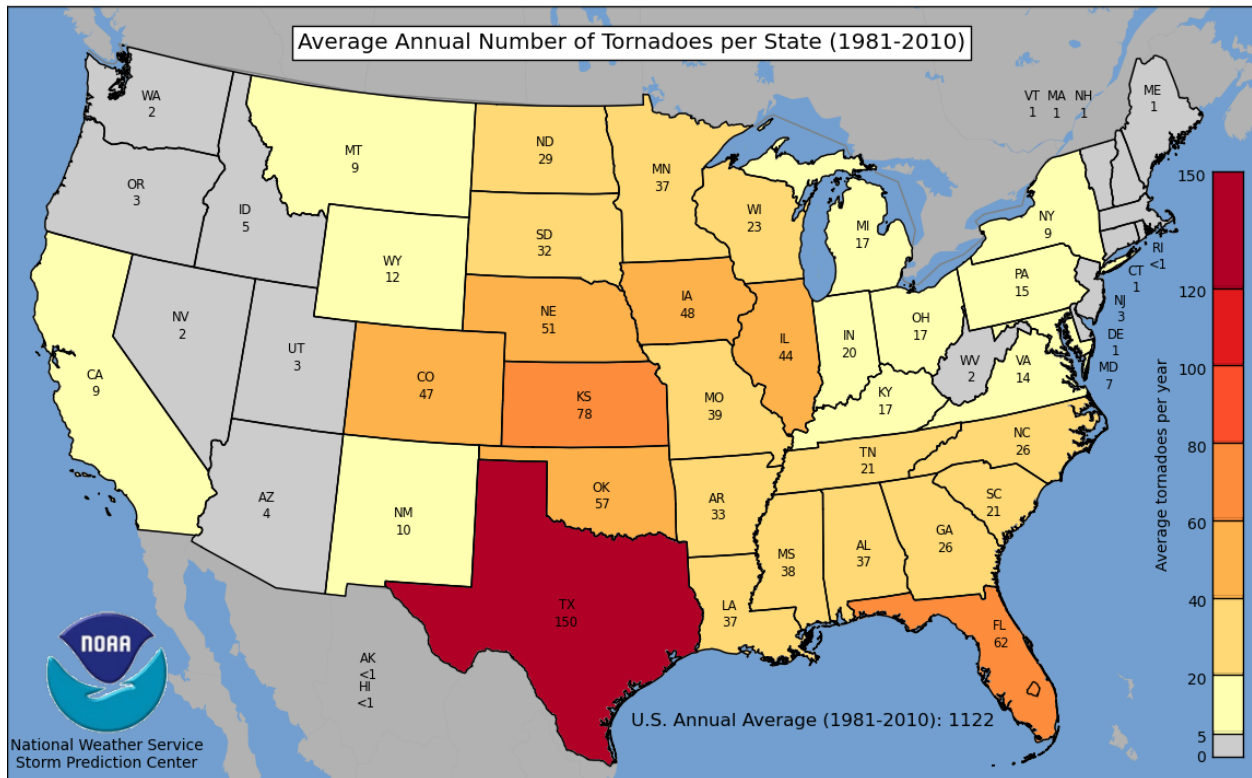
Tornado movement is characterized in two ways: direction and speed of the spinning winds and forward movement of the tornado and storm track. Rotational wind speeds of the vortex can range from 100 mph to more than 250 mph. In addition, the speed of forward motion can be 0 to 45 or 50 mph. Therefore, some estimates place the maximum velocity (combination of ground speed, wind speed, and upper winds) of tornadoes at about 300 mph. The forward motion of the tornado path can be a few hundred yards or several hundred miles in length. The width of tornadoes can vary greatly, but they generally range in size from less than 100 feet to more than a mile in width. Some tornadoes never touch the ground and are short-lived, while others may touch the ground several times.

While the extent of tornado damage is usually localized, the extreme winds of this vortex can be among the most destructive on earth when they move through populated, developed areas.

Figure 4.3.9-2 shows the annual average number of tornadoes between 1981 and 2010 (Johns and Cordifi 2011). The Commonwealth of Pennsylvania experienced an average of 15 tornado events annually between 1981 and 2010.



Figure 4.3.9-2. Annual Average Number of Tornadoes in the United States, 1981 to 2010

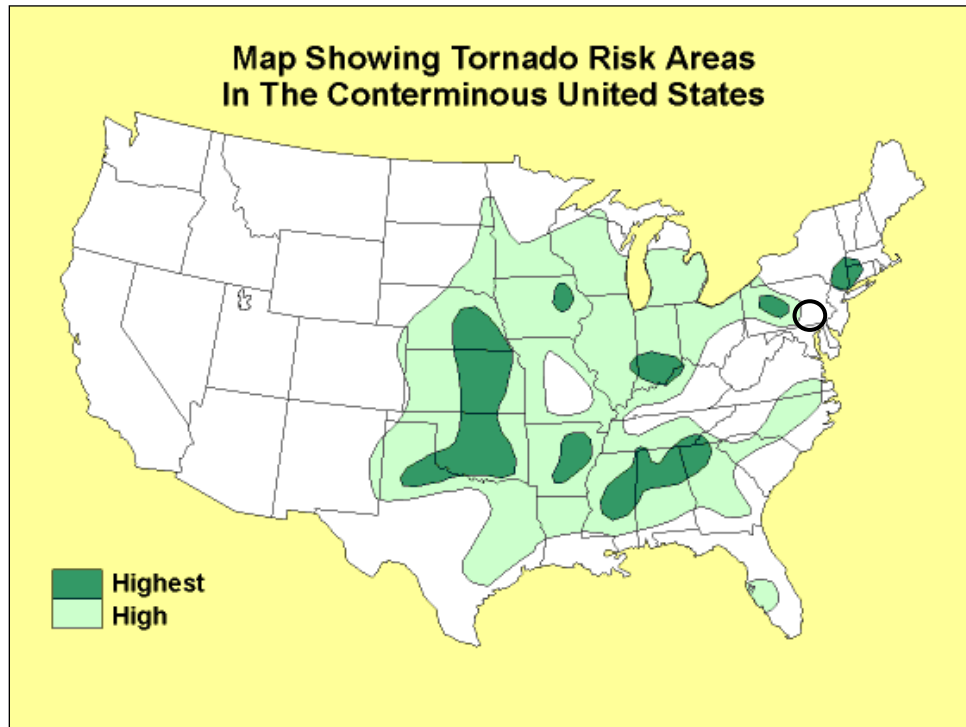


Source: SPC 2012

Figure 4.3.9-3 indicates that a large portion of Pennsylvania is at high risk for tornadoes; with a portion considered to be at the highest risk. According to this graphic, Lancaster County has a moderate risk for tornado. Details regarding historical tornado events are discussed in the Past Occurrences section (Section 4.3.9.3) of this profile.



Figure 4.3.9-3. Tornado Risk in the United States



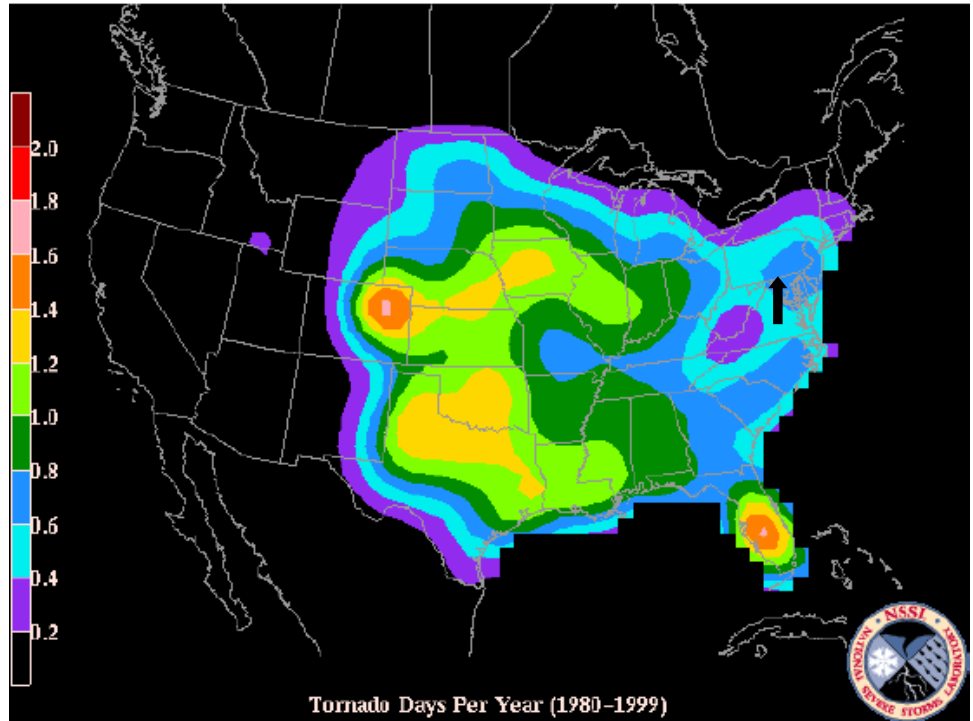
Source: American Red Cross 2010

Note: The black circle indicates the general location of Lancaster County.

A study from the National Oceanic and Atmospheric Administration's (NOAA) NSSL provided estimates of the long-term threat from tornadoes. The NSSL used historical data to estimate the daily probability of tornado occurrences across the United States, without considering the magnitude of the tornado. Figure 4.3.9-4 shows the estimates prepared by the NSSL. In Pennsylvania, it is estimated that the probability of a tornado occurring is 0.2 to 0.8 day per year. In Lancaster County, it is estimated that the probability of a tornado occurring is 0.6 to 0.8 day per year (NSSL 2013).



Figure 4.3.9-4. Total Annual Threat of Tornado Events in the United States, 1980-1999



Source: NSSL 2013

Notes: The mean number of days per year with one or more events within 25 miles of a point is shown here. The fill interval for tornadoes is 0.2, with the purple starting at 0.2 day. For the non-tornadic threats, the fill interval is 1, with the purple starting at 1. For the significant (violent) threats, it is 5 days per century (millennium). The black arrow indicates the general location of Lancaster County.

### 4.3.9.2 Range of Magnitude

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. A tornado’s magnitude is classified using the Enhanced Fujita Scale, which is further discussed below.

The magnitude or severity of a tornado was originally categorized using the Fujita Scale (F-Scale) or the Pearson Fujita Scale introduced in 1971, based on a relationship between the Beaufort Wind Scales (B-Scales) (measure of wind intensity) and the Mach number scale (measure of relative speed). It is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure (Tornado Project Date Unknown). The F-Scale categorizes each tornado by intensity and area. The scale is divided into six categories, F0 (Gale) to F5 (Incredible) (Edwards 2013).

Although the F-Scale has been in use for more than 30 years, the scale has limitations. 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 the inconsistent rating of tornadoes and, in some cases, an overestimate of tornado wind speeds. The limitations listed above led to the development of the Enhanced Fujita Scale (EF Scale). The Texas Tech University Wind Science and Engineering (WISE) Center, along with a forum of nationally renowned meteorologists and wind engineers from across the country, developed the EF Scale (Texas Tech University 2015).





The EF Scale was adopted on February 1, 2007. It is used to assign a tornado with a rating based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared with a list of DIs and Degrees of Damage (DOD), which help better estimate the range of wind speeds produced by the tornado. From that, a rating is assigned, similar to that of the F-Scale, with six categories from EF0 to EF5, representing increasing DOD. The EF Scale was revised from the original F-Scale to reflect better examinations of tornado damage. The EF Scale also relates to how most structures are designed (NWS 2007). Table 4.3.9-3 displays each of its six categories of the EF Scale.

**Table 4.3.9-3. Enhanced Fujita Damage Scale**

EF Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
EF0	Light tornado	65–85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	Moderate tornado	86-110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	Significant tornado	111-135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	Severe tornado	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	Devastating tornado	166-200	Devastating damage. Well-constructed houses and whole-frame houses completely leveled; cars thrown; and small missiles generated.
EF5	Incredible tornado	>200	Incredible damage. Strong-frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); high-rise buildings have significant structural deformation; incredible phenomena will occur.

Source: SPC 2016  
mph Miles per hour

The EF Scale takes into account more variables than the original F-Scale did in assigning a wind speed rating to a tornado. The EF Scale incorporates 28 DIs, such as building type, structures, and trees. There are eight DODs for each damage indicator, ranging from the beginning of visible damage to complete destruction of the damage indicator. Table 4.3.9-4 lists the 28 DIs. A description is provided for each one of these indicators of the typical construction for that category. Each DOD in every category is assigned an expected estimate of wind speed, a lower bound of wind speed, and an upper bound of wind speed.



**Table 4.3.9-4. EF Scale Damage Indicators**

Number	Damage Indicator	Abbreviation	Number	Damage Indicator	Abbreviation
1	Small barns, farm outbuildings	SBO	15	School - 1-story elementary (interior or exterior halls)	ES
2	One- or two-family residences	FR12	16	School - junior or senior high school	JHSH
3	Single-wide mobile home	MHSW	17	Low-rise (1-4 story) building	LRB
4	Double-wide mobile home	MHDW	18	Mid-rise (5-20 story) building	MRB
5	Apartment, condominium, townhouse (3 stories or less)	ACT	19	High-rise (over 20 stories)	HRB
6	Motel	M	20	Institutional building (hospital, government. or university)	IB
7	Masonry apartment or motel	MAM	21	Metal building system	MBS
8	Small retail building (fast food)	SRB	22	Service station canopy	SSC
9	Small professional (doctor office, branch bank)	SPB	23	Warehouse (tilt-up walls or heavy timber)	WHB
10	Strip mall	SM	24	Transmission line tower	TLT
11	Large shopping mall	LSM	25	Free-standing tower	FST
12	Large, isolated (“big box”) retail building	LIRB	26	Free-standing pole (light, flag, luminary)	FSP
13	Automobile showroom	ASR	27	Tree - hardwood	TH
14	Automotive service building	ASB	28	Tree - softwood	TS

Source: SPC 2016

Since the EF Scale went into effect in February 2007, previous occurrences and losses associated with historical tornado events, described in Section 4.3.9.3, Past Occurrences, are classified based on the former Fujita Scale. Events after February 2007 are classified based on the Enhance Fujita Scale.

Lancaster County’s worst tornado event occurred on February 24, 2016, when an EF2 tornado moved across the County near Gap. The storm blew over trees, damaged an estimated fifty structures, including two large farm outbuildings, an Amish school building, and a two-story residence. Total damage was estimated at \$8,000,000.



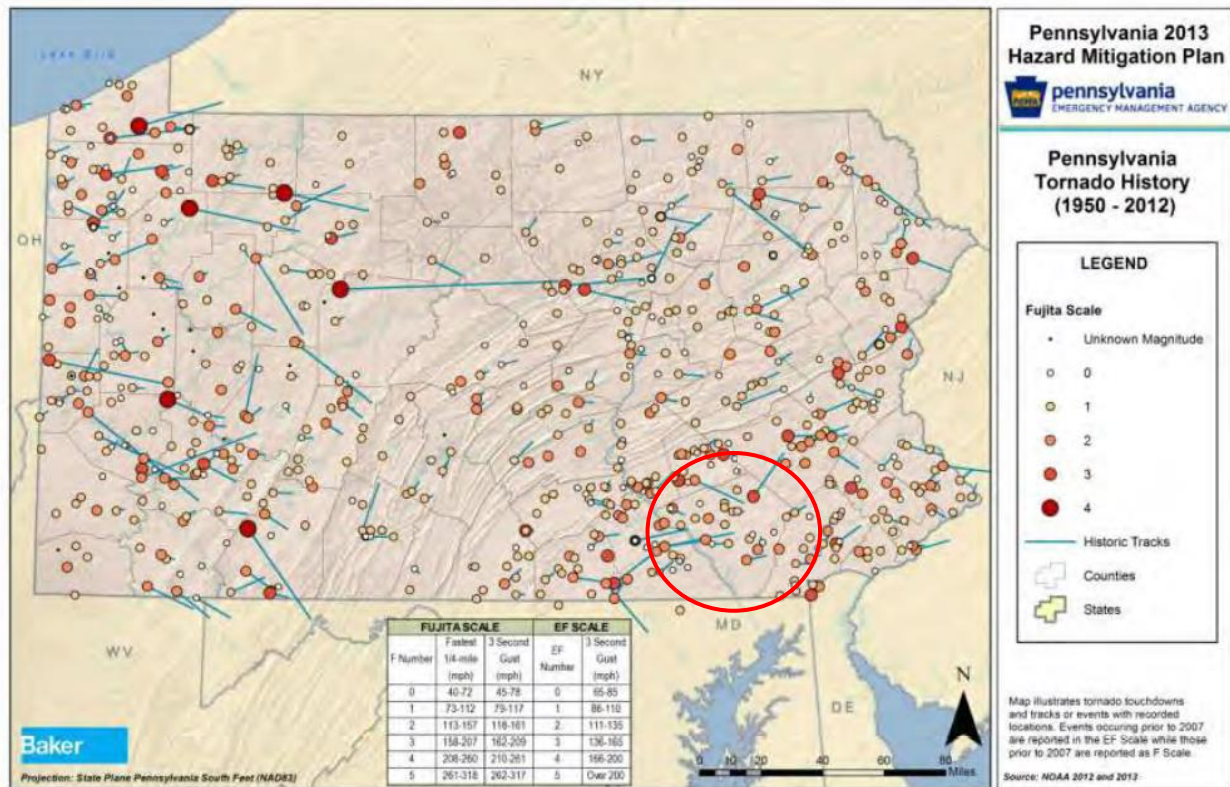
### 4.3.9.3 Past Occurrence

Many sources provided historical information regarding previous occurrences and losses associated with tornado and windstorm events throughout the Commonwealth of Pennsylvania and Lancaster County. With so many sources reviewed for this plan, loss and impact information varies depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

According to NOAA’s National Climatic Data Center (NCDC) storm events database, Lancaster County experienced 294 tornado and windstorm events between August 1, 1950, and September 30, 2017. These events include high winds, strong winds, thunderstorm winds, and tornadoes. Total property damage as a result of these tornado and windstorm events was estimated at over \$69 million. This total also includes damage to other counties.

Figure 4.3.9-5 shows the tornadoes that have occurred across Pennsylvania from 1950 to 2012 (PEMA 2013).

Figure 4.3.9-5. Pennsylvania Tornado History



Source: PEMA 2013

Note: Lancaster County is indicated by the red oval.

According to NOAA’s NCDC, there were 32 recorded tornadoes in Lancaster County between 1950 and 2016. These tornadoes included 6 with an intensity of F/EF0, 14 with an intensity of F/EF1, 11 with an intensity of F/EF2, and 1 with an intensity of F3. Lancaster County’s worst tornado event occurred on February 24, 2016, when an EF2 tornado caused damage around Gap.

Between 1954 and 2017, the Commonwealth of Pennsylvania experienced 36 federally declared windstorm or tornado-related disasters (DR) or emergencies (EM) classified as one or a combination of the following disaster types: hurricane, tropical storm, tropical depression, severe storms, flash flooding, flooding, and high winds. Generally, these disasters cover a wide region of the Commonwealth; therefore, they may have affected many



**SECTION 4.3.9: RISK ASSESSMENT – TORNADO, WINDSTORM**

counties. However, not all counties were included in the disaster declarations. Lancaster County was included in eight declared disasters (FEMA 2017).

Based on all sources researched, select significant windstorms (those with damages of at least \$5,000), and tornado events that have affected Lancaster County and its municipalities between 1950 and 2017 are identified in Table 4.3.9-5. With tornado and windstorm documentation for the Commonwealth of Pennsylvania being so extensive, not all sources have been identified or researched. Therefore, Table 4.3.9-5 may not include all events that have occurred throughout Lancaster County.

**Table 4.3.9-5. Tornado and Windstorm Events in Lancaster County, 1950 to 2017**

Dates of Event	Event Type	Location	Magnitude	Losses / Impacts
November 4, 1950	Tornado	Lancaster	F3	\$250,000 in property damage. 1 direct injury reported.
July 29, 1961	Tornado	Lancaster	F2	\$2,500,000 in property damage. 3 injuries reported.
June 18, 1970	Tornado	Lancaster	F1	\$250,000 in property damage
July 31, 1985	Tornado	Lancaster	F2	\$250,000 in property damage. Winds damaged at least 7 homes, several warehouses and other commercial buildings. Trees, vehicles, fences and other small structures were also damaged. Two people were injured.
August 30, 1985	Tornado	Lancaster	F1	\$250,000 in property damage. Winds damaged two barns, a windmill, and another barn building. Many trees and corn crops were damaged.
June 15, 1989	Tornado	Lancaster	F2	\$2,500,000 in property damage. Winds caused damage to 16 homes, one business, a church, 5 garages and 3 barns. Many trees were uprooted. 7 people were injured.
May 13, 1990	Tornado	Lancaster	F0	\$25,000 in property damage. At least 100 large trees were uprooted and homes had roofs damaged.
May 6, 1991	Tornado	Lancaster	F2	\$250,000 in property damage
June 22, 2001	Tornado	White Horse	F0	\$5,000 in property damage. Numerous trees were knocked down and corn fields damaged.
July 27, 2004	Tornado	Willow Street	F1	\$100,000 in property damage. 4 or 5 homes, and several barns and silos were damaged. Hundreds of trees were knocked down. Two tractor trailers at a trucking company were lifted into the air. No injuries were reported.
August 4, 2004	Tornado	Manheim	F0	\$5,000 in property damage. The tornado extensively damaged several corn fields, and portions of a vineyard. Dozens of trees were knocked down. No injuries were reported.
July 18, 2006	Tstm Wind	Churchtown	75 kts	\$50,000 in property damage. Several homes were damaged from the falling trees. In addition, a barn was destroyed by the high winds. No injuries were reported.
March 29, 2009	Tornado	Clay Twp.	F1	\$1,000,000 in property damage. 200 structures sustained damage. Significant tornado damage affected eight trailer homes, six of which were totally destroyed. Approximately 30 barns sustained either moderate or major damage. Three minor injuries were reported.





**SECTION 4.3.9: RISK ASSESSMENT – TORNADO, WINDSTORM**

Dates of Event	Event Type	Location	Magnitude	Losses / Impacts
August 20, 2009	Tstm Wind	Hamilton Park	50 kts.	\$20,000 in property damage. Winds uprooted large trees and knocked down numerous wires in and around the City of Lancaster. A few trees fell onto cars and damaged surrounding structures. Several thousand customers lost power in the city.
July 25, 2010	Tstm Wind	Lititz	70 kts.	\$20,000 in property damage. Winds knocked down 50-75 trees onto homes and vehicles. No injuries were reported.
September 27, 2010	Tornado	Kinzers/Paradise Twp.	F0	\$15,000 in property damage. Several farm buildings sustained significant damage and multiple trees were snapped off. A commercial roof-top AC unit was overturned and crop damage was visible in nearby corn fields. One man was injured.
August 28, 2011	Strong Wind	Lancaster	46 kts	\$25,000 in property damage. Hurricane Irene produced strong winds that toppled trees and utility wires leaving thousands of residents without power and many roads closed. One tree killed a person and seriously injured another.
February 25, 2012	Strong Wind	Lititz	43 kts	\$10,000 in property damage. Strong winds blew-off part of a roof on a building. No injuries were reported.
October 29, 2012	Tornado	Paradis Twp.	F1	\$6,000,000 in property damage. 15 direct injuries from this tornado were reported. Swaths of trees were leveled and approximately 50 structures sustained damage including several barn collapses. An estimated 2,000–3,000 trees were knocked down, along with 2 small high tensions towers in the Buck area.
June 17, 2013	Tstm Wind	Lancaster	50 kts.	\$45,000 in property damage in Lampeter, Iva and Christiana. Winds knocked down 2 utility poles, and several trees.
June 24, 2013	Tstm Wind	Tayloria	50 kts.	\$5,000 in property damage. Winds knocked down numerous trees and hail was reported. Approximately 100 yards of West Christine Road in Chester County was closed due to downed trees.
June 25, 2013	Tstm Wind	Lancaster	50 kts.	\$10,000 in property damage in Willow Street and Refton. Winds knocked down trees.
June 26, 2013	Tstm Wind	Lancaster	50 kts.	\$10,000 in property damage in East Petersburg and Lancaster. Winds knocked down utility wires and trees.
June 27, 2013	Tstm Wind	Intercourse	50 kts.	\$5,000 in property damage. Winds knocked down trees.
September 29, 2015	Tornado	Rohrerstown	EF1	\$4,000,000 in property damage. Tornado produced significant structural damage to a warehouse, uprooted trees, and destroyed an outbuilding shed. No injuries were reported.
February 24, 2016	Tornado	Gap	EF2	\$8,000,000 in property damage. An estimated 50 buildings sustained damage including 2 large farm outbuildings, an Amish school building, and a two-story residence. Numerous trees were stripped of leaves and knocked over.
July 18, 2016	Tstm Wind	Gordonville	52 kts.	\$8,000 in property damage. Trees and wires were knocked down.





Dates of Event	Event Type	Location	Magnitude	Losses / Impacts
July 23, 2016	Tstm Wind	Lancaster	61 kts.	\$23,000 in property damage in Sporting Hill, West Lancaster and Christiana. Storm knocked down trees and damaged roofs. In one instance, trees fell onto a building, trapping several people inside but no injuries were reported.
August 16, 2016	Tstm Wind	Lancaster	52 kts.	\$22,000 in property damage in Marietta and Maytown. Storm knocked down trees. In one instance, trees fell onto a mobile home. No injuries were reported.
October 30, 2016	Tstm Wind	Lancaster	52 kts.	\$19,000 in property damage in West Lancaster, Rothsville and Gordonville. Storm knocked down numerous trees and wires.
February 25, 2017	Tstm Wind	Lexington	78 kts.	\$500,000 in property damage. Hail reported.

Source: FEMA 2017; NOAA-NCDC 2017

Notes:

(1) Monetary figures within this table were U.S. Dollar (USD) figures calculated during or within the approximate time of the event. If such an event would occur in the present day, monetary losses would be considerably higher in USDs as a result of increased U.S. Inflation Rates.

FEMA Federal Emergency Management Agency  
 K Thousand (\$)  
 Kts. Knots  
 M Million (\$)  
 mph Miles per hour

NCDC National Climatic Data Center  
 NOAA National Oceanic Atmospheric Administration  
 PEMA Pennsylvania Emergency Management Agency  
 Tstm Thunderstorm

#### 4.3.9.4 Future Occurrence

In Section 4.4, the hazards of concern identified for Lancaster 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 Lancaster County is considered *likely* (between 50 and 90 percent annual probability) as defined by the Risk Factor Methodology probability criteria (Section 4.4).

Lancaster County experiences strong winds on a frequent basis, and when those winds occur, they can result in significant property damage, downed trees, and utility outages. It can be reasonably assumed that future tornadoes will be similar in nature to those that have affected Lancaster County in the past. It is estimated that Lancaster County will continue to experience direct and indirect impacts of annual windstorms and tornadoes 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.

#### 4.3.9.5 Vulnerability Assessment

To understand risk, a community must evaluate which assets are exposed and vulnerable in the identified hazard. The entire County has been identified as the hazard area for tornado and other windstorm events. Therefore, all assets in the County (population, structures, critical facilities, and lifelines), as described in the County Profile (Section 2), are potentially vulnerable. The following text evaluates and estimates the potential impact of strong winds on the County, including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, safety and health of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability



### Overview of Vulnerability

The high winds and air speeds of a severe windstorm event, including winds in a tornado, can result in power outages, disruptions to transportation corridors and equipment, loss of workplace access, significant property damage, injuries and loss of life, and the need to shelter and care for individuals affected by the events. A large amount of damage can be inflicted by trees, branches, and other objects that fall onto power lines, buildings, roads, vehicles, and, in some cases, people. The risk assessment for tornadoes and windstorms evaluates available data for a range of storms included in this hazard category.

The entire inventory of the County is at risk of being damaged or lost through the impacts of tornadoes and windstorms. Certain areas, infrastructure, and types of buildings are at greater risk than others because of their proximity to falling hazards or their manner of construction. Potential losses associated with high wind events were calculated for two probabilistic hurricane events: the 100-year and 500-year mean return period (MRP) hurricane events. The impacts on population, existing structures, critical facilities, and the economy are presented below, after a summary of the data and methodology used. Although the estimate is based on a hurricane event, the data can also be used to estimate potential damage from other windstorm events.

### Data and Methodology

After historical data had been reviewed, the Hazards U.S.-Multi-Hazard (HAZUS-MH) methodology and model were used to analyze windstorms for Lancaster County. Data used to assess this hazard include data available in the HAZUS-MH 3.2 wind model and professional knowledge.

HAZUS-MH contains data on historical hurricane events and wind speeds. It also includes surface roughness and vegetation (tree coverage) maps for the area. Surface roughness and vegetation data support modeling of wind force across various types of land surfaces. Hurricane and inventory data available in HAZUS-MH were used to evaluate potential losses from the 100- and 500-year MRP events (severe wind impacts). Other than updated data for the general building stock and critical facility inventories, the default data in HAZUS-MH 3.2 were the best available for use in this evaluation.

### Impact on Life, Health, and Safety

The impact of a tornado or windstorm on life, health, and safety depends on several factors, including the severity of the event and whether adequate warning time was provided to residents. It is assumed that the entire population of Lancaster County (U.S. Census 2010 population of 519,445 people) is exposed to this 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. 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 the location and construction quality of their housing. HAZUS-MH estimates there will be zero people displaced and zero people who may require temporary shelter as a result of the 100- and 500-year MRP events.

Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to 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 are considered most vulnerable because they require extra time or outside assistance during evacuations and are more likely to seek or need medical attention that may not be available due to isolation during a storm event. Section 2 presents the statistical information regarding these populations in the County.

### Impact on General Building Stock

After the population exposed to the tornado or windstorm hazard has been considered, the general building stock replacement value exposed to and damaged by 100-year and 500-year MRP events was examined. Wind-only impacts are reported based on the probabilistic hurricane runs using HAZUS-MH 3.2. 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 (greater than \$3.4 billion for structures only). Expected building damage was evaluated by HAZUS across the following wind damage categories: no damage/very minor damage, minor damage, moderate damage, severe damage, and total destruction. Table 4.3.9-6 summarizes the definitions of the damage categories.

**Table 4.3.9-6. 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
<b>No Damage or Very Minor Damage</b> 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
<b>Minor Damage</b> Maximum of one broken window, door, or garage door. Moderate roof cover loss that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.	> 2% and ≤ 15%	One window, door, or garage door failure	No	< 5 Impacts	No	No
<b>Moderate Damage</b> 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
<b>Severe Damage</b> 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
<b>Destruction</b> 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 2013

As noted earlier in the profile, HAZUS estimates the 100-year MRP peak gust wind speeds for Lancaster County to be 49 to 66 mph, which equates to a *Tropical Storm*. As depicted in Table 4.3.9-7, HAZUS-MH 3.2 estimates over \$9 million in structure damage across the County for the 100-year MRP event. Residential buildings comprise of all of the building inventory and are estimated to experience all of the damage.

HAZUS estimates the 500-year MRP peak gust wind speeds for Lancaster County to range from 69 to 83 mph. This wind speed equates to a *Tropical Storm* (<74 mph) and *Category 1 Storm* (74 mph to 95 mph) and approximately \$88 million in damages to the general building stock (structure only). This amount is less than 1 percent of the County’s building inventory. The residential buildings are estimated to experience the majority of the damage. Table 4.3.9-7 summarizes the building value (structure only) damage estimated for the 100-year and 500-year MRP wind-only events by occupancy class.





**Table 4.3.9-7. Estimated Building Replacement Value (Structure Only) Damaged by the 100-Year and 500-Year Mean Return Period Winds for All Occupancy Classes**

Municipality	Total Building Replacement Value (Structure Only)	Total Building Damage (All Occupancies)		Residential Buildings		Commercial Buildings	
		100-Year	500-Year	100-Year	500-Year	100-Year	500-Year
		Probable Loss	Probable Loss	Probable Loss	Probable Loss	Probable Loss	Probable Loss
Adamstown Borough	\$241,291,000	\$39,564	\$127,961	\$39,564	\$118,503	\$0	\$710
Akron Borough	\$386,174,000	\$56,894	\$400,871	\$56,858	\$386,387	\$36	\$9,530
Bart Township	\$210,899,000	\$187,592	\$583,557	\$184,547	\$571,686	\$1,574	\$5,437
Brecknock Township	\$622,322,000	\$253,969	\$581,341	\$244,263	\$571,319	\$5,024	\$5,045
Caernarvon Township	\$378,543,000	\$163,151	\$305,504	\$154,127	\$293,651	\$5,001	\$6,092
Christiana Borough	\$123,264,000	\$45,953	\$163,156	\$43,691	\$158,308	\$1,104	\$2,052
Clay Township	\$534,342,000	\$120,836	\$733,073	\$111,567	\$716,089	\$5,277	\$9,378
Colerain Township	\$243,323,000	\$214,778	\$915,768	\$211,120	\$888,890	\$1,965	\$11,095
Columbia Borough	\$1,023,852,000	\$55	\$1,611,131	\$55	\$1,533,478	\$0	\$55,861
Conestoga Township	\$345,963,000	\$56,352	\$872,504	\$56,111	\$861,308	\$167	\$5,709
Conoy Township	\$276,993,000	\$0	\$612,002	\$0	\$602,565	\$0	\$3,935
Denver Borough	\$410,669,000	\$85,125	\$337,945	\$85,031	\$328,308	\$94	\$3,956
Drumore Township	\$198,654,000	\$106,988	\$938,252	\$104,255	\$904,153	\$1,636	\$14,720
Earl Township	\$987,315,000	\$305,365	\$1,015,501	\$253,327	\$878,203	\$33,598	\$67,684
East Cocalico Township	\$1,060,783,000	\$247,474	\$836,788	\$241,877	\$807,186	\$2,635	\$14,455
East Donegal Township	\$778,411,000	\$41	\$2,152,422	\$41	\$2,105,199	\$0	\$22,116
East Drumore Township	\$437,268,000	\$188,933	\$1,224,337	\$178,796	\$1,160,063	\$5,403	\$27,820
East Earl Township	\$611,326,000	\$289,636	\$720,116	\$270,765	\$693,617	\$9,526	\$10,378
East Hempfield Township	\$3,453,712,000	\$247,186	\$5,969,101	\$246,290	\$5,731,560	\$465	\$115,344
East Lampeter Township	\$2,059,520,000	\$411,687	\$2,999,671	\$389,456	\$2,826,637	\$14,118	\$110,023
East Petersburg Borough	\$445,336,000	\$35,114	\$783,721	\$35,114	\$767,293	\$0	\$11,731
Eden Township	\$156,417,000	\$80,302	\$396,463	\$76,958	\$384,150	\$786	\$3,109





**SECTION 4.3.9: RISK ASSESSMENT - TORNADO, WINDSTORM**

Municipality	Total Building Replacement Value (Structure Only)	Total Building Damage (All Occupancies)		Residential Buildings		Commercial Buildings	
		100-Year	500-Year	100-Year	500-Year	100-Year	500-Year
		Probable Loss	Probable Loss	Probable Loss	Probable Loss	Probable Loss	Probable Loss
Elizabeth Township	\$383,738,000	\$32,294	\$426,687	\$32,294	\$415,518	\$0	\$3,269
Elizabethtown Borough	\$1,112,560,000	\$0	\$1,386,538	\$0	\$1,345,640	\$0	\$19,685
Ephrata Borough	\$1,422,269,000	\$159,004	\$1,004,335	\$158,991	\$952,043	\$0	\$30,363
Ephrata Township	\$1,023,938,000	\$194,777	\$1,068,654	\$185,745	\$1,029,394	\$3,363	\$18,130
Fulton Township	\$256,463,000	\$114,026	\$1,044,527	\$109,391	\$963,254	\$1,721	\$13,688
Lancaster City	\$5,732,698,000	\$478,486	\$6,289,378	\$478,486	\$5,893,722	\$0	\$215,827
Lancaster Township	\$1,528,187,000	\$232,282	\$2,955,510	\$232,282	\$2,913,231	\$0	\$28,266
Leacock Township	\$455,618,000	\$230,486	\$901,322	\$215,090	\$853,073	\$8,558	\$23,230
Lititz Borough	\$1,239,113,000	\$91,297	\$1,204,836	\$91,297	\$1,122,126	\$0	\$26,307
Little Britain Township	\$337,249,000	\$283,580	\$1,226,495	\$279,650	\$1,198,287	\$1,951	\$9,357
Manheim Borough	\$526,083,000	\$105	\$652,296	\$105	\$619,500	\$0	\$16,227
Manheim Township	\$5,144,650,000	\$830,470	\$8,405,682	\$816,329	\$8,121,713	\$7,342	\$198,048
Manor Township	\$2,071,018,000	\$228,520	\$5,146,664	\$228,159	\$4,974,282	\$194	\$80,998
Marietta Borough	\$227,159,000	\$100	\$350,969	\$100	\$334,923	\$0	\$6,937
Martic Township	\$399,587,000	\$66,586	\$1,138,784	\$66,479	\$1,115,130	\$67	\$10,083
Millersville Borough	\$705,041,000	\$75,267	\$1,161,797	\$74,790	\$1,139,814	\$324	\$11,760
Mount Joy Borough	\$859,338,000	\$293	\$1,361,881	\$293	\$1,313,696	\$0	\$26,039
Mount Joy Township	\$1,016,431,000	\$171	\$1,758,470	\$171	\$1,707,695	\$0	\$30,352
Mountville Borough	\$251,996,000	\$6,023	\$437,427	\$6,023	\$423,624	\$0	\$9,763
New Holland Borough	\$581,959,000	\$186,845	\$625,737	\$169,281	\$591,612	\$11,294	\$21,486
Paradise Township	\$455,279,000	\$210,680	\$823,244	\$198,677	\$794,941	\$7,393	\$14,128
Penn Township	\$1,040,491,000	\$36,118	\$1,571,441	\$36,118	\$1,503,731	\$0	\$36,547
Pequea Township	\$431,396,000	\$96,157	\$1,056,912	\$93,230	\$1,023,446	\$1,158	\$11,100





**SECTION 4.3.9: RISK ASSESSMENT – TORNADO, WINDSTORM**

Municipality	Total Building Replacement Value (Structure Only)	Total Building Damage (All Occupancies)		Residential Buildings		Commercial Buildings	
		100-Year	500-Year	100-Year	500-Year	100-Year	500-Year
		Probable Loss	Probable Loss	Probable Loss	Probable Loss	Probable Loss	Probable Loss
Providence Township	\$498,260,000	\$144,374	\$1,263,817	\$142,321	\$1,234,305	\$982	\$13,556
Quarryville Borough	\$282,446,000	\$97,606	\$481,214	\$89,322	\$459,151	\$6,250	\$16,926
Rapho Township	\$1,096,056,000	\$896	\$2,154,858	\$896	\$2,096,331	\$0	\$24,708
Sadsbury Township	\$246,515,000	\$177,800	\$573,536	\$173,077	\$557,356	\$2,131	\$6,204
Salisbury Township	\$792,974,000	\$488,279	\$1,185,180	\$472,264	\$1,147,723	\$8,210	\$15,688
Strasburg Borough	\$325,423,000	\$121,832	\$714,202	\$114,057	\$687,032	\$5,583	\$17,972
Strasburg Township	\$399,206,000	\$171,125	\$926,042	\$159,178	\$891,263	\$9,994	\$25,359
Terre Hill Borough	\$140,089,000	\$55,701	\$150,865	\$52,355	\$146,919	\$1,664	\$1,664
Upper Leacock Township	\$962,453,000	\$261,181	\$1,425,174	\$237,254	\$1,332,058	\$10,351	\$34,478
Warwick Township	\$1,947,800,000	\$246,588	\$2,782,946	\$238,438	\$2,685,264	\$4,734	\$56,390
West Cocalico Township	\$626,071,000	\$134,176	\$571,870	\$130,840	\$558,759	\$1,498	\$4,312
West Donegal Township	\$901,131,000	\$0	\$1,554,915	\$0	\$1,528,049	\$0	\$12,561
West Earl Township	\$794,974,000	\$253,422	\$1,159,268	\$244,625	\$1,102,467	\$4,494	\$26,311
West Hempfield Township	\$1,663,399,000	\$36,225	\$3,548,915	\$36,225	\$3,468,071	\$0	\$41,037
West Lampeter Township	\$1,754,420,000	\$352,561	\$3,418,599	\$349,064	\$3,334,301	\$1,957	\$48,739
<b>Lancaster County</b>	<b>\$54,619,855,000</b>	<b>\$9,232,326</b>	<b>\$88,192,173</b>	<b>\$8,896,707</b>	<b>\$84,867,992</b>	<b>\$189,618</b>	<b>\$1,723,671</b>

Source: HAZUS-MH 3.2





Because of differences in building construction, residential structures are generally more susceptible to wind damage than are commercial and industrial structures. Wood and masonry buildings, regardless of their occupancy class, generally tend to 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.

Of the more than \$54.6 billion in total residential replacement value (structure) for the entire County, an estimated \$8.9 in residential building damage can be anticipated for the 100-year event and over \$84.8 million in residential building damage can be anticipated for the 500-year event. Residential building damage accounts for 96.2 percent of total damage for the 500-year wind-only event. This information illustrates residential structures are the most vulnerable to the wind hazard.

Annualized losses were also examined for Lancaster County. A total of more than \$934K is estimated as the annualized loss for the entire County; however, annualized loss does not predict which losses will occur in any particular year.

Impact on Critical Facilities

HAZUS-MH 3.2 estimates the probability that critical facilities (medical facilities, fire/emergency medical services, police, emergency operation centers, and schools) may sustain damage as a result of 100-year and 500-year MRP wind-only events; note, an error in HAZUS does not allow for damage estimates to user defined facilities (i.e., shelters, senior facilities, etc.). Additionally, HAZUS-MH estimates the loss of use for each facility in number of days. HAZUS-MH estimates that there will be a 0-1% chance of minor damage to various police, emergency operation center, and school facilities in Lancaster County, and continuity of operations at these facilities will not be interrupted (loss of use is estimated to be 0 days) as a result of a 100-year MRP event. Table 4.3.9-8 summarizes the results estimated for the 500-year MRP wind-only events.

Table 4.3.9-8. Estimated Impacts to Critical Facilities for the 500-Year Mean Return Period Hurricane-Related Winds

Facility Type	500-Year Event				
	Loss of Days	Percent-Probability of Sustaining Damage			
		Minor	Moderate	Severe	Complete
EOC	0	1-5	0-1	0	0
Medical	0	0-3	0-2	0-1	0
Police	0	1-3	0	0	0
Fire	0	0-2	0	0	0
Schools	0	0-7	0-2	0	0

Source: HAZUS-MH 3.2

At this time, HAZUS-MH 3.2 does not estimate losses to transportation lifelines and utilities as part of the hurricane model. Transportation lifelines are not considered particularly vulnerable to the wind hazard; they are more vulnerable to cascading effects such as flooding, and falling debris. Impacts to transportation lifelines affect both short-term (evacuation activities) and long-term (day-to-day commuting) transportation needs.

Utility structures could suffer damage associated with falling tree limbs or other debris, resulting in the loss of power, which can impair business operations and can affect heating or cooling provision to citizens (including the young and elderly, who are particularly vulnerable to temperature-related health impacts).

Impact on Economy

Severe storms also affect the economy, including loss of business function (for example, to tourism and recreation), damage to inventory, relocation costs, wage loss, and rental loss from repair or replacement of





buildings. HAZUS-MH estimates the total economic loss associated with each storm scenario (direct building losses and business interruption losses). Direct building losses are considered the estimated costs to repair or replace the damage caused to the building. These losses are reported in the “Impact on General Building Stock” section discussed earlier. Business interruption losses are the losses associated with the inability to operate a business because of the wind damage sustained during the storm or the temporary living expenses for those displaced from their home because of the event.

HAZUS-MH estimates business interruption losses for Lancaster County for the 100-year MRP event (<\$10,000). HAZUS-MH estimates \$3.7 million in business interruption losses for Lancaster County for the 500-year MRP wind-only event, which includes loss of inventory, income, relocation costs, rental costs, and lost wages.

HAZUS-MH 3.2 also estimates the amount of debris that may be produced a result of the 100-year and 500-year MRP wind events. Table 4.3.9-9 estimates the debris produced for Lancaster County during a wind event. This estimate is likely conservative; it may be higher if multiple impacts occur or if the event occurs in conjunction with rain or other hazards, because the estimated debris production does not include flooding. According to the HAZUS-MH Hurricane User Manual:

“The Eligible Tree Debris columns provide estimates of the weight and volume of downed trees that would likely be collected and disposed at public expense. As discussed in Chapter 12 of the HAZUS-MH Hurricane Model Technical Manual, the eligible tree debris estimates produced by the Hurricane Model tend to underestimate reported volumes of debris brought to landfills for a number of events that have occurred over the past several years. This indicates that there may be other sources of vegetative and non-vegetative debris that are not currently being modeled in HAZUS. For landfill estimation purposes, it is recommended that the HAZUS debris volume estimate be treated as an approximate lower bound. Based on actual reported debris volumes, it is recommended that the HAZUS results be multiplied by three to obtain an approximate upper bound estimate. It is also important to note that the Hurricane Model assumes a bulking factor of 10 cubic yards per ton of tree debris. If the debris is chipped prior to transport or disposal, a bulking factor of 4 is recommended. Thus, for chipped debris, the eligible tree debris volume should be multiplied by 0.4.” (FEMA 2015a)

**Table 4.3.9-9. Estimated Debris Production for 100-Year and 500-Year Mean Return Period Hurricane-Related Winds**

Municipality	Brick and Wood (tons)		Concrete and Steel (tons)		Tree (tons)		Eligible Tree Volume (cubic yards)	
	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year
Adamstown Borough	0.0	7.0	0.0	0.0	9.0	32.0	102.3	307.6
Akron Borough	0.0	32.0	0.0	0.0	14.0	81.0	110.1	610.0
Bart Township	6.0	44.0	0.0	0.0	324.0	1,506.0	248.9	1,165.8
Brecknock Township	1.0	11.0	0.0	0.0	389.0	682.0	684.5	1,231.3
Caernarvon Township	2.0	9.0	0.0	0.0	87.0	240.0	120.2	268.0
Christiana Borough	0.0	13.0	0.0	0.0	10.0	54.0	69.6	334.8
Clay Township	0.0	34.0	0.0	0.0	79.0	664.0	192.5	1,007.6
Colerain Township	2.0	76.0	0.0	0.0	698.0	4,379.0	627.7	3,537.3
Columbia Borough	0.0	171.0	0.0	0.0	0.0	196.0	2.6	1,608.6
Conestoga Township	0.0	62.0	0.0	0.0	48.0	926.0	111.4	1,276.2
Conoy Township	0.0	32.0	0.0	0.0	0.0	1,211.0	0.0	1,068.1



**SECTION 4.3.9: RISK ASSESSMENT – TORNADO, WINDSTORM**

Municipality	Brick and Wood (tons)		Concrete and Steel (tons)		Tree (tons)		Eligible Tree Volume (cubic yards)	
	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year
Denver Borough	0.0	13.0	0.0	0.0	20.0	86.0	247.4	720.6
Drumore Township	1.0	83.0	0.0	0.0	404.0	4,929.0	278.9	3,795.4
Earl Township	17.0	79.0	0.0	0.0	164.0	754.0	272.1	993.1
East Cocalico Township	0.0	29.0	0.0	0.0	246.0	771.0	571.2	1,873.7
East Donegal Township	0.0	150.0	0.0	0.0	0.0	2,275.0	0.5	2,592.9
East Drumore Township	3.0	113.0	0.0	0.0	615.0	4,344.0	444.6	3,064.3
East Earl Township	6.0	31.0	0.0	0.0	221.0	450.0	295.3	614.6
East Hempfield Township	0.0	368.0	0.0	0.0	109.0	2,209.0	663.5	9,251.0
East Lampeter Township	2.0	262.0	0.0	0.0	281.0	1,717.0	1,079.6	5,668.5
East Petersburg Borough	0.0	53.0	0.0	0.0	0.0	126.0	0.7	1,109.6
Eden Township	0.0	27.0	0.0	0.0	258.0	1,321.0	197.5	952.1
Elizabeth Township	0.0	24.0	0.0	0.0	3.0	410.0	12.3	710.8
Elizabethtown Borough	0.0	127.0	0.0	0.0	0.0	220.0	0.0	1,741.4
Ephrata Borough	0.0	67.0	0.0	0.0	38.0	171.0	445.5	1,537.9
Ephrata Township	2.0	63.0	0.0	0.0	199.0	885.0	353.2	1,649.6
Fulton Township	1.0	111.0	0.0	0.0	590.0	5,598.0	411.6	4,124.5
Lancaster City	1.0	834.0	0.0	0.0	51.0	566.0	612.9	3,946.3
Lancaster Township	0.0	231.0	0.0	0.0	95.0	725.0	732.2	4,411.1
Leacock Township	16.0	84.0	0.0	0.0	69.0	622.0	88.0	653.5
Lititz Borough	0.0	103.0	0.0	0.0	30.0	223.0	347.2	1,728.1
Little Britain Township	2.0	92.0	0.0	0.0	596.0	3,870.0	430.5	2,877.2
Manheim Borough	0.0	45.0	0.0	0.0	7.0	130.0	100.6	1,091.3
Manheim Township	2.0	478.0	0.0	0.0	465.0	2,235.0	2,708.8	11,626.5
Manor Township	0.0	440.0	0.0	0.0	130.0	5,261.0	424.9	8,134.4
Marietta Borough	0.0	38.0	0.0	0.0	0.0	72.0	0.0	624.3
Martic Township	0.0	87.0	0.0	0.0	114.0	3,277.0	197.5	3,803.9
Millersville Borough	0.0	122.0	0.0	0.0	23.0	249.0	217.9	1,960.8
Mount Joy Borough	0.0	108.0	0.0	0.0	4.0	214.0	15.8	1,827.3
Mount Joy Township	0.0	121.0	0.0	0.0	0.0	2,081.0	0.0	2,613.3
Mountville Borough	0.0	44.0	0.0	0.0	0.0	121.0	0.0	839.8
New Holland Borough	2.0	61.0	0.0	0.0	37.0	91.0	338.7	801.1
Paradise Township	5.0	55.0	0.0	0.0	251.0	769.0	380.0	1,221.9
Penn Township	0.0	98.0	0.0	0.0	67.0	1,877.0	62.4	2,536.5
Pequea Township	0.0	89.0	0.0	0.0	173.0	1,478.0	241.6	2,032.7
Providence Township	0.0	108.0	0.0	0.0	135.0	1,641.0	279.6	2,889.7
Quarryville Borough	2.0	43.0	0.0	0.0	28.0	172.0	202.5	1,044.3
Rapho Township	0.0	151.0	0.0	0.0	44.0	4,530.0	37.0	3,822.9
Sadsbury Township	3.0	38.0	0.0	0.0	491.0	1,836.0	405.7	1,559.9
Salisbury Township	6.0	65.0	0.0	0.0	390.0	1,249.0	505.8	1,455.8
Strasburg Borough	4.0	63.0	0.0	0.0	31.0	164.0	285.7	1,372.4





## SECTION 4.3.9: RISK ASSESSMENT – TORNADO, WINDSTORM

Municipality	Brick and Wood (tons)		Concrete and Steel (tons)		Tree (tons)		Eligible Tree Volume (cubic yards)	
	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year	100 Year	500 Year
Strasburg Township	2.0	73.0	0.0	0.0	504.0	2,256.0	480.6	2,375.0
Terre Hill Borough	1.0	7.0	0.0	0.0	9.0	20.0	89.3	197.4
Upper Leacock Township	0.0	110.0	0.0	0.0	105.0	766.0	381.3	1,915.8
Warwick Township	0.0	161.0	0.0	0.0	219.0	1,469.0	524.4	3,754.5
West Cocalico Township	0.0	15.0	0.0	0.0	252.0	814.0	406.8	1,281.9
West Donegal Township	0.0	111.0	0.0	0.0	0.0	1,090.0	0.0	1,690.6
West Earl Township	1.0	66.0	0.0	0.0	142.0	899.0	455.1	2,077.7
West Hempfield Township	0.0	260.0	0.0	0.0	11.0	1,698.0	51.2	5,607.1
West Lampeter Township	3.0	299.0	0.0	0.0	284.0	1,962.0	743.0	4,929.5
<b>Lancaster County</b>	<b>93.0</b>	<b>6,791.0</b>	<b>0.0</b>	<b>0.0</b>	<b>9,563.0</b>	<b>80,664.0</b>	<b>19,290.6</b>	<b>141,519.9</b>

Source: HAZUS-MH 3.2

### Future Growth and Development

As discussed and illustrated in Section 2.4, areas targeted for future growth and development have been identified across Lancaster County. Any areas of growth could be affected by the tornado and windstorm hazard because the entire County is exposed and vulnerable to the wind hazard, particularly when associated with severe storms.

### 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 scale, climate change has the potential to alter the prevalence and severity of events such as hurricanes. While predicting changes to the prevalence or intensity of a wind event and its effects is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (U.S. Environmental Protection Agency [EPA], 2006).



### 4.3.10 Wildfire

This section provides a profile of and vulnerability assessment for the wildfire hazard. A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. 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.

#### 4.3.10.1 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 Lancaster 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.

The majority of the County is agricultural land (approximately 54.5%) and large forest areas are not widespread. In the County, the majority of wildfires are relatively small in size (Lancaster HMP, 2012). The greatest potential for wildfires is in the spring months of March, April, and May, and the autumn months of October and November; 83% of all Pennsylvania wildfires occur in these two time periods. In the spring, bare trees allow sunlight to reach the forest floor, drying fallen leaves and other ground debris. In the fall, dried leaves are also fuel for fires.

**Table 4.3.10-1. Land Use Summary for Lancaster County**

Land Use Category	Total Area (square miles)	Percent of Total
Agricultural	535.0	54.5%
Barren Land	3.6	<1%
Forest	206.2	21.0%
Urban Built Up	196.4	20.0%
Water	32.1	3.3%
Wetland	9.2	<1%
<b>Total</b>	<b>982.4</b>	<b>100.0%</b>

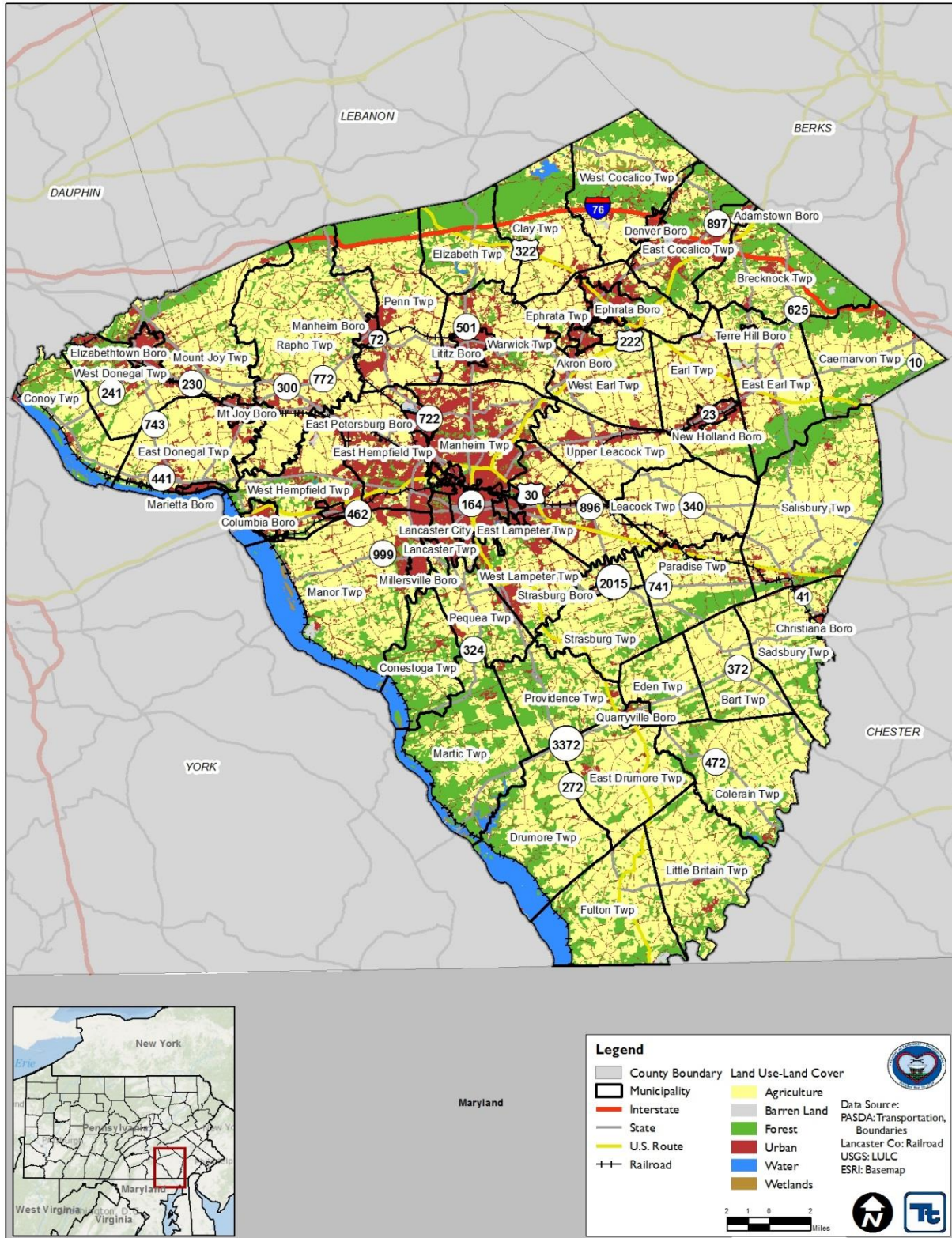
Source: USGS 2011

Figure 4.3.10-1 illustrates the land cover across Lancaster County. As the figure shows, a majority of Lancaster County is agricultural. Figure 4.3.10-2 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 2002 to June 2013. 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. Therefore, these locally controlled blazes may not be represented in BOF records.





Figure 4.3.10-1. Land Cover in Lancaster County



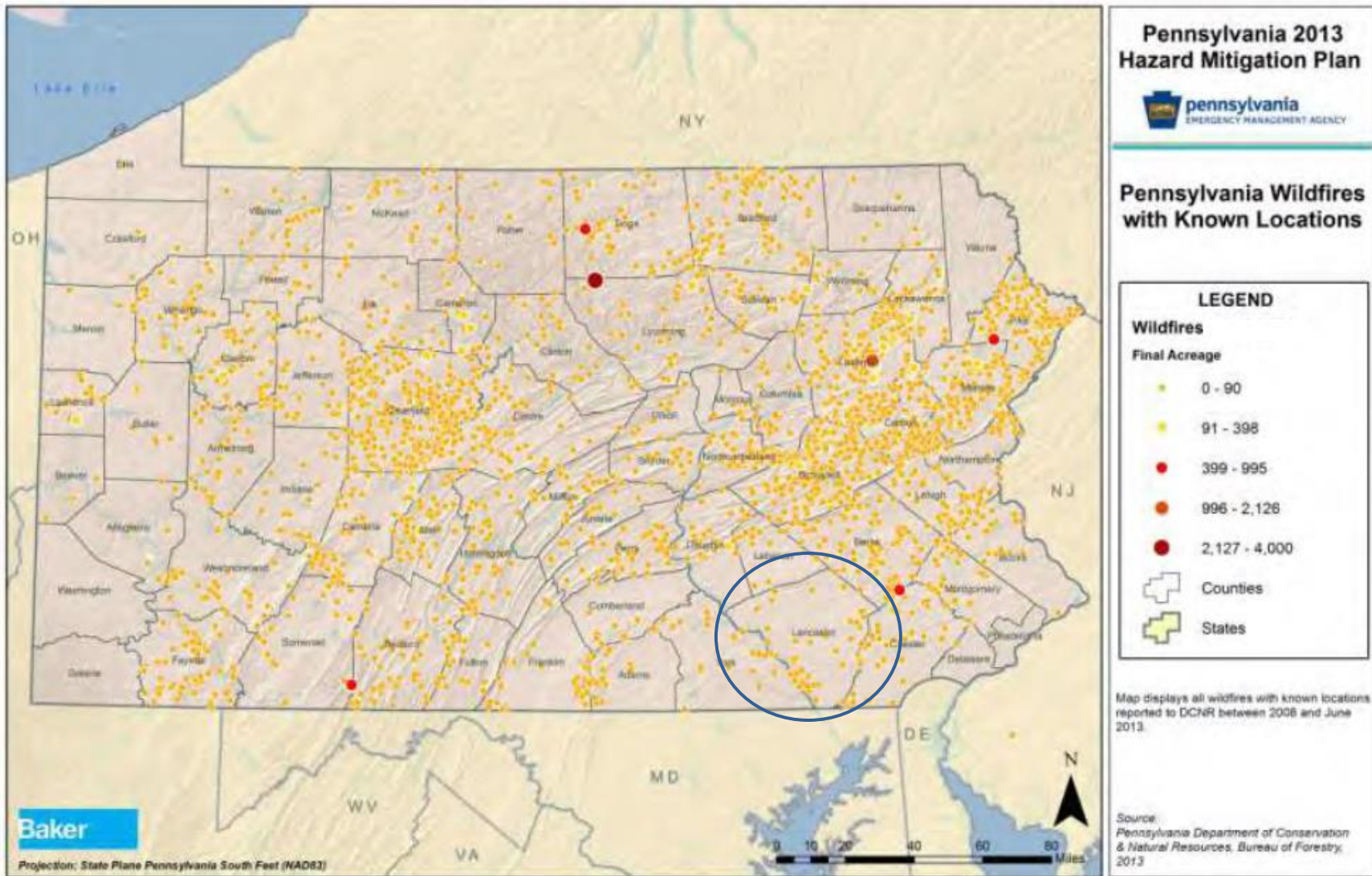
Source: USGS – National Land Cover Database (NLCD) 2011







Figure 4.3.10-2. Location of Wildfire Events responded to by BOF from 2002–2013



Source: PEMA 2013

Note: Blue circle was added to highlight Lancaster County's location within Pennsylvania.





According to the Pennsylvania 2013 Standard State All-Hazard Mitigation Plan, 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 wildfires. In southeastern Pennsylvania, communities are most susceptible to large fires accidentally started by people; fires of this type include those ignited by sparks from railroad cars that run parallel to and on the banks of the Susquehanna River (PEMA 2013).

At a meeting of municipal emergency management coordinators in August 2017, the following areas were identified as being problematic in terms of risk of wildfires:

- Along railroad tracks, where sparks from trains' brake shoes have been igniting brush fires
- The area along Chiques Creek
- The Welsh Mountain Natures Preserve, along the border of East Earl Township and Salisbury Township
- In Columbia Borough, the area along the hill leading down to the Susquehanna River from the overlook

Several tools are available to estimate fire potential location and extent, including (but not limited to) the WUI, Wildland Fire Assessment System, and PA DCNR Priority Landscape Analysis. These tools are discussed in further detail below.

### Wildland/Urban Interface (WUI)

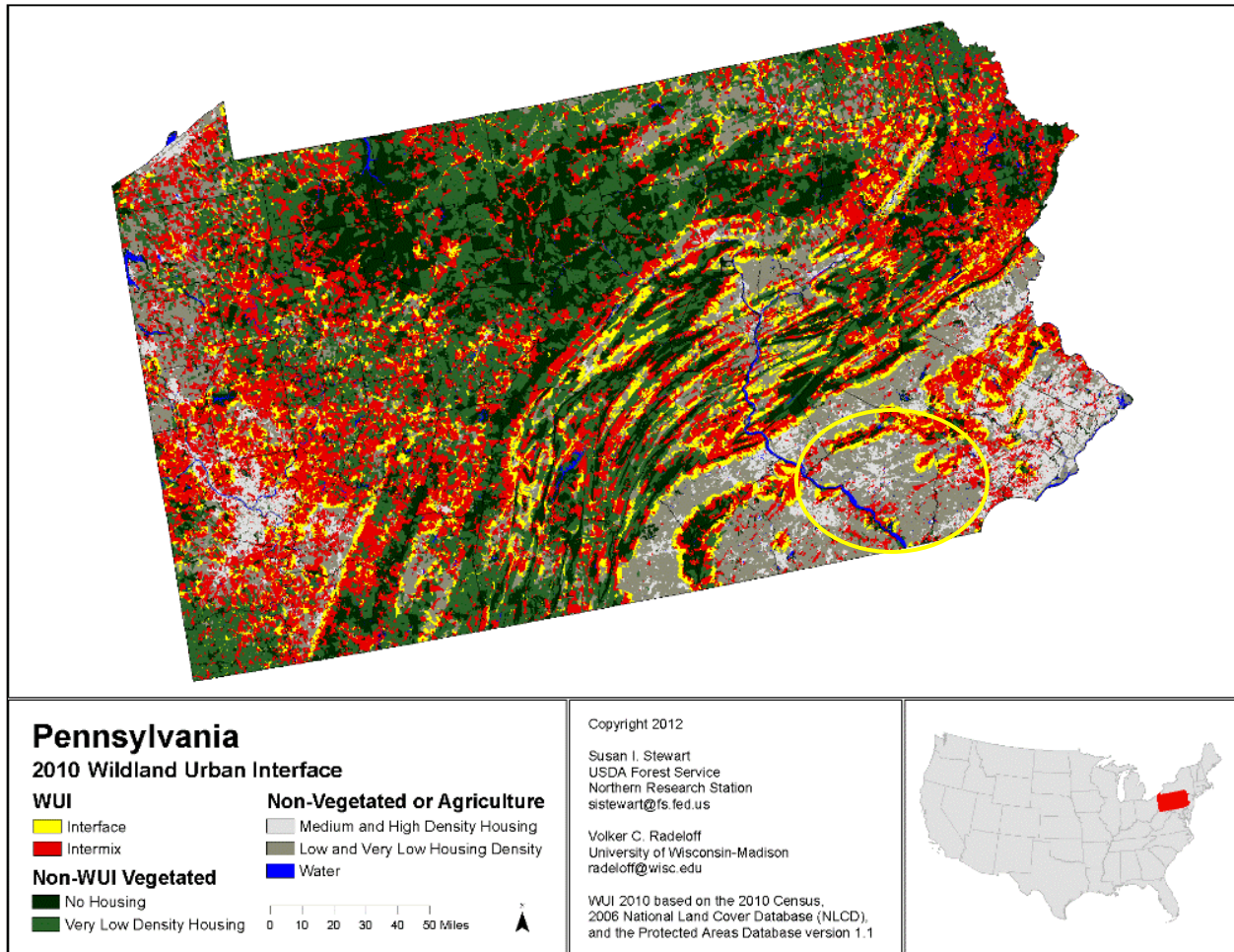
The WUI is the area where houses and wildland vegetation coincide. The WUI is divided into two categories: intermix and interface. Intermix WUI are areas where housing and vegetation “intermingle.” Intermix areas have more than one house per 40 acres and have more than 50 percent vegetation. Interface 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 et al. 2005).

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 et al. 2005).

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. Lancaster County is identified as having many areas of low-density housing or very low-density housing due to the large amount of agricultural area. Areas where recreation and tourism dominate are also places where WUI is common (Stewart et al. 2005). Figure 4.3.10-3 depicts the WUI for Pennsylvania in 2010, and Figure 4.3.10-4 illustrates the WUI for Lancaster County. Concentrations of WUI areas greater than 50 percent are classified as WUI (intermix or interface) in the County.



Figure 4.3.10-3. 2010 WUI for Pennsylvania



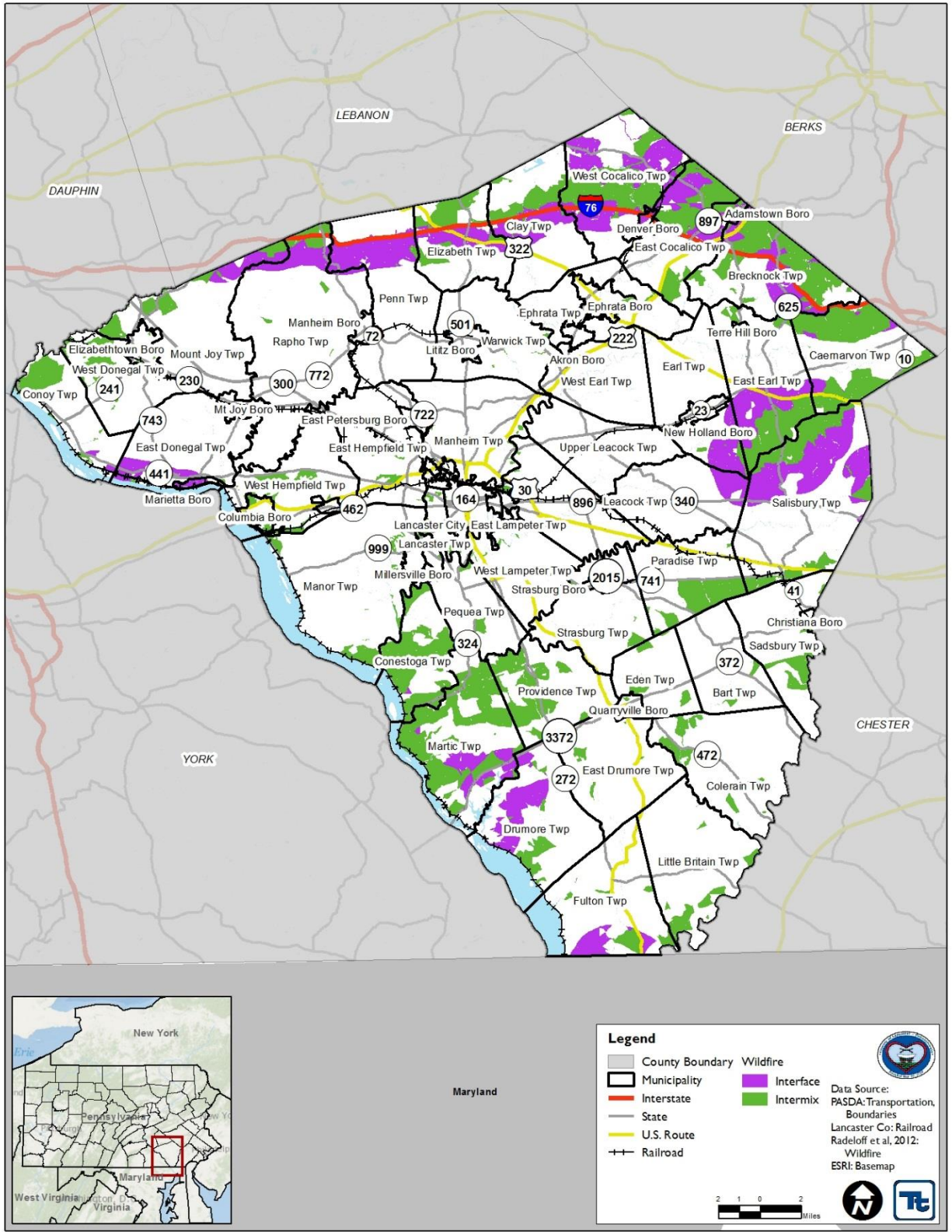
Source: Stewart 2015

Note: Yellow oval highlights Lancaster County's location within Pennsylvania.





Figure 4.3.10-4. WUI for Lancaster County



Source: Stewart and Radeloff 2015





### Wildland Fire Assessment System (WFAS)

The 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 fires danger, weather maps and satellite-derived “Greenness” maps (U.S. Forestry Service [USFS] Date Unknown). Each day during the fire season, national maps of selected fire weather and fire danger components of the National Fire Danger Rating System (NFDRS) are produced by the WFAS (USFS 2012). The Fire Danger Rating level, described in Table 4.3.10-2 below, takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture. The adjective class rating is a method of normalizing rating classes across different fuel models, indexes, and station locations. It is based primarily on a fuel model cataloged for the station, the fire danger index selected to reflect staffing levels, and climatological class breakpoints. Local station managers provide this information to USFS (USFS 2012).

Table 4.3.10-2. 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 tree tops) 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 2012

### Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Priority Landscape Analysis

The 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 five datasets were used for this analysis:

- 2002 WUI





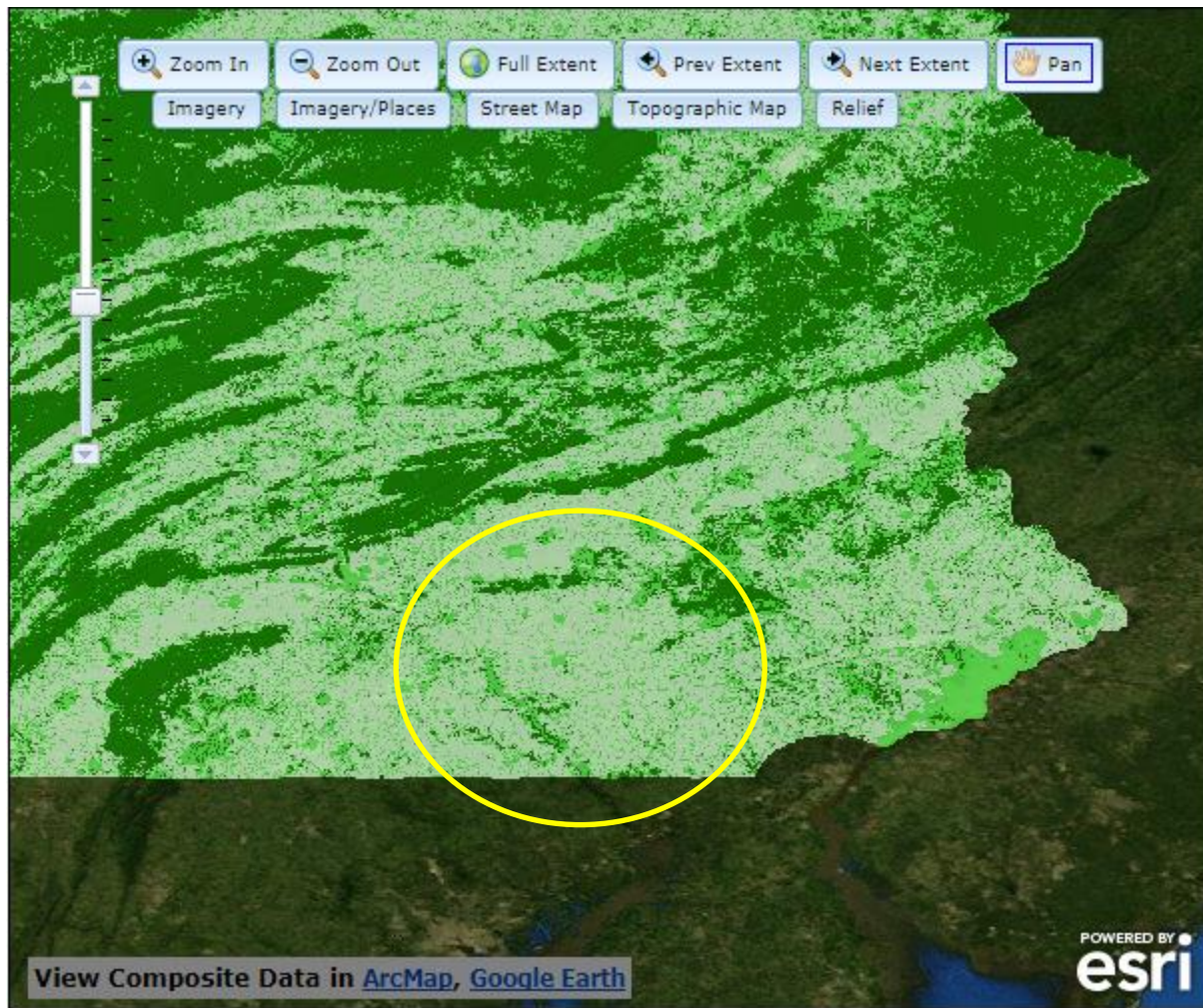
- 2006 LANDFIRE
- 2002–2008 Pennsylvania Wildfire Point Origin Occurrences
- Percent Slope
- 2009 Local Assessment of Values, Risks, Hazards

The WUI classifies areas where homes and other human development meet or intermingle with undeveloped land. LANDFIRE characterizes the land's vegetation into fuel models that predict various fire behavior intensities. The Pennsylvania wildfire Point Origin Occurrences are records of wildland fire origins that have been reported. Percent slope aids in predicting fire behavior from the terrain. The local assessment of values, risks, and hazards is a municipality-based rating system; this assessment has been made by local wildland fire managers (PA DCNR 2017b). Figure 4.3.10-5 illustrates the output for the wildfire priority landscapes model for Lancaster County.

The greatest potential for wildfires is in the spring months of March, April, and May, and the autumn months of October and November. These months generally bring clear skies, high winds, low relative humidity, and prolonged periods of dry weather. In the spring, bare trees allow sunlight to reach the forest floor, drying fallen leaves and other ground debris. The same theory applies for the fall; however, the drier conditions are a more crucial factor. People cause most wildfires in Pennsylvania, often by burning debris. Several fires have started in a person's backyard and traveled through dead grasses and weeds into bordering woodlands. According to the Pennsylvania Emergency Management Agency (PEMA) Standard All-Hazard Mitigation Plan, 92 percent of Pennsylvania wildfires burn less than 10 acres and are suppressed within the first burning period (PEMA 2013).



Figure 4.3.10-5. Wildfire Priority Landscapes in Lancaster County



Source: PA DCNR 2017b

Notes: Low Priority = 0–0.21 (light green); Medium Priority = 0.21–0.35 (medium green); High Priority = 0.35–1 (dark green)  
Lancaster County location within yellow oval

### 4.3.10.2 Range of Magnitude

Wildfire events in Lancaster 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 general public and property owners, the safety of firefighters is also a concern. Although loss of life among firefighters does not occur often in Pennsylvania, 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.

While some fires are not human-caused and are part of natural succession processes, a wildfire can kill people, livestock, fish, and wildlife. They often destroy property, valuable timber, forage, and recreational and scenic





values. The most significant environmental impact is the potential for severe erosion, silting of stream beds and reservoirs, and flooding due to ground-cover loss following a fire event. Wildfire can also have a positive environmental impact in that they burn dead trees, leaves, and grasses to allow more open spaces for new vegetation to grow and receive sunlight. Another positive effect is that it stimulates the growth of new shoots on trees and shrubs and its heat can open pine cones and other seed pods.

The worst-case scenario for Lancaster County would occur if an uncontrolled wildfire spread across the northern region of the County, specifically within West Cocalico Township, where 6,753 people (92.8% of the population) are located within the WUI hazard area. Additionally, 5,015 structures valued at \$946 million (91.6%) are exposed to the hazard area in West Cocalico Township.

### 4.3.10.3 Past Occurrence

Wildfires are a constant threat in Lancaster County. For the 2014 HMP, only wildfires reported to PA DCNR from 2002–2008 were reflected in the HMP. For this update, all wildfires and brush fires reported to the Lancaster County 911 Center from 2008–2017 are included. From 2009–2017, only two wildfires were reported to PA DCNR one in 2016 and one in 2017. Table 4.3.10-3 shows the numbers of wildfire events in the County from 2002–2017. Of all of Lancaster County’s jurisdictions, Manheim Township had the most wildfires between 2002 and 2017.

On March 29, 2012, controlled burning of household trash in Rapho Township got out of control and started a brush fire. Wind caused the fire to spread to numerous hay bales, endangering nearby buildings including a barn. An estimated \$4,000 worth of hay was destroyed; however, no one was injured.



Table 4.3.10-3. List of wildfire events reported in Lancaster County from 2002-2017

Municipality	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Adamstown Borough	-	-	-	-	-	-	0	0	2	1	1	0	0	0	1	1	6
Akron Borough	-	-	-	-	-	-	3	1	2	0	2	2	1	5	1	0	17
Bart Township	-	-	-	-	-	-	5	6	1	0	2	2	3	1	3	4	27
Brecknock Township	-	-	-	-	-	-	4	7	9	10	12	7	5	9	15	7	85
Caernarvon Township	-	3	-	1	-	2	1	7	5	2	10	6	2	7	13	6	65
Christiana Borough	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	2	2
Clay Township	-	-	-	-	-	-	1	4	3	3	4	1	4	7	2	3	32
Colerain Township	-	-	-	1	-	-	1	3	3	0	3	1	8	3	3	6	32
Columbia Borough	-	-	-	-	-	-	1	5	7	8	9	2	3	3	0	3	41
Conestoga Township	2	1	-	2	-	1	4	5	3	5	4	1	3	3	3	4	41
Conoy Township	-	-	-	-	-	-	2	5	3	0	6	2	4	1	0	3	26
Denver Borough	-	-	-	-	-	-	0	0	1	1	1	1	1	0	0	1	6
Drumore Township	-	-	-	1	3	1	1	1	6	4	7	12	7	4	3	11	61
Earl Township	-	-	-	-	-	-	4	10	7	7	4	7	6	7	4	8	64
East Cocalico Township	-	-	-	-	-	-	7	11	7	10	9	3	3	8	8	6	72
East Donegal Township	-	-	-	-	-	-	3	3	13	4	3	9	6	4	5	7	57
East Drumore Township	-	-	-	-	-	-	4	6	2	3	6	4	7	4	4	4	44
East Earl Township	-	-	-	-	-	-	4	3	4	2	7	6	5	3	4	7	45
East Hempfield Township	-	-	-	-	-	-	18	12	20	13	22	15	30	14	21	21	186
East Lampeter Township	-	-	-	-	-	-	14	14	11	6	17	14	13	12	12	12	125
East Petersburg Borough	-	-	-	-	-	-	3	0	0	0	0	0	0	3	1	1	8
Eden Township	-	-	-	1	1	-	7	2	2	0	2	5	3	3	5	5	36
Elizabeth Township	-	-	-	-	-	-	3	6	4	2	7	1	3	2	5	7	40
Elizabethtown Borough	-	-	-	-	-	-	2	3	0	1	5	0	3	0	1	2	17
Ephrata Borough	-	-	-	-	-	-	9	4	6	6	10	5	4	7	11	3	65
Ephrata Township	-	-	-	-	-	-	6	6	5	3	5	7	5	6	6	4	53
Fulton Township	-	1	-	1	-	-	4	12	10	3	6	4	5	9	10	11	76



Municipality	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Lancaster City	-	-	-	-	-	-	16	19	23	13	20	21	22	22	22	25	203
Lancaster Township	-	-	-	-	-	-	3	1	16	6	1	2	5	8	7	8	57
Leacock Township	-	-	-	-	-	-	3	3	3	1	3	3	5	6	9	4	40
Lititz Borough	-	-	-	-	-	-	0	0	2	0	6	3	3	2	2	4	22
Little Britain Township	-	-	-	-	-	-	4	2	5	3	5	4	4	7	8	7	49
Manheim Borough	-	-	-	-	-	-	2	2	0	1	0	2	2	2	1	1	13
Manheim Township	-	-	-	-	-	-	13	19	34	22	30	24	8	16	24	14	204
Manor Township	-	-	-	-	-	-	5	15	16	13	6	10	11	15	10	5	106
Marietta Borough	-	-	-	-	-	-	2	5	3	1	3	0	2	2	3	1	22
Martic Township	5	-	-	2	1	4	2	8	18	10	8	7	10	16	13	8	112
Millersville Borough	-	-	-	-	-	-	1	1	7	1	3	3	1	4	3	2	26
Mount Joy Borough	-	-	-	-	-	-	1	2	3	0	1	4	1	1	6	4	23
Mount Joy Township	-	-	-	-	1	1	8	6	16	15	11	3	7	12	8	7	95
Mountville Borough	-	-	-	-	-	-	0	0	0	2	1	4	9	3	4	1	24
New Holland Borough	-	-	-	-	-	-	3	0	1	1	1	0	0	2	2	0	10
Paradise Township	-	-	-	2	-	-	7	4	5	3	7	5	5	11	3	6	58
Penn Township	-	-	-	-	-	-	4	6	8	9	12	4	7	2	5	4	61
Pequea Township	-	-	-	-	-	-	10	8	5	5	5	3	3	12	6	6	63
Providence Township	-	1	-	-	1	1	3	7	8	4	9	5	10	5	9	12	75
Quarryville Borough	-	-	-	-	-	-	1	3	2	1	0	0	1	2	2	2	14
Rapho Township	-	-	-	2	1	-	3	16	17	5	13	16	12	8	13	7	113
Sadsbury Township	-	-	-	-	-	-	2	3	8	2	11	3	3	7	3	5	47
Salisbury Township	-	-	-	1	1	-	4	16	11	11	10	10	5	17	17	7	110
Strasburg Borough	-	-	-	-	-	-	1	2	1	0	1	0	0	2	2	1	10
Strasburg Township	-	-	-	-	1	-	2	6	10	6	5	4	8	10	11	7	70
Terre Hill Borough	-	-	-	-	-	-	0	1	0	0	1	0	0	0	0	0	2
Upper Leacock Township	-	-	-	-	-	-	5	4	11	3	3	1	5	4	4	6	46
Warwick Township	-	-	-	-	-	-	10	9	6	4	7	6	7	4	0	19	72



Municipality	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
West Cocalico Township	-	-	-	1	-	-	0	10	11	4	8	5	5	9	5	8	<b>66</b>
West Donegal Township	-	-	-	-	-	-	2	3	0	2	4	4	5	3	6	0	<b>29</b>
West Earl Township	-	-	-	-	-	-	6	3	13	4	4	1	5	9	13	5	<b>63</b>
West Hempfield Township	-	-	-	-	1	-	4	8	13	6	12	13	15	14	10	9	<b>105</b>
West Lampeter Township	-	-	-	-	-	-	2	3	9	4	9	4	7	7	4	8	<b>57</b>

Source: PADCNR 2010; Lancaster County EMA 2017

Note: Numbers listed in 2002-2007 were based on wildfires reported to PA DCNR. Numbers listed in 2008-2017 were based on Lancaster County EMA incident records.

- None Reported





### 4.3.10.4 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. Weather conditions, particularly drought events, increase the likelihood of wildfires occurring. Additionally, invasive forest insects can increase the likelihood of wildfires occurring; insects that attack and kill trees increase the total wildfire fuel available in wooded areas. Climate change is also likely to increase the probability of future wildfires. Prolonged periods of drought caused by climate change can potentially increase the length of the wildfire season and provide a more favorable climate for ignition (PEMA 2013).

For the 2017 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of wildfire events for Lancaster County. Information from the 2012 Lancaster County HMP and input from Lancaster County were used to identify the number of wildfire events that occurred between 2002 and 2017. 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, using the County’s complete records from 2008-2017. Based on these statistics, there is an estimated 100-percent chance of a wildfire event occurring in any given year in Lancaster County.

**Table 4.3.10-4. Probability of Future Wildfire Events**

Hazard Type	Number of Occurrences Between 2008 and 2017	Rate of Occurrence or Annual Number of Events (average)	Probability of Event in Any Given Year	Percent Chance of Occurrence in Any Given Year
Wildfires	3,347	335	1.0	100%

Sources: Lancaster County 2017

Based on available historical data, the future occurrence of wildfires in Lancaster County can be considered *highly likely* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4). However, the likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response. Weather conditions like drought and wind can increase the likelihood of wildfires occurring. Any fire, without the quick response or attention of firefighters, forestry personnel, or visitors to the forest, has the potential to become a wildfire.

### 4.3.10.5 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:

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



### Overview of Vulnerability

Wildfire hazards can impact significant areas of land, as evidenced by wildfires throughout the United States in recent years. Fire in urban areas has the potential for great damage to infrastructure, loss of life, and strain on lifelines and emergency responders because of the high density of population and structures that can be affected in these areas. Wildfire, however, can spread quickly, become a huge fire consisting of thousands of acres, and present greater challenges for allocating resources, defending isolated structures, and coordinating multi-jurisdictional response.

### Data and Methodology

Information regarding the wildfire hazard included input and data from PA DCNR, the University of Wisconsin-Madison, and the Steering Committee. The WUI (interface and intermix) obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison, defines the wildfire hazard area. The asset data (population, building stock, and critical facilities) presented in the County Profile (Section 2) was used to support an evaluation of assets exposed and the potential impacts and losses associated with this hazard. Available and appropriate geographic information system (GIS) data were overlaid on the hazard area to identify what assets are exposed to wildfire. The limitations of this analysis are recognized, and as such, the analysis is used only to provide a general estimate.

### Impact on Life, Health, and Safety

As demonstrated by historical wildfire events, potential losses include human health and life of residents and responders. The most vulnerable populations include emergency responders and those within a short distance of the interface between the built environment and the wildland environment.

The County land within the WUI data was overlaid on the 2010 U.S. Census population data to estimate the Lancaster County population vulnerable to the wildfire hazard (U.S. Census 2010). The census blocks with their center within the hazard area were used to calculate the estimated population exposed to the wildfire hazard. Table 4.3.10-5 summarizes the estimated population exposed by municipality.

**Table 4.3.10-5. Estimated Population Located within the WUI in Lancaster County**

Municipality	U.S. Census 2010 Population	Estimated Population Exposed	Percent of Total
Adamstown Borough	1,772	1,772	100.0%
Akron Borough	3,876	0	0.0%
Bart Township	3,094	2,889	93.4%
Brecknock Township	7,199	1,437	20.0%
Caernarvon Township	4,748	2,970	62.6%
Christiana Borough	1,168	69	5.9%
Clay Township	6,308	2,850	45.2%
Colerain Township	3,635	336	9.2%
Columbia Borough	10,400	270	2.6%
Conestoga Township	3,776	2,240	59.3%
Conoy Township	3,194	703	22.0%
Denver Borough	3,861	1,644	42.6%
Drumore Township	2,560	794	31.0%
Earl Township	7,024	2,057	29.3%



Municipality	U.S. Census 2010 Population	Estimated Population Exposed	Percent of Total
East Cocalico Township	10,310	4,987	48.4%
East Donegal Township	7,755	1,747	22.5%
East Drumore Township	3,791	448	11.8%
East Earl Township	6,507	3,735	57.4%
East Hempfield Township	23,522	1,026	4.4%
East Lampeter Township	16,424	31	0.2%
East Petersburg Borough	4,506	0	0.0%
Eden Township	2,094	212	10.1%
Elizabeth Township	3,886	2,224	57.2%
Elizabethtown Borough	11,545	89	<1%
Ephrata Borough	13,394	230	1.7%
Ephrata Township	9,400	440	4.7%
Fulton Township	3,074	548	17.8%
Lancaster City	59,322	154	<1%
Lancaster Township	16,149	995	6.2%
Leacock Township	5,220	369	7.1%
Lititz Borough	9,369	0	0.0%
Little Britain Township	4,106	469	11.4%
Manheim Borough	4,858	0	0.0%
Manheim Township	38,133	218	<1%
Manor Township	19,612	1,288	6.6%
Marietta Borough	2,588	2,275	87.9%
Martic Township	5,190	3,394	65.4%
Millersville Borough	8,168	251	3.1%
Mount Joy Borough	7,410	17	<1%
Mount Joy Township	9,873	1,031	10.4%
Mountville Borough	2,802	0	0.0%
New Holland Borough	5,378	0	0.0%
Paradise Township	5,131	1,220	23.8%
Penn Township	8,789	1,246	14.2%
Pequea Township	4,605	717	15.6%
Providence Township	6,897	2,162	31.3%
Quarryville Borough	2,576	2	<1%
Rapho Township	10,442	1,186	11.4%
Sadsbury Township	3,395	304	9.0%
Salisbury Township	11,062	6,060	54.8%
Strasburg Borough	2,809	0	0.0%
Strasburg Township	4,182	201	4.8%
Terre Hill Borough	1,295	0	0.0%
Upper Leacock Township	8,708	14	<1%
Warwick Township	17,783	149	<1%



Municipality	U.S. Census 2010 Population	Estimated Population Exposed	Percent of Total
West Cocalico Township	7,280	6,753	92.8%
West Donegal Township	8,260	1,438	17.4%
West Earl Township	7,868	0	0.0%
West Hempfield Township	16,153	1,252	7.8%
West Lampeter Township	15,209	456	3.0%
<b>Lancaster County</b>	<b>519,445</b>	<b>69,369</b>	<b>13.4%</b>

Source: U.S. Census 2010, Stewart and Radeloff 2012

Notes:

WUI Wildland-Urban Interface

### Impact on General Building Stock

The most vulnerable structures to wildfire events are those within the WUI. 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 WUI was overlaid on the default building inventory in Hazards U.S. – Multi-Hazard (HAZUS-MH) to estimate the replacement cost of buildings and on the County provided spatial layer of buildings to estimate number of structures exposed to the wildfire hazard in Lancaster County. The replacement cost value (RCV) of the census blocks with their center in the WUI was totaled. Table 4.3.10-6 summarizes the estimated building stock inventory exposed by municipality.

**Table 4.3.10-6. Building Stock Replacement Value and Structures Located within the WUI in Lancaster County**

Municipality	Total GBS RCV	Estimated GBS RCV Exposed	Percent of Total	Total Number of Structures	Number of Structures in Hazard Area	Percent of Total
Adamstown Borough	\$450,258,000	\$450,258,000	100.0%	980	977	99.7%
Akron Borough	\$616,236,000	\$0	0.0%	1,788	0	0.0%
Bart Township	\$335,836,000	\$11,709,000	3.5%	2,567	77	3.0%
Brecknock Township	\$998,227,000	\$581,037,000	58.2%	6,071	3,836	63.2%
Caernarvon Township	\$622,129,000	\$378,663,000	60.9%	3,438	2,035	59.2%
Christiana Borough	\$198,673,000	\$11,384,000	5.7%	523	49	9.4%
Clay Township	\$862,268,000	\$372,855,000	43.2%	4,686	2,258	48.2%
Colerain Township	\$385,028,000	\$43,363,000	11.3%	3,125	252	8.1%
Columbia Borough	\$1,749,096,000	\$42,112,000	2.4%	3,338	92	2.8%
Conestoga Township	\$541,954,000	\$324,046,000	59.8%	2,871	1,693	59.0%
Conoy Township	\$434,872,000	\$88,981,000	20.5%	2,590	608	23.5%
Denver Borough	\$688,940,000	\$194,522,000	28.2%	1,679	672	40.0%
Drumore Township	\$316,735,000	\$103,872,000	32.8%	2,418	713	29.5%
Earl Township	\$1,817,500,000	\$350,888,000	19.3%	5,209	1,161	22.3%
East Cocalico Township	\$1,793,707,000	\$691,116,000	38.5%	7,002	3,417	48.8%
East Donegal Township	\$1,240,941,000	\$237,554,000	19.1%	4,176	627	15.0%
East Drumore Township	\$713,496,000	\$50,544,000	7.1%	2,958	280	9.5%





SECTION 4.3.10: RISK ASSESSMENT - WILDFIRE

Municipality	Total GBS RCV	Estimated GBS RCV Exposed	Percent of Total	Total Number of Structures	Number of Structures in Hazard Area	Percent of Total
East Earl Township	\$1,049,169,000	\$599,844,000	57.2%	5,337	2,861	53.6%
East Hempfield Township	\$5,931,760,000	\$177,321,000	3.0%	10,748	427	4.0%
East Lampeter Township	\$3,533,820,000	\$28,525,000	<1%	7,998	118	1.5%
East Petersburg Borough	\$709,918,000	\$0	0.0%	1,923	0	0.0%
Eden Township	\$259,861,000	\$23,137,000	8.9%	1,738	203	11.7%
Elizabeth Township	\$656,622,000	\$425,905,000	64.9%	3,088	1,848	59.8%
Elizabethtown Borough	\$1,800,576,000	\$16,360,000	<1%	3,963	33	<1%
Ephrata Borough	\$2,476,959,000	\$30,853,000	1.2%	5,744	67	1.2%
Ephrata Township	\$1,733,746,000	\$61,022,000	3.5%	5,503	256	4.7%
Fulton Township	\$450,131,000	\$71,175,000	15.8%	3,138	569	18.1%
Lancaster City	\$9,943,057,000	\$24,256,000	<1%	10,200	87	<1%
Lancaster Township	\$2,401,153,000	\$118,484,000	4.9%	4,936	570	11.5%
Leacock Township	\$775,791,000	\$47,728,000	6.2%	4,262	263	6.2%
Lititz Borough	\$2,117,828,000	\$0	0.0%	3,710	0	0.0%
Little Britain Township	\$533,035,000	\$67,412,000	12.6%	3,559	387	10.9%
Manheim Borough	\$894,777,000	\$0	0.0%	2,613	0	0.0%
Manheim Township	\$8,574,727,000	\$46,848,000	<1%	14,400	128	<1%
Manor Township	\$3,404,670,000	\$161,724,000	4.8%	10,385	561	5.4%
Marietta Borough	\$381,645,000	\$324,450,000	85.0%	1,228	1,064	86.6%
Martic Township	\$627,819,000	\$370,147,000	59.0%	4,438	2,825	63.7%
Millersville Borough	\$1,110,119,000	\$41,409,000	3.7%	2,286	37	1.6%
Mount Joy Borough	\$1,429,747,000	\$1,910,000	<1%	3,347	13	<1%
Mount Joy Township	\$1,663,039,000	\$139,597,000	8.4%	5,754	811	14.1%
Mountville Borough	\$407,896,000	\$0	0.0%	1,068	0	0.0%
New Holland Borough	\$972,312,000	\$0	0.0%	2,421	0	0.0%
Paradise Township	\$751,377,000	\$134,692,000	17.9%	4,218	956	22.7%
Penn Township	\$1,728,870,000	\$277,725,000	16.1%	5,981	1,220	20.4%
Pequea Township	\$703,142,000	\$117,259,000	16.7%	3,479	457	13.1%
Providence Township	\$809,633,000	\$250,011,000	30.9%	5,278	1,628	30.8%
Quarryville Borough	\$475,281,000	\$318,000	<1%	1,277	7	<1%
Rapho Township	\$1,796,999,000	\$219,656,000	12.2%	8,411	1,034	12.3%
Sadsbury Township	\$399,547,000	\$40,514,000	10.1%	2,691	313	11.6%
Salisbury Township	\$1,280,883,000	\$591,092,000	46.1%	8,123	4,205	51.8%
Strasburg Borough	\$530,296,000	\$0	0.0%	1,480	0	0.0%
Strasburg Township	\$664,574,000	\$37,487,000	5.6%	3,600	165	4.6%
Terre Hill Borough	\$233,620,000	\$0	0.0%	759	0	0.0%
Upper Leacock Township	\$1,707,208,000	\$1,276,000	0.1%	5,215	33	<1%
Warwick Township	\$3,253,969,000	\$18,048,000	<1%	8,372	102	1.2%





Municipality	Total GBS RCV	Estimated GBS RCV Exposed	Percent of Total	Total Number of Structures	Number of Structures in Hazard Area	Percent of Total
West Cocalico Township	\$1,032,223,000	\$945,946,000	91.6%	5,679	5,015	88.3%
West Donegal Township	\$1,435,727,000	\$218,596,000	15.2%	4,112	850	20.7%
West Earl Township	\$1,368,975,000	\$0	0.0%	5,151	0	0.0%
West Hempfield Township	\$2,702,751,000	\$160,022,000	5.9%	8,384	926	11.0%
West Lampeter Township	\$2,857,346,000	\$21,674,000	<1%	6,607	131	2.0%
<b>Lancaster County</b>	<b>\$91,338,494,000</b>	<b>\$9,745,327,000</b>	<b>10.7%</b>	<b>268,023</b>	<b>48,917</b>	<b>18.3%</b>

Source: HAZUS-MH v3.2; Stewart and Radeloff 2012; Lancaster County

Notes:

GBS General Building Stock

RCV Replacement cost value

WUI Wildland-Urban Interface

### Impact on Critical Facilities

A number of critical facilities are located in the wildfire hazard area. Many of these facilities are the locations for vulnerable populations (schools) and responding agencies to wildfire events (fire and police). Table 4.3.10-7 summarizes the number of critical facilities identified by the County plan participants that are located within the wildfire hazard area.

**Table 4.3.10-7. Number of Critical Facilities in the WUI in Lancaster County**

Facility Type	Number of Facilities in Hazard Area	
	Interface	Intermix
Adamstown Borough	5	8
Akron Borough	0	0
Bart Township	0	0
Brecknock Township	6	3
Caernarvon Township	1	3
Christiana Borough	0	0
Clay Township	6	0
Colerain Township	0	0
Columbia Borough	0	9
Conestoga Township	0	6
Conoy Township	0	4
Denver Borough	1	0
Drumore Township	2	0
Earl Township	12	0
East Cocalico Township	14	11
East Donegal Township	2	1
East Drumore Township	0	0
East Earl Township	0	5



Facility Type	Number of Facilities in Hazard Area	
	Interface	Intermix
East Hempfield Township	0	0
East Lampeter Township	0	0
East Petersburg Borough	0	0
Eden Township	0	1
Elizabeth Township	6	1
Elizabethtown Borough	0	2
Ephrata Borough	0	4
Ephrata Township	0	2
Fulton Township	0	1
Lancaster City	0	4
Lancaster Township	0	2
Leacock Township	1	0
Lititz Borough	0	0
Little Britain Township	0	0
Manheim Borough	0	0
Manheim Township	0	0
Manor Township	0	9
Marietta Borough	5	0
Martic Township	1	3
Millersville Borough	0	1
Mount Joy Borough	0	0
Mount Joy Township	0	2
Mountville Borough	0	0
New Holland Borough	0	0
Paradise Township	0	4
Penn Township	3	0
Pequea Township	0	2
Providence Township	0	2
Quarryville Borough	0	0
Rapho Township	1	1
Sadsbury Township	0	2
Salisbury Township	11	4
Strasburg Borough	0	0
Strasburg Township	0	0
Terre Hill Borough	0	0
Upper Leacock Township	0	0
Warwick Township	0	1
West Cocalico Township	8	7
West Donegal Township	0	5



Facility Type	Number of Facilities in Hazard Area	
	Interface	Intermix
West Earl Township	0	0
West Hempfield Township	0	4
West Lampeter Township	0	3
<b>Lancaster County</b>	<b>95</b>	<b>117</b>

Source: Stewart and Radeloff 2012; Lancaster County 2017

Notes:

WUI Wildland-Urban Interface

### 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 businesses and decreases in tourism. Wildfire can also severely damage roads and infrastructure. Portions of Interstate I-76, US Routes US-222, US-30, and US-322, and multiple State Routes, including PA-72, PA-272, PA-283, PA-372, and PA-501 run through WUI areas. This factor should be considered for determine evacuation routes for Lancaster County residents.

### Future Growth and Development

Areas targeted for potential future growth and development in the next 5 years have been identified across the County at the municipal level. It is anticipated that any new development and new residents in the WUI will be exposed to the wildfire hazard.

### 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 2012).

Fire interacts with climate and vegetation (fuel) in predictable ways. Understanding the interactions of climate, fire, and vegetation interactions is essential for addressing issues associated with climate change that include:

- 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 (USFS 2012)

It is projected that higher summer temperatures will likely increase the high fire risk by 10 to 30-percent. Fire occurrence and area 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 and extending fire seasons and areas burned (USFS 2012).

Pennsylvania’s Department of Environmental Protection (PADEP) was directed by the Climate Change Act (Act 70 of 2008) to initiate a study of the potential impacts of global climate change on the Commonwealth. The June 2009 Pennsylvania Climate Impact Assessment’s main findings indicate Pennsylvania may be at increased risk for wildfires, but it is unclear how large the increase in risk will be (Shortle and others 2009).





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 2012).

### 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.



### 4.3.11 Winter Storm

This section provides a profile and vulnerability assessment of the winter storm hazard in Lancaster County. Winter storms occur, on average, approximately five 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 heavy snow (snowstorms), blizzards, sleet or freezing rain, ice storms, and mid-Atlantic cyclones locally known as Nor'easters or Nor'easters. Because most Nor'easters generally occur during winter weather months, these hazards have also been grouped as a type of severe winter weather storm. Types of severe winter weather events or conditions are further defined as follows:

- **Heavy Snow:** According to the National Weather Service (NWS), heavy snow is generally considered snowfall accumulating to depth of 4 inches or more within 12 hours or less or snowfall accumulating to depth of 6 inches or more within 24 hours or less. A snow squall is 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) (NWS 2009). Snowstorms are complex phenomena involving heavy snow and winds whose impact can be affected by a great many factors, including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, and occurrence during the course of the day, weekday versus weekend, and time of season (Kocin and Uccellini 2013).
- **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 of time (3 or more hours) (NWS 2009). A severe blizzard is defined as having a wind velocity of 45 mph, temperatures of 10°F or lower, and a high density of blowing snow with visibility frequently measured in feet over an extended period of time.
- **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 glaze upon contact with the ground. Both types of precipitation, even in small accumulations, can cause significant hazards to a community (NWS 2009).
- **Ice Storm:** An ice storm is described as an occasion when damaging volumes of ice are expected to accumulate during freezing rain situations. Significant accumulations of ice pull down trees and utility lines, resulting in loss of power and means of communication. These accumulations of ice render walking and driving extremely dangerous, and can create extreme hazards to motorists and pedestrians (NWS 2009).
- **Nor'easter:** Nor'easters are macro-scale, extra-tropical storms named for the strong northeasterly winds that blow in from the Atlantic Ocean ahead of the storm and over coastal areas of the northeastern United States and Atlantic Canada. They are also referred to as a type of extra-tropical cyclone (mid-latitude storms, or Great Lake storms). Wind gusts associated with Nor'easters can exceed hurricane



forces in intensity. Unlike tropical cyclones that form in the tropics and have warm cores (including tropical depressions, tropical storms, and hurricanes), Nor’easters contain a cold core of low barometric pressure that forms in the mid-latitudes. Their strongest winds are close to the earth’s surface and often extend several hundred miles across. Nor’easters may occur at any time of the year but are more common during fall and winter months (September through April) (New York City Office of Emergency Management [NYCOEM] Date Unknown).

Nor’easters can induce heavy snow, rain, gale-force winds, and oversized waves (storm surge) that can cause beach erosion, coastal flooding, structural damage, power outages, and unsafe human conditions. If a Nor’easter cyclone stays just offshore, the results are much more devastating than if the cyclone travels up the coast on an inland track. Nor’easters that stay inland are generally weaker and usually cause strong winds and rain. Those that stay offshore can bring heavy snow, blizzards, ice, strong winds, high waves, and severe beach erosion. In these storms, the warmer air is aloft. Precipitation falling from this warm air moves into the colder air at the surface, causing crippling sleet or freezing rain (McNoldy Multi-Community Environmental Storm Observatory [MESO], Date Unknown). While some of the most devastating effects of Nor’easters occur in coastal areas (e.g., beach erosion, coastal flooding), effects on inland areas, like Lancaster County, may include heavy snow, strong winds, and blizzards.

4.3.11.1 Location and Extent

Winter storms are regional events, most of which impact a large area of the entire Commonwealth. In many cases, surrounding states and even the northeast region of the United States are affected by a single winter storm incident.

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.

The extent of a severe winter storm can be classified by meteorological measurements and by evaluating its societal impacts. National Oceanic and Atmospheric Administration (NOAA)’s National Climatic Data Center (NCDC) is currently producing 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. The index is based on spatial extent of the storm, amount of snowfall, and interaction of the extent and snowfall totals with population (based on the 2000 U.S. Census). NCDC has analyzed and assigned RSI values to over 500 storms since 1900 (NCDC 2011). Table 4.3.11-1 lists the five RSI ranking categories.

Table 4.3.11-1. RSI Ranking Categories

Category	Description	Regional Snowfall Index (RSI)
1	Notable	1-3
2	Significant	3-6
3	Major	6-10
4	Crippling	10-18
5	Extreme	18.0+

Source: NCDC 2011



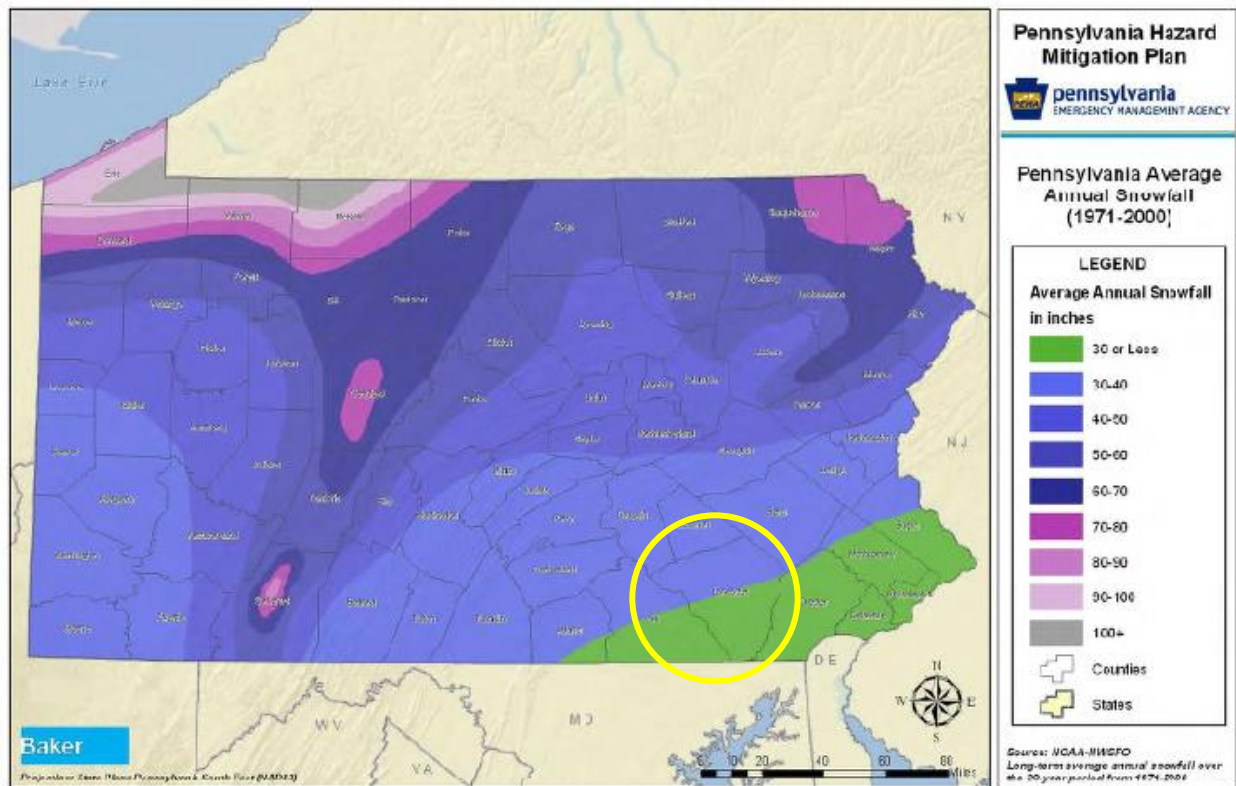
### 4.3.11.2 Range in Magnitude

A winter storm can adversely affect roadways, utilities, and businesses and can cause loss of life, frostbite, and freezing conditions. These storms typically fall into one of the following categories, defined in the previous section:

- Heavy snow
- Sleet or freezing rain
- Ice storm
- Blizzard
- Nor'easter

All of Lancaster County is susceptible to winter storms. Based on annual snowfall averages according to the 2013 State Hazard Mitigation Plan (HMP) (Figure 4.3.11-1), snowfall accumulation during the winter season in Lancaster County ranges from 30 or less inches to 40 inches.

Figure 4.3.11-1. Annual Snowfall



Source: Pennsylvania Emergency Management Agency (PEMA) 2013

Note: The yellow oval surrounds Lancaster County.

The January 1996 snowstorm has been referred to as the “storm of the century,” but the worst-case scenario of a winter storm in Lancaster County occurred March 13–14, 1993. A blizzard dropped nearly three feet of snow on the County with significant drifting, causing many primary and secondary road closures. Both the County and Commonwealth Emergency Operations Centers (EOCs) were staffed around the clock, working to provide food, medicine, and fuel to stranded motorists. There were two fatalities and an estimated \$5 million in property damage (1993 dollars). All airports and highways throughout the Commonwealth were closed, and the state of emergency lasted for nearly a week.





**4.3.11.3 Past Occurrence**

Many sources provided historical information regarding previous occurrences and losses associated with winter storm events throughout the Commonwealth of Pennsylvania and Lancaster 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, accuracy of 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 as a whole, based on entire storm damage, and include damage from other counties.

Between 1954 and 2017, the Federal Emergency Management Agency (FEMA) declared that the Commonwealth of Pennsylvania experienced eight winter storm-related disasters (DR) or emergencies (EM) classified as one or a combination of the following disaster types: severe winter storms, snowstorms, blizzards, winter storms, severe storms, and snowfalls. Generally, these disasters covered a wide region of the Commonwealth, and therefore may have impacted many counties. However, not all counties were included in the disaster declarations. PEMA and other sources indicate that Lancaster County has been declared as a disaster area as a result of all eight of the declarations for winter storm events (FEMA 2017).

According to the NOAA-NCDC storm events database, Lancaster County experienced 58 winter storm events between March 1993 and September 30, 2017. Based on all sources researched, known winter storm events that have affected Lancaster County are listed in Table 4.3.11-2. Because winter storm documentation for the Commonwealth of Pennsylvania is so extensive, not all sources have been identified or researched. Therefore, Table 4.3.11-2 may not include all events that have occurred throughout the County.

**Table 4.3.11-2. Major Winter Storm Events in Lancaster County between 1993 and 2017**

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
March 1, 1993	Record Snow	N/A	N/A	\$27,777
March 13, 1993	Blizzard	EM-3105	Yes	2 fatalities and \$5,000,000 in property damages
January 1994	Severe Winter Storms	DR-1015	Yes	No reported losses.
January 6, 1995	Ice Storm	N/A	N/A	No reported losses.
February 3, 1995	Heavy Snow	N/A	N/A	No reported losses.
February 5, 1995	Blowing Snow	N/A	N/A	No reported losses.
February 26, 1995	Light Snow	N/A	N/A	No reported losses.
January 7, 1996	Blizzard	DR-1085	Yes	More than 2 feet of snow fell across much of the lower Susquehanna Valley. This storm was termed the ‘Blizzard of ‘96’. Public Assistance requested.
January 12, 1996	Heavy Snow	N/A	N/A	No reported losses.
February 2, 1996	Heavy Snow	N/A	N/A	No reported losses.
February 16, 1996	Heavy Snow	N/A	N/A	No reported losses.
November 28, 1996	Heavy Snow	N/A	N/A	No reported losses.
February 13, 1997	Winter Storm	N/A	N/A	No reported losses.
March 31, 1997	Heavy Snow	N/A	N/A	No reported losses.
January 15, 1998	Ice Storm	N/A	N/A	No reported losses.



**SECTION 4.3.11: RISK ASSESSMENT – WINTER STORM**

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
January 28, 1998	Ice Storm	N/A	N/A	Ice brought down trees and power lines, and caused several accidents. More than 7,000 homes and businesses lost power.
March 14, 1999	Heavy Snow	N/A	N/A	No reported losses.
January 25, 2000	Heavy Snow	N/A	N/A	No reported losses.
January 30, 2000	Heavy Snow	N/A	N/A	No reported losses.
February 13, 2000	Ice Storm	N/A	N/A	No reported losses.
January 20, 2001	Heavy Snow	N/A	N/A	No reported losses.
February 5, 2001	Heavy Snow	N/A	N/A	No reported losses.
January 19, 2002	Heavy Snow	N/A	N/A	No reported losses.
December 5, 2002	Heavy Snow	N/A	N/A	No reported losses.
December 10, 2002	Ice Storm	N/A	N/A	No reported losses.
December 25, 2002	Heavy Snow	N/A	N/A	No reported losses.
January 2, 2003	Ice Storm	N/A	N/A	No reported losses.
February 6, 2003	Heavy Snow	N/A	N/A	No reported losses.
February 16, 2003	Severe Winter Storm	3180	Yes	No reported losses.
December 5, 2003	Heavy Snow	N/A	N/A	No reported losses.
February 6, 2004	Ice Storm	N/A	N/A	No reported losses.
March 1, 2005	Heavy Snow	N/A	N/A	No reported losses.
December 9, 2005	Heavy Snow	N/A	N/A	No reported losses.
February 12, 2006	Heavy Snow	N/A	N/A	No reported losses.
February 13, 2007	Severe Winter Storm	N/A	N/A	No reported losses.
December 13, 2007	Winter Storm	N/A	N/A	1 reported injury.
December 15, 2007	Winter Storm	N/A	N/A	Numerous trees and wires down, which resulted in over 11,000 reported power outages.
February 3, 2009	Winter Weather	N/A	N/A	No reported losses.
March 1, 2009	Heavy Snow	N/A	N/A	No reported losses.
April 2010	Severe Winter Storm	1898	Yes	No reported losses.
February 1, 2011	Severe Winter Storm	N/A	N/A	No reported losses.
October 29, 2011	Heavy Snow	N/A	N/A	More than a half-million (520,000) power outages at the height of the storm. Warming shelters were opened to accommodate the power outages. Several secondary roads were closed due to the downed trees and wires.
December 14, 2013	Winter Storm	N/A	N/A	Adversely impacted travel especially along the Pennsylvania Turnpike and Route 30.
January 2, 2014	Heavy Snow	N/A	N/A	No reported losses.
January 20, 2014	Heavy Snow	N/A	N/A	Schools were closed across most of southern Pennsylvania.



Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
February 3, 2014	Heavy Snow	N/A	N/A	No reported losses.
February 4, 2014	Winter Storm	EM-3367	Yes	Heavy snow and ice made travel dangerous. Downed trees and utility lines caused power outages to nearly 850,000 people across Pennsylvania, primarily in the southeast. Governor Corbett declared a state of emergency for Lancaster County.
February 13, 2014	Heavy Snow	N/A	N/A	No reported losses.
November 25, 2014	Heavy Snow	N/A	N/A	Travel severely impacted on the day before Thanksgiving.
January 22, 2016	Winter Storm	DR-4267	Yes	2 reported indirect deaths – cardiac arrest from shoveling snow.
February 8, 2016	Winter Storm	N/A	N/A	No reported losses.
February 15, 2016	Winter Storm	N/A	N/A	No reported losses.
March 13, 2017	Winter Storm	N/A	N/A	No reported losses.

Source: NCDC 2017.

Notes:

Monetary figures within this table were U.S. Dollar (USD) figures calculated during or within the approximate time of the event. If such an event would occur in the present day, many monetary losses earlier than 2017 would be considerably higher in USDs as a result of increased U.S. Inflation Rates.

DR Federal Disaster Declaration  
 FEMA Federal Emergency Management Agency  
 N/A Not applicable/available  
 NCDC National Climate Data Center  
 NOAA National Oceanic Atmospheric Administration

**4.3.11.4 Future Occurrence**

Apparently, given the history of winter storm events that have impacted Lancaster County, future winter storm events of varying degrees will occur, and thus many people and properties are at risk from the winter storm hazard in the future.

Based on available historical data, future occurrences of winter storm events are considered likely, according to Risk Factor Methodology probability criteria (further discussed in Section 4.4).

**4.3.11.5 Vulnerability Assessment**

To understand risk, a community must evaluate what assets are exposed or vulnerable within the identified hazard area. Regarding winter storm events, all of Lancaster County has been identified as the hazard area. Therefore, all assets (population, structures, critical facilities and lifelines), as described in the County Profile (Section 2), are potentially vulnerable. The following section includes an evaluation and estimation of potential winter storm impacts on the County, including:

- Overview of vulnerability
- 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.





### Overview of Vulnerability

In Lancaster County, winter storms are a concern because of frequency, associated direct and indirect costs, delays caused by the storms, and impacts on people and facilities of the region.

### Data and Methodology

National weather databases, the 2013 Pennsylvania HMP, and local resources were referenced to acquire information about and analyze severe winter storm impacts on Lancaster County. Information from the 2010 U.S. Census data and the Hazards U.S. – Multi-Hazard (HAZUS-MH) building inventory for Lancaster County supported an evaluation of exposed assets and potential impacts associated with this hazard.

### 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. 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 (NSSL 2015c).

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 2015c).

For the purposes of this HMP, the entire population of Lancaster County is considered exposed to winter storm events (U.S. Census 2010). 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). The County Profile (Section 2) 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 Lancaster 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. As an alternate approach, this plan considers percentage damages that could result from winter storm conditions. Table 4.3.11-3 below summarizes percent damages from winter storm conditions on Lancaster County's total general building stock (structure only). Given professional knowledge and currently available information, potential losses from this hazard are considered overestimated; hence, the listed values in Table 4.3.11-3 represent conservative estimates of losses associated with severe winter storm events.





**Table 4.3.11-3. General Building Stock Exposure (Structure Only) and Estimated Losses from Winter Storm Events in Lancaster County**

Municipality	Total GBS (Structure Only)	1% of Total	5% of Total	10% of Total
Adamstown Borough	\$241,291,000	2,412,910	12,064,550	24,129,100
Akron Borough	\$386,174,000	3,861,740	19,308,700	38,617,400
Bart Township	\$210,899,000	2,108,990	10,544,950	21,089,900
Brecknock Township	\$622,322,000	6,223,220	31,116,100	62,232,200
Caernarvon Township	\$378,543,000	3,785,430	18,927,150	37,854,300
Christiana Borough	\$123,264,000	1,232,640	6,163,200	12,326,400
Clay Township	\$534,342,000	5,343,420	26,717,100	53,434,200
Colerain Township	\$243,323,000	2,433,230	12,166,150	24,332,300
Columbia Borough	\$1,023,852,000	10,238,520	51,192,600	102,385,200
Conestoga Township	\$345,963,000	3,459,630	17,298,150	34,596,300
Conoy Township	\$276,993,000	2,769,930	13,849,650	27,699,300
Denver Borough	\$410,669,000	4,106,690	20,533,450	41,066,900
Drumore Township	\$198,654,000	1,986,540	9,932,700	19,865,400
Earl Township	\$987,315,000	9,873,150	49,365,750	98,731,500
East Cocalico Township	\$1,060,783,000	10,607,830	53,039,150	106,078,300
East Donegal Township	\$778,411,000	7,784,110	38,920,550	77,841,100
East Drumore Township	\$437,268,000	4,372,680	21,863,400	43,726,800
East Earl Township	\$611,326,000	6,113,260	30,566,300	61,132,600
East Hempfield Township	\$3,453,712,000	34,537,120	172,685,600	345,371,200
East Lampeter Township	\$2,059,520,000	20,595,200	102,976,000	205,952,000
East Petersburg Borough	\$445,336,000	4,453,360	22,266,800	44,533,600
Eden Township	\$156,417,000	1,564,170	7,820,850	15,641,700
Elizabeth Township	\$383,738,000	3,837,380	19,186,900	38,373,800
Elizabethtown Borough	\$1,112,560,000	11,125,600	55,628,000	111,256,000
Ephrata Borough	\$1,422,269,000	14,222,690	71,113,450	142,226,900
Ephrata Township	\$1,023,938,000	10,239,380	51,196,900	102,393,800
Fulton Township	\$256,463,000	2,564,630	12,823,150	25,646,300
Lancaster City	\$5,732,698,000	57,326,980	286,634,900	573,269,800
Lancaster Township	\$1,528,187,000	15,281,870	76,409,350	152,818,700
Leacock Township	\$455,618,000	4,556,180	22,780,900	45,561,800
Lititz Borough	\$1,239,113,000	12,391,130	61,955,650	123,911,300
Little Britain Township	\$337,249,000	3,372,490	16,862,450	33,724,900
Manheim Borough	\$526,083,000	5,260,830	26,304,150	52,608,300
Manheim Township	\$5,144,650,000	51,446,500	257,232,500	514,465,000
Manor Township	\$2,071,018,000	20,710,180	103,550,900	207,101,800
Marietta Borough	\$227,159,000	2,271,590	11,357,950	22,715,900
Martic Township	\$399,587,000	3,995,870	19,979,350	39,958,700
Millersville Borough	\$705,041,000	7,050,410	35,252,050	70,504,100



Municipality	Total GBS (Structure Only)	1% of Total	5% of Total	10% of Total
Mount Joy Borough	\$859,338,000	8,593,380	42,966,900	85,933,800
Mount Joy Township	\$1,016,431,000	10,164,310	50,821,550	101,643,100
Mountville Borough	\$251,996,000	2,519,960	12,599,800	25,199,600
New Holland Borough	\$581,959,000	5,819,590	29,097,950	58,195,900
Paradise Township	\$455,279,000	4,552,790	22,763,950	45,527,900
Penn Township	\$1,040,491,000	10,404,910	52,024,550	104,049,100
Pequea Township	\$431,396,000	4,313,960	21,569,800	43,139,600
Providence Township	\$498,260,000	4,982,600	24,913,000	49,826,000
Quarryville Borough	\$282,446,000	2,824,460	14,122,300	28,244,600
Rapho Township	\$1,096,056,000	10,960,560	54,802,800	109,605,600
Sadsbury Township	\$246,515,000	2,465,150	12,325,750	24,651,500
Salisbury Township	\$792,974,000	7,929,740	39,648,700	79,297,400
Strasburg Borough	\$325,423,000	3,254,230	16,271,150	32,542,300
Strasburg Township	\$399,206,000	3,992,060	19,960,300	39,920,600
Terre Hill Borough	\$140,089,000	1,400,890	7,004,450	14,008,900
Upper Leacock Township	\$962,453,000	9,624,530	48,122,650	96,245,300
Warwick Township	\$1,947,800,000	19,478,000	97,390,000	194,780,000
West Cocalico Township	\$626,071,000	6,260,710	31,303,550	62,607,100
West Donegal Township	\$901,131,000	9,011,310	45,056,550	90,113,100
West Earl Township	\$794,974,000	7,949,740	39,748,700	79,497,400
West Hempfield Township	\$1,663,399,000	16,633,990	83,169,950	166,339,900
West Lampeter Township	\$1,754,420,000	17,544,200	87,721,000	175,442,000
<b>Lancaster County</b>	<b>\$54,619,855,000</b>	<b>546,198,550</b>	<b>2,730,992,750</b>	<b>5,461,985,500</b>

Source: HAZUS-MH 3.2

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 (Section 4.3.3). 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 4.3.3.

**Impact on Critical Facilities**

Full functionality of critical facilities such as police, fire, and medical services is essential for response during and after a winter storm event. These critical facility structures are largely constructed of concrete and masonry; therefore, these should undergo only minimal structural damage from severe winter storm events. Because power interruption can occur, backup power is recommended for critical facilities and infrastructure.

**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 2013).

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 2013).

### **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 2.4 of this HMP. Because Lancaster 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.

### **Effect of Climate Change on Vulnerability**

Climate is defined not just as average temperature and precipitation, but also by type, frequency, and intensity of weather events. Both globally and at the local level, climate change potentially can alter prevalence and severity of weather extremes such as winter storms. While predicting changes in winter storm 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.

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 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 decrease in snow and 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).

### **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/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.



### 4.3.12 Dam Failure

This section provides a profile and vulnerability assessment of the dam failure hazard in Lancaster County. A dam is an artificial barrier allowing storage of water, wastewater, or liquid-borne materials for many reasons (flood control, human water supply, irrigation, livestock water supply, energy generation, containment of mine tailings, recreation, or pollution control). Many dams fulfill a combination of these stated functions (Association of State Dam Safety Officials 2013). They are an important resource in the United States.

Man-made dams can be classified according to type of construction material used, methods applied in construction, slope or cross-section of the dam, how a dam resists forces of water pressure behind it, means used to control seepage, and, occasionally, purpose of the dam. Materials used for construction of dams include earth, rock, tailings from mining or milling, concrete, masonry, steel, timber, miscellaneous materials (plastic or rubber), and any combination of these materials (Association of State Dam Safety Officials 2013).

More than a third of the country’s dams are 50 or more years old. Approximately 14,000 of those dams pose a significant hazard to life and property if failure occurs. About 2,000 unsafe dams are dispersed throughout the United States, in almost every state.

Dams typically fail when spillway capacity is inadequate and excess flow overtops the dam, or when internal erosion (piping) through the dam or foundation occurs. Complete failure occurs if internal erosion or overtopping results in a complete structural breach, releasing a high-velocity wall of debris-filled water that rushes downstream, damaging or destroying anything in its path (Federal Emergency Management Agency [FEMA] 2015b).

Dam failures can result from one or a combination of the following:

- Overtopping caused by floods that exceed capacity of the dam
- Deliberate acts of sabotage
- Structural failure of materials used in dam construction
- Movement or failure of the foundation supporting the dam
- Settling and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate maintenance and upkeep (FEMA 2015b)

#### 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 2013).

#### Pennsylvania Department of Environmental Protection

The Pennsylvania Department of Environmental Protection (PADEP) holds responsibility for dam safety. Hazard Potential Category 1 dams are those “where its failure could result in significant loss of life, excessive economic losses, and significant public inconvenience.” Hazard Potential Category 2 dams are those “where its failure could result in the loss of a few lives, appreciable property damage, and short-duration public inconvenience” (PADEP 2009a). Owners of dams classified as Hazard Categories 1 or 2 (“high-hazard” dams) are required to create an Emergency Action Plan (EAP) that describes the dam, the inundation area if the dam were to catastrophically fail, and procedures for responding to the dam failure (such as notification to





the vulnerable population). Lancaster County receives copies of EAPs and inundation maps for high-hazard dams whose failure could impact local residents.

### **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 design, construction, operation, and maintenance of the dams. USACE has also developed guidelines for inspection and evaluation of dam safety (USACE 2017b). The USACE National Inventory of Dams (NID) provides the most recent dates of inspection of the following Lancaster County dams:

- Barnett Dam: September 30, 2014
- Conowingo Dam: None
- Cutler Dam: None
- Gable Park Woods Dam: December 17, 2014
- Groff Mill Dam: July 19, 2012
- Holtwood Dam: July 21, 2015
- Holtwood SES Ash Basin No 2 Dam: August 10, 2015
- Koolbrooke Lake Association Dam: None
- Lake Placida Dam: August 10, 2015
- Manheim Township Detention Basin No 2 Dam: September 30, 2014
- Middle Creek Dam: August 10, 2015
- Muddy Run East Dike: July 11, 2013
- Muddy Run Intake Channel Dam: August 12, 2015
- Muddy Run Main Dam: August 12, 2015
- Muddy Run Recreation Dam: July 11, 2013
- New Holland Reservoir Dam: September 30, 2014
- Pine Grove Dam: June 17, 2013
- Sadsbury Township Detention Pond 1 Dam: June 17, 2013
- Safe Harbor: June 30, 2015
- Speedwell Forge Dam: December 18, 2014
- Twin Pine Dam: July 8, 2015
- Woods Edge - Pond A Dam: June 21, 2013
- York Haven East Channel Dam: July 22, 2015
- York Haven Headrace: July 22, 2015

### **Federal Energy Regulatory Commission Dam Safety Program**

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:

- 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 (FERC 2017)

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 2017).



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 effects of potential and actual large floods on safety of dams. FERC staff visit dams and licensed projects during and after floods, assess extents 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 2017).

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 2017).

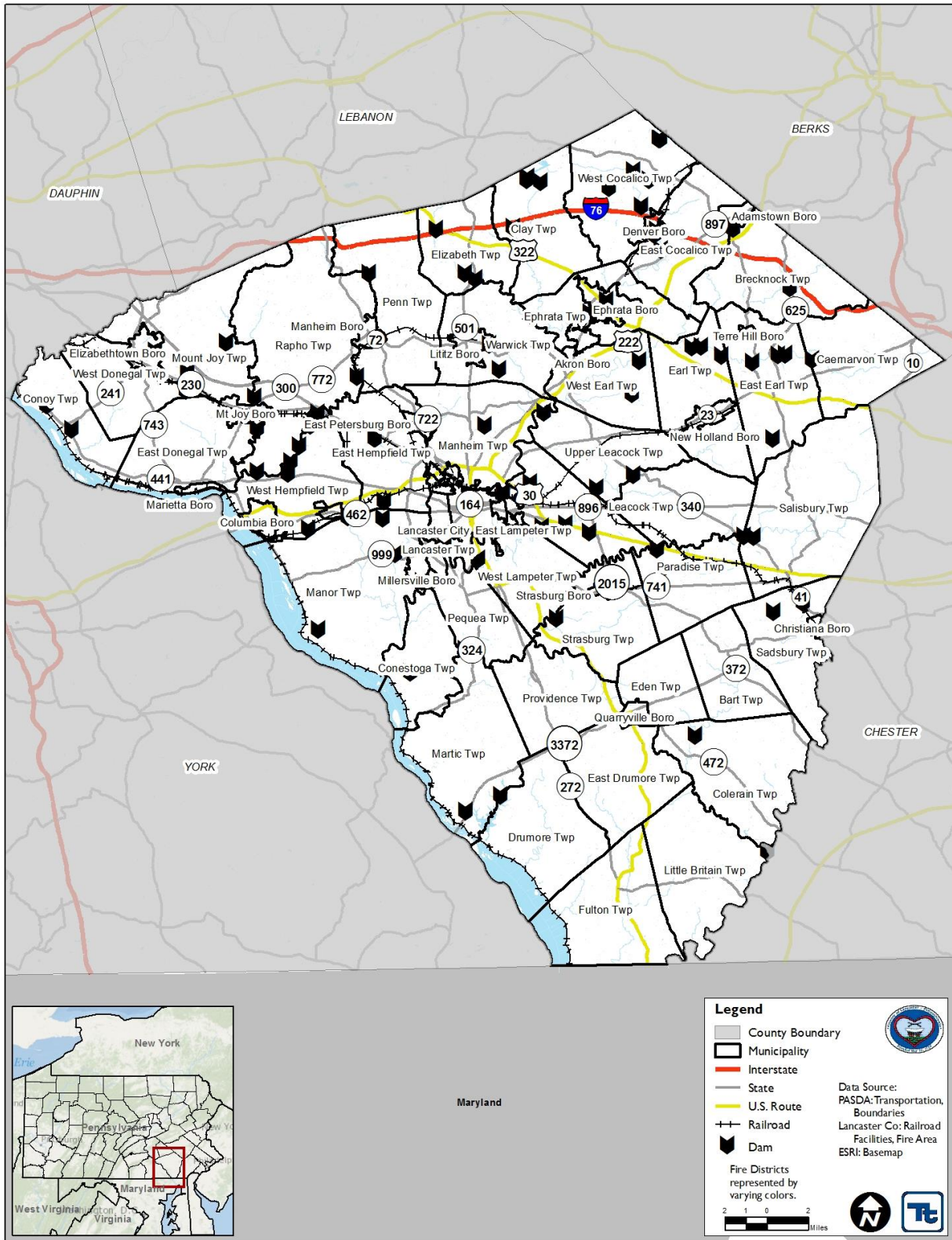
#### **4.3.12.1 Location and Extent**

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Seventy-seven (77) dams are present throughout Lancaster County, as shown on Figure 4.3.12-1. The vast majority of these dams pose little risk; however, nine Hazard Category 1 “high-hazard” dams require EAPs. Table 4.3.12-1 lists dam classification definitions. Table 4.3.12-2 is a complete list of dams in Lancaster County with “high-hazard” dams listed first.



Figure 4.3.12-1. Dams in Lancaster County



Sources: Lancaster County; PADEP 2017a.





**Table 4.3.12-1. 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.

**Table 4.3.12-2. Dams in Lancaster County**

Dam Name	Municipality	Stream	Class	Permittee
<b>High-Hazard Dams</b>				
Middle Creek	Clay Township	Middle Creek	B-1	PA Game Commission
New Holland Reservoir	East Earl Township	Tributary of Mill Creek	C-1	Jacob & Evelyn King
Speedwell Forge	Elizabeth Township	Hammer Creek	B-1	PA Fish & Boat Commission
Lake Placida	Elizabethtown Borough	Tributary of Conoy Creek	C-1	Elizabethtown College
Manheim Township Detention Basin No 2	Manheim Township	Landis Run	C-1	Manheim Township
Holtwood Ses Ash Basin No 2	Martic Township	Tributary of Susquehanna River	B-1	Holtwood LLC
Holtwood Ses Ash Basin No 2	Martic Township	Tributary of Susquehanna River	B-1	Pennsylvania Power & Light Company
Barnett	West Cocalico Township	Tributary of Cocalico Creek	C-1	Randy Shirk
Gable Park Woods	Lancaster Township	Tributary of Conestoga River	C-2	Gable Park Woods Association, Inc.
<b>Other Dams</b>				
Adamstown Rod & Gun Club	Brecknock Township	Tributary of Little Muddy Creek	C-4	Adamstown Rod & Gun Club
Kean	Brecknock Township	Muddy Creek	C-4	Stewart Kean
Conestoga	Caernarvon Township	Conestoga River	C-4	Norman & Elizabeth Hahn and Jesse Michelle Good





**SECTION 4.3.12: RISK ASSESSMENT – DAM FAILURE**

Dam Name	Municipality	Stream	Class	Permittee
Hollenbach	Clay Township	Tributary of Middle Creek	C-4	PA Game Commission
Stuckey	Clay Township	Tributary of Middle Creek	C-4	Bruce and Julie Hamilton
Sunfish Pond	Clay Township	Tributary of Middle Creek	C-4	PA Game Commission
McCrea	Colerain Township	West Branch Octorara Creek	C-4	Pennsylvania - American Water Company
Green Hill Sportsmen Association	Conestoga Township	Tributary of Little Conestoga Creek	C-4	Green Hill Sportsmen Association
Collins Mill	Conoy Township	Snitz Creek	C-4	George Doyle
Moore Pond	Conoy Township	Tributary of Conoy Creek	C-4	Ed Moore
Denver Mill	Denver Borough	Little Cocalico Creek	C-4	F. & M. Hat Company
Muddy Run Recreation	Drumore Township	Muddy Run	C-4	Exelon Generation Company
Keystone Mill	Earl Township	Conestoga Creek	C-4	Walter H. Nolt
Limited Power	Earl Township	Conestoga Creek	C-4	David Horning
Nolts	Earl Township	Conestoga River	C-4	Harry M. Burkholder
Eberly	East Cocalico Township	Cocalico Creek	C-4	Denver Realty Associates
Leshner Knitting Mill	East Cocalico Township	Cocalico Creek	C-4	East Cocalico Township
Reist	East Donegal Township	Little Chiques Creek	C-4	Henry Reist
Linden Grove Mill	East Earl Township	Conestoga River	C-4	Chas. E. Sauder and Sons
Roller Mill	East Earl Township	Conestoga River	C-4	Aaron Sensenig, Jr.
Roller Mill	East Earl Township	Conestoga River	C-4	Titus Rice
Roller Mill	East Earl Township	Conestoga River	C-4	John Horst
Brubaker Run Detention	East Hempfield Township	Brubaker Run	C-4	East Hempfield Associates
Park Place Detention Basin	East Hempfield Township	Tributary of Swarr Run	C-4	Mahlon Zimmerman
Dutch Wonderland	East Lampeter Township	Mill Creek	C-4	Wonderland Amusement Management LLC
Groff Mill	East Lampeter Township	Mill Creek	C-4	A. Jerry Landis
High Properties	East Lampeter Township	Stauffer Run	C-4	Edward Hoover
Nolts Mill	East Lampeter Township	Mill Creek	C-4	Jim Nolt
Rockvale Square	East Lampeter Township	Tributary of Mill Creek	C-4	Rockvale Square Associates
Lexington Roller Mill	Elizabeth Township	Hammer Creek	C-4	Snavely Family Limited Partnership
Miller	Elizabeth Township	Tributary of Hammer Creek	C-4	J. Mervin Miller
Haller	Ephrata Borough	Cocalico Creek	C-4	Borough of Ephrata
Mission	Ephrata Borough	Cocalico Creek	C-4	Ephrata Area Joint Authority
Conestoga River	Lancaster Township	Conestoga River	C-4	Lancaster City Water Authority
Mascot Mill	Leacock Township	Mill Creek	C-4	Ressler Mill Foundation
Pine Grove	Little Britain Township	Octoraro Creek	C-4	Chester Water Authority



**SECTION 4.3.12: RISK ASSESSMENT – DAM FAILURE**

Dam Name	Municipality	Stream	Class	Permittee
Crossgates Golf Course Pond 1	Manor Township	Tributary of Conestoga River	C-4	William E. Murry
Frantz Mill	Manor Township	Little Conestoga Creek	C-4	Henry L. & Anita S. Emrich
Freys Dairy Farm	Manor Township	Tributary of Manns Run	C-4	Frey Dairy Farms, Inc.
Oak Ridge Detention Basin	Manor Township	Tributary of West Branch Little Conestoga Creek	C-4	Oak Ridge
Woods Edge - Pond A	Manor Township	Tributary of Little Conestoga River	C-4	The Murry Companies/Sher-Wal, Inc.
H & S Excavating	Mount Joy Township	Tributary of Donegal Creek	C-4	H & S Excavating
Milton Grove Wetland Mitigation	Mount Joy Township	Tributary of Little Chiques Creek	C-4	Robert D. Garner, Jr.
Mount Joy Water Works	Mount Joy Township	Little Chiques Creek	C-4	Borough of Mount Joy
Stoltzfus	Paradise Township	Pequea Creek	C-4	Joel Stoltzfus
Snavelys Mill	Penn Township	Chiques Creek	C-4	Martin L. Cassel
White Oak	Penn Township	Chiques Creek	C-4	Jay R. Nissley
Silver Mine Run Park	Pequea Township	Silver Mine Run	C-4	Pequea Silver Mine Park
Beiler	Rapho Township	Chiques Creek	C-4	Elam E. Beiler
Chiques Roller Mill	Rapho Township	Chiques Creek	C-4	Leon B. & Carol L. Koser
Conley Farms	Rapho Township	Chiques Creek	C-4	Unidentified
Krady Mill	Rapho Township	Chiques Creek	C-4	Mrs. Jay Krady
Newcomer /Hill	Rapho Township	Chiques Creek	C-4	H. Jeanette Newcomer
Sadsbury Township Detention Pond 1	Sadsbury Township	Tributary of Williams Run	C-4	Sadsbury Township
Sadsbury Township Detention Pond 2	Sadsbury Township	Tributary of Williams Run	C-4	Sadsbury Township
Lieberman	Salisbury Township	Pequea Creek	C-4	Ron Lieberman
New Miltown Roller Mill	Salisbury Township	Pequea Creek	C-4	Ron Lieberman
Groffs Mill	Upper Leacock Township	Mill Creek	C-4	A. Stoltzfus
Iron Stone Mill	Upper Leacock Township	Conestoga River	C-4	Frank L. Diem
Iron Stone Mill	Upper Leacock Township	Conestoga River	C-4	Franklin C. Diem
Hess Lower	Warwick Township	Lititz Run	C-4	Clark Hess
Rudy	Warwick Township	New Haven Creek	C-4	Jay Shelley
Blue Lake Rod and Gun Club	West Cocalico Township	Cocalico Creek	C-4	Blue Lake Rod And Gun Club
Groff	West Cocalico Township	Cocalico Creek	C-4	Randy R. Groff
Martin	West Cocalico Township	Tributary of Cocalico Creek	C-4	Melvin Wenger
Yarus Lower	West Cocalico Township	Tributary of Harnish Run	C-4	Lance & Shiela Yarus
Yarus Upper	West Cocalico Township	Tributary of Harnish Run	C-4	Lance & Shiela Yarus
Aspen Estates	West Donegal Township	Tributary of Donegal Creek	C-4	Carl E. & H. Glenn Esbenshade
Eberlys Mill	West Earl Township	Conestoga River	C-4	Nathan Eberly
Hoover	West Earl Township	Groff Creek	C-4	Noah S. & Susan Z. Hoover





Dam Name	Municipality	Stream	Class	Permittee
Bridge Valley Detention Basin	West Hempfield Township	Tributary of Chiques Creek	C-4	West Hempfield Township
Strickler Run	West Hempfield Township	Strickler Run	C-4	West Hempfield Township
Eckman Mill	West Lampeter Township	Mill Creek	C-4	Stephen J. & Carol Tollaksen
Eckman Mill	West Lampeter Township	Mill Creek	C-4	Dr. Randal H. Brown
Lime Valley	West Lampeter Township	Pequea Creek	C-4	John D. Hofmeister

Source: PADEP 2017a

### 4.3.12.2 Range of Magnitude

Extent or magnitude of a dam failure event can be measured in terms of classification of the dam. FEMA has three classification levels of dam hazard potential: low, significant, and high. The classification levels build on each other. The hazard potential classification system should be used with the understanding that failure of any dam or water-retaining structure could represent a danger to downstream life and property (FEMA 2004). Each FEMA classification level of dam hazard potential is described as follows:

- Low-hazard potential dams are those where failure or misoperation 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 are those where failure or misoperation would result in no probable loss of human life but could cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Significant-hazard potential dams are often located in predominantly rural or agricultural areas.
- High-hazard potential dams are those where failure or misoperation will probably cause loss of human life.

Table 4.3.12-3 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 probability of failure.



**Table 4.3.12-3. U.S. Army Corps of Engineers Hazard Potential Classification**

Hazard Category <sup>1</sup>	Direct Loss of Life <sup>2</sup>	Lifeline Losses <sup>3</sup>	Property Losses <sup>4</sup>	Environmental Losses <sup>5</sup>
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

- <sup>1</sup> Categories are assigned to overall projects, not individual structures at a project.
- <sup>2</sup> 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.
- <sup>3</sup> 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.
- <sup>4</sup> 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.
- <sup>5</sup> 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

The County considers the EAP for the New Holland Reservoir Dam to be the most significant, due to the potential impact of a dam failure from this dam. Failure of this dam would create a rush of water that would impact residents in East Earl Township, Earl Township, Upper Leacock Township, Leacock Township, and East Lampeter Township. The number of vulnerable structures includes 200 homes, 10 businesses, and 1 school. The number of vulnerable residents totals 500.

**4.3.12.3 Past Occurrence**

There have been two significant dam failures in Pennsylvania. The worst dam failure to occur in the U.S. took place in Johnstown, PA, in 1889 and claimed 2,209 lives. Another dam failure took place in Austin, PA, (Potter County) in 1911 and claimed 78 lives. To date, there have not been any dam failures in Lancaster County’s recent history. However, there were concerns about dam integrity at the Speedwell Forge Lake Dam, located in Elizabeth Township. There was a possibility that this lake may have had to be partially drained to reduce the stress that was being placed on this structure. In June of 2005, this dam was inspected and deemed safe by state officials.

No dam failures or incidents have been recorded in Lancaster County.

**4.3.12.4 Future Occurrence**

Likelihood of a dam failure in Lancaster County is difficult to predict. Dam failure events are infrequent and usually coincide with events that cause them, such as earthquakes, landslides, and excessive rainfall and snowmelt. However, the risk of such an event increases for each dam as the dam’s age increases or frequency of maintenance decreases.







“Residual risk” to dams is risk that remains after implementation of safeguards. Residual risk to dams is associated with events beyond those that the facility was designed to withstand. However, probability of any type of dam failure is low in today’s dam safety regulatory and oversight environment.

Based on Risk Factor Methodology Probability Criteria (further defined in Section 4.4), and assuming regular maintenance and inspections of the dams in Lancaster County, dam failures are considered *unlikely* in the County.

#### 4.3.12.5 Vulnerability Assessment

The dam failure hazard is of significance to Lancaster County because 84 dams are present across Lancaster County, nine of which are classified as high-hazard by PADEP. Warning time for dam failure is often limited. These events are frequently associated with other natural hazard events such as earthquakes, landslides, or severe weather, limiting their predictability and compounding the hazard. Populations without adequate warning of the event are highly vulnerable to this hazard. Direct and indirect losses associated with dam failures include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources.

The entire population residing within a dam failure inundation zone is considered exposed and vulnerable. 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 the net economic impact to their family. 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.

The EAPs associated with the Lancaster County high-hazard dams provide information concerning the estimated number of homes and residents vulnerable to a dam failure. The County considers the EAP for the New Holland Reservoir Dam to be the most significant due to the potential impact of a dam failure from this dam. The number of vulnerable structures includes 200 homes, 10 businesses, and 1 school. The number of vulnerable residents totals 500.

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. Populations without adequate warning of the event are highly vulnerable to this hazard.

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



### **4.3.13 Environmental Hazard**

This section provides a profile and vulnerability assessment of the environmental hazard profile for Lancaster County.

The U.S. Department of Transportation (DOT) categorizes hazardous materials (HazMat) into the following nine classes based on chemical characteristics producing the risk:

- 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.

Lancaster County is home to 203 identified facilities that utilize, ship, or house chemicals considered hazardous. These facilities have been identified under the Superfund Amendment and Reauthorization Act (SARA) as exceeding the quantity threshold for reporting.

Product release into the local environment can derive from a fixed facility or occur at any location along a route of travel, and may be the result of carelessness, technical failure, external incidents, or an intentional act against the facility or container. 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 HazMat 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.

#### **4.3.13.1 Location and Extent**

Based on past occurrences, HazMat releases within Lancaster County have been accidental and have not been considered terrorist or criminal acts. While past occurrences have not been deemed intentional, an intentional 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.

Lancaster County is home to 4,450.3 miles of roadways, including 61.1 miles of interstate highway, 161.99 miles of principal arterial roads, 298.04 miles of minor arterial roads, and over 3,058.9 miles of local roads. With nearly 4,500 miles of roadways linking more-populated areas with rural communities, the grid work of roadways facilitates free movement of HazMat throughout the region. The County's large agricultural areas increase its vulnerability to HazMat accidents.

While permitted, identified hazardous substance travel routes are not maintained by the County or regional planning entities. The primary roadways in Lancaster County are listed as follows (and shown in red on Figure 4.3.13-1):

- Pennsylvania Turnpike (I-76)
- U.S. Highway 30 (US-30).
- U.S. Highway 222 (US-222)
- U.S. Highway 322 (US-322)
- State Highway 72 (PA-72)



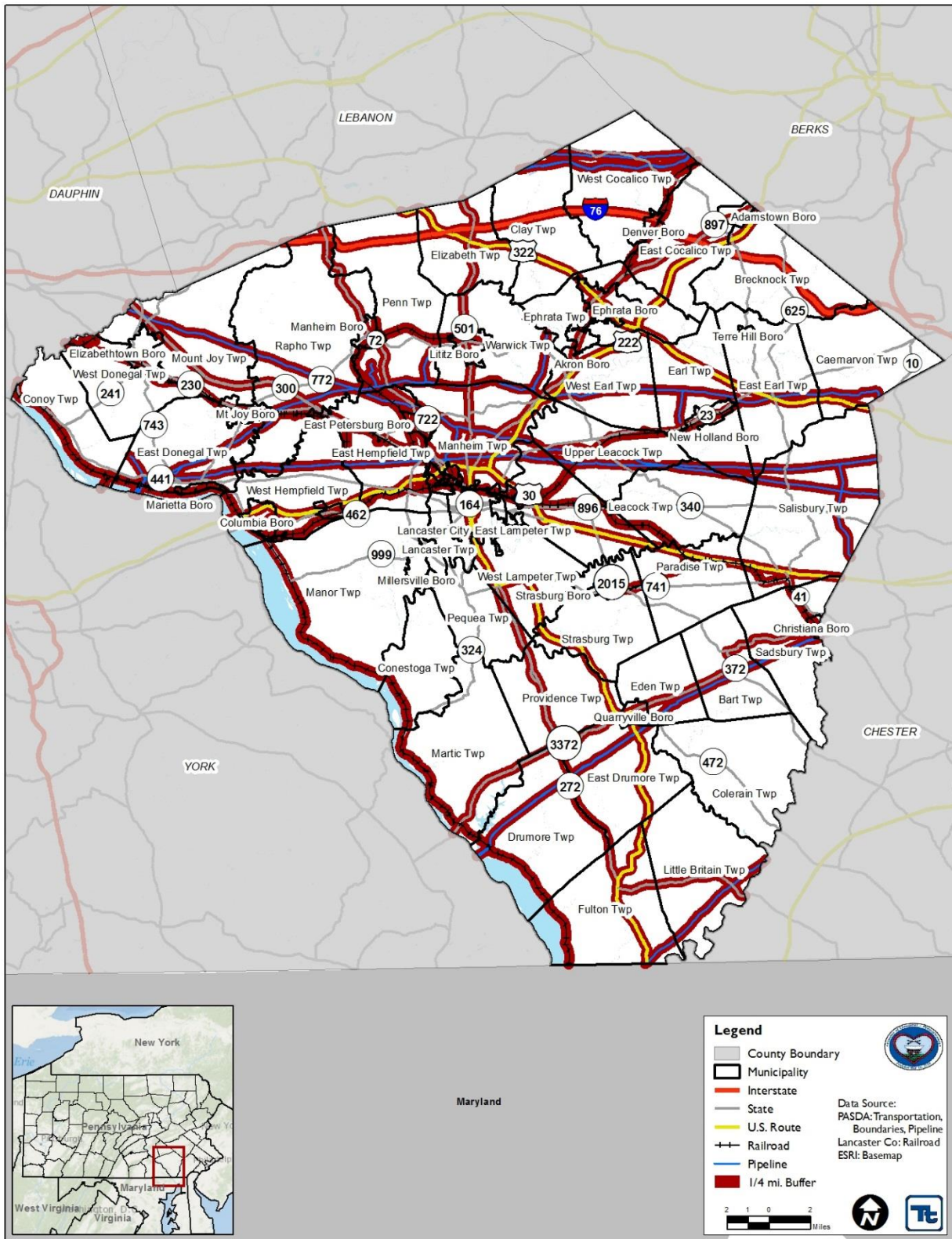
- State Highway 272 (PA-272)
- State Highway 283 (PA-283)
- State Highway 372 (PA-372)
- State Highway 501 (PA-501)

Rail lines that transport hazardous materials follow the Susquehanna River on the County’s western border, and traverse the middle of the County east to west. There are also several pipelines in the County, two running east to west across the northern sections of Clay Township and West Cocalico Township; one running from the northwest corner of Drumore Township northeast through Sadsbury Township; and several running east to west across the center of the County.

In addition to the major routes of transportation, each fixed facility identified within Lancaster County poses a potential threat to the surrounding community. The U.S. Environmental Protection Agency (EPA) tracks management of over 650 toxic chemicals that pose a threat to human health and the environment through the Toxic Release Inventory (TRI). 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. A “release” of a chemical means emission to the air or water, or placement in some type of land disposal. EPA publishes all TRI data in a publicly accessible database in Envirofacts. In 2016, 70 TRI facilities in Lancaster County reported to EPA (EPA 2017).



Figure 4.3.13-1. Major Roadways Used to Transport Hazardous Materials in Lancaster County



Source: Pennsylvania Spatial Data Access (PASDA)







### 4.3.13.2 Range of Magnitude

Environmental hazard incidents within Lancaster 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 within closest proximity 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, whether accidental or intentional, can be exacerbated or mitigated by specific circumstances surrounding the event. Exacerbating conditions are characteristics that can enhance or magnify effects of a hazard and mitigating conditions are characteristics of the target and its physical environment that can reduce effects of a hazard. These conditions are described below.

- Non-compliance 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 worst-case scenario would be a large, uncontrolled release of a toxic gas within a major urban area. In Lancaster County, this could take the form of an accident and major rupture of a tanker hauling a toxic or flammable gas in or near Lancaster City. While little physical property damage is likely from this type of event, the potential for injury and death to people up to 0.25 mile from the scene is significant. This event would likely overwhelm the medical care capacity within the County, and possibly the region. The population vulnerable to such a release includes the 22,666 people in Lancaster City alone. In addition, an event such as this would likely close County offices, causing a major disruption to government operations. The most likely scenario would be a transportation accident resulting in a rupture of a truck’s fuel tank, spilling a small quantity of diesel fuel onto the roadway.

### 4.3.13.3 Past Occurrence

The County has undergone HazMat release accidents at facilities and along roadways. For most incidents, the County Hazmat Team’s representative is contacted by the on-scene fire department for technical advice about addressing the hazardous material. Since 2012, there have been 404 incidents in which the County Hazmat Team was contacted for technical advice. Of these, the County Hazmat Team provided on-scene response in 194 incidents. Most of these events were vehicle accidents or fires, with 60 incidents. East Hempfield Township had the most cases, with 23 incidents.

One significant incident occurred in Rapho Township on November 3, 2000, when an excavating crew ruptured an 8-inch underground fuel pipeline, thus causing a 40-foot geyser of diesel fuel oil spraying into the environment. The leak flowed for nearly 2.5 hours and released more than 40,000 gallons of diesel fuel. Thanks to the prompt response by emergency crews and early defensive containment, the impact of the spill was limited. In total, the spill took weeks to clean up, and early estimates indicated that the effort would cost in excess of \$1 million (LEMA 2001).



Another significant incident took place on July 24, 2001, at 2810 Weaverland Road, in the village of Neffsville in Manheim Township. An explosion took place as technicians were working on a gasoline pumping station for an underground petroleum line. Conventional unleaded gas was traveling through the line, which ran from Harrisburg to Malvern, Pennsylvania, at the time. After the explosion took place, a huge fireball erupted, reaching 100 feet into the air at times. While crucial valves were shut off, approximately 20,000 gallons of gasoline remained in the underground line. Emergency responders elected to let this fuel just burn off until all of it was gone. Firefighters and hazmat personnel arrived on the scene just before 17:30; flames finally died down around midnight but crews remained on the scene through the night and all of the next day to ensure that this incident remained under control (Lancaster County Emergency Management Agency).

In August 2017, 250 people were evacuated from the Manheim Auto Auction in Penn Township due to an unknown odor. Seven people were treated on site, and six people were taken to Lancaster General Hospital for observation. Manheim Fire Department and Lancaster County HAZMAT were dispatched to the site to inspect and clear the scene. The source of the odor was not determined, and the building was cleared and the site returned to normal operations that day (Stauffer 2017).

#### **4.3.13.4 Future Occurrence**

Because of the wide scope of definition of environmental hazards, ranging from a small spill to a large release of a highly volatile or toxic HazMat, incidents can and will happen at any time. Additionally, the County is home to 203 SARA facilities. Although these facilities follow applicable safety and health regulations and best practices, proximities of the facilities to population centers is a concern for the County.

HazMats are also transported via rail, pipeline, and along I-76, US-30, US-222, US-322, PA-72, PA-272, PA-283, PA-372, and PA-501. Transportation of HazMat on highways involves tanker trucks or trailers; not surprisingly, trucks are responsible for the greatest number of HazMat incidents. At several points, these transportation routes cross streams within the watersheds that are part of the County's domestic water supply.

While HazMat release incidents in Lancaster County have occurred in the past, they are generally considered difficult to predict. Smaller incidents, such as fuel spills, will affect the County many times each year, most likely along I-76 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. Based on Risk Factor Methodology Probability Criteria, likelihood of future occurrences within Lancaster County remains *highly likely*.

#### **4.3.13.5 Vulnerability Assessment**

To understand risk, a community must evaluate assets exposed or vulnerable within the identified hazard area. To assess effects of and risk from environmental hazards, locations of SARA Title III facilities, railways, major roadways, and pipelines are examined. The following sections evaluate and estimate potential impacts in Lancaster County, presenting specifically:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impacts on (1) life, health, and safety; (2) general building stock, critical facilities, and the economy; and (3) future growth and development.

#### **Overview of Vulnerability**

Facilities that produce, use, or ship HazMat within the Commonwealth of Pennsylvania are required to comply with regulations set forth within the federal SARA and the Emergency Planning and Community Right to Know



Act (EPCRA), and the Commonwealth of Pennsylvania reporting requirements under the Hazardous Materials Emergency Planning and Response Act (Act 165). The County has 203 SARA Title III facilities.

As stated above, hazardous materials are transported via rail, pipeline, and along major roadways in the County, including one interstate (I-76), U.S. Highways (US-30, US-222, US-322), and five state Highways (PA-72, PA-272, PA-283, PA-372, PA-501). Accidents on these routes can result in HazMat spills that can contaminate and impact surrounding populations and environment.

### Data and Methodology

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To determine potential impact on the County, a vulnerability analysis was performed using ArcGIS, where a 0.25-mile buffer was placed around the identified major roadways, railroads, and pipelines, and the designated vulnerability radius of each SARA Type III facility was used to define the hazard area. Populations and features of the built environment within these areas may be directly or indirectly affected by a potential environmental hazard. The hazard area was overlaid upon the 2010 U.S. Census population data in Geographic Information System (GIS) (U.S. Census 2010). Census blocks do not coincide with these boundaries; blocks with centroids in the hazard area were determined to be affected.

The vulnerability radius for each hazard facility is determined by the County Local Emergency Planning Committee, and each radius is shown in Appendix I.

### Impact on Life, Health, and Safety

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Environmental hazards exert the greatest impact on the residential population in Lancaster County (Table 4.3.13-1 below). Several incidents reported in the County are related to petroleum spills, which may have resulted from motor vehicle incidents.



Table 4.3.13-1. Estimated Lancaster County Population Vulnerable to Environmental Hazards

Municipality	Total Population	Population within ¼ mile of railroads	% Population	Population within ¼ mile of major roadways	% Population	Population within vulnerability radii of SARA Facility	% Population	Population within ¼ mile of pipelines	% Population
Adamstown Borough	1,772	0	0.0%	1,395	78.7%	108	6.1%	0	0.0%
Akron Borough	3,876	0	0.0%	1,627	42.0%	3,387	87.4%	0	0.0%
Bart Township	3,094	0	0.0%	485	15.7%	3,094	100.0%	174	5.6%
Brecknock Township	7,199	0	0.0%	1,417	19.7%	1,217	16.9%	0	0.0%
Caernarvon Township	4,748	0	0.0%	422	8.9%	519	10.9%	458	9.6%
Christiana Borough	1,168	905	77.5%	691	59.2%	1,168	100.0%	64	5.5%
Clay Township	6,308	0	0.0%	1,522	24.1%	0	0.0%	0	0.0%
Colerain Township	3,635	0	0.0%	0	0.0%	3,635	100.0%	0	0.0%
Columbia Borough	10,400	5,190	49.9%	2,264	21.8%	513	4.9%	0	0.0%
Conestoga Township	3,776	80	2.1%	0	0.0%	358	9.5%	0	0.0%
Conoy Township	3,194	881	27.6%	0	0.0%	3,194	100.0%	0	0.0%
Denver Borough	3,861	2,053	53.2%	1,642	42.5%	1,761	45.6%	0	0.0%
Drumore Township	2,560	115	4.5%	339	13.2%	2,560	100.0%	254	9.9%
Earl Township	7,024	521	7.4%	411	5.9%	4,183	59.6%	830	11.8%
East Cocalico Township	10,310	667	6.5%	3,838	37.2%	6,257	60.7%	0	0.0%
East Donegal Township	7,755	238	3.1%	0	0.0%	5,651	72.9%	3,085	39.8%
East Drumore Township	3,791	0	0.0%	1,103	29.1%	3,791	100.0%	522	13.8%
East Earl Township	6,507	7	<1%	1,469	22.6%	540	8.3%	742	11.4%
East Hempfield Township	23,522	5,736	24.4%	2,085	8.9%	7,701	32.7%	5,475	23.3%
East Lampeter Township	16,424	1,839	11.2%	3,037	18.5%	4,643	28.3%	1,253	7.6%
East Petersburg Borough	4,506	612	13.6%	2,283	50.7%	3,759	83.4%	1,082	24.0%
Eden Township	2,094	0	0.0%	185	8.8%	2,094	100.0%	150	7.2%
Elizabeth Township	3,886	0	0.0%	1,355	34.9%	450	11.6%	0	0.0%
Elizabethtown Borough	11,545	1,936	16.8%	584	5.1%	11,545	100.0%	0	0.0%





**SECTION 4.3.13: RISK ASSESSMENT - ENVIRONMENTAL HAZARD**

Municipality	Total Population	Population within ¼ mile of railroads	% Population	Population within ¼ mile of major roadways	% Population	Population within vulnerability radii of SARA Facility	% Population	Population within ¼ mile of pipelines	% Population
Ephrata Borough	13,394	0	0.0%	7,717	57.6%	12,297	91.8%	0	0.0%
Ephrata Township	9,400	74	<1%	1,626	17.3%	5,213	55.5%	13	<1%
Fulton Township	3,074	30	1.0%	645	21.0%	3,074	100.0%	56	1.8%
Lancaster City	59,322	3,634	6.1%	22,666	38.2%	47,117	79.4%	0	0.0%
Lancaster Township	16,149	0	0.0%	21	0.1%	7,218	44.7%	257	1.6%
Leacock Township	5,220	405	7.8%	66	1.3%	503	9.6%	0	0.0%
Lititz Borough	9,369	2,687	28.7%	3,873	41.3%	4,029	43.0%	0	0.0%
Little Britain Township	4,106	0	0.0%	414	10.1%	4,106	100.0%	654	15.9%
Manheim Borough	4,858	1,942	40.0%	3,273	67.4%	4,858	100.0%	0	0.0%
Manheim Township	38,133	1,905	5.0%	14,280	37.4%	5,282	13.9%	10,619	27.8%
Manor Township	19,612	682	3.5%	0	0.0%	2,131	10.9%	0	0.0%
Marietta Borough	2,588	2,479	95.8%	0	0.0%	1,236	47.8%	0	0.0%
Martic Township	5,190	87	1.7%	484	9.3%	3,715	71.6%	0	0.0%
Millersville Borough	8,168	0	0.0%	0	0.0%	4,525	55.4%	0	0.0%
Mount Joy Borough	7,410	5,147	69.5%	0	0.0%	6,266	84.6%	41	<1%
Mount Joy Township	9,873	818	8.3%	1,629	16.5%	9,018	91.3%	870	8.8%
Mountville Borough	2,802	1,336	47.7%	1,227	43.8%	804	28.7%	0	0.0%
New Holland Borough	5,378	3,615	67.2%	0	0.0%	5,378	100.0%	0	0.0%
Paradise Township	5,131	1,050	20.5%	1,353	26.4%	2,183	42.5%	0	0.0%
Penn Township	8,789	379	4.3%	910	10.4%	1,957	22.3%	680	7.7%
Pequea Township	4,605	0	0.0%	1,173	25.5%	540	11.7%	0	0.0%
Providence Township	6,897	0	0.0%	1,167	16.9%	4,563	66.2%	0	0.0%
Quarryville Borough	2,576	0	0.0%	2,259	87.7%	2,576	100.0%	0	0.0%
Rapho Township	10,442	146	1.4%	1,188	11.4%	2,826	27.1%	1,496	14.3%
Sadsbury Township	3,395	241	7.1%	457	13.5%	3,203	94.3%	398	11.7%





**SECTION 4.3.13: RISK ASSESSMENT - ENVIRONMENTAL HAZARD**

Municipality	Total Population	Population within ¼ mile of railroads	% Population	Population within ¼ mile of major roadways	% Population	Population within vulnerability radii of SARA Facility	% Population	Population within ¼ mile of pipelines	% Population
Salisbury Township	11,062	673	6.1%	1,312	11.9%	585	5.3%	1,674	15.1%
Strasburg Borough	2,809	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Strasburg Township	4,182	65	1.6%	475	11.4%	1,527	36.5%	0	0.0%
Terre Hill Borough	1,295	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Upper Leacock Township	8,708	1,735	19.9%	0	0.0%	378	4.3%	1,849	21.2%
Warwick Township	17,783	71	<1%	2,317	13.0%	2,697	15.2%	1,114	6.3%
West Cocalico Township	7,280	1,040	14.3%	1,052	14.5%	221	3.0%	972	13.4%
West Donegal Township	8,260	1,369	16.6%	0	0.0%	8,260	100.0%	0	0.0%
West Earl Township	7,868	325	4.1%	1,710	21.7%	790	10.0%	862	11.0%
West Hempfield Township	16,153	2,152	13.3%	1,940	12.0%	2,272	14.1%	1,021	6.3%
West Lampeter Township	15,209	0	0.0%	3,568	23.5%	1,131	7.4%	0	0.0%
<b>Lancaster County</b>	<b>519,445</b>	<b>54,867</b>	<b>10.6%</b>	<b>106,956</b>	<b>20.6%</b>	<b>234,627</b>	<b>45.2%</b>	<b>36,665</b>	<b>7.1%</b>

Sources: U.S. Census 2010, Lancaster County

Notes:

% Percent

SARA Superfund Amendments and Reauthorization Act





### **Impact on General Building Stock, Critical Facilities, and Economy**

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While buildings and critical facilities may be present within the hazard area, estimating direct damage to these structures and facilities would be difficult. However, damages to the surrounding environment can result in indirect impacts, such as temporary loss of function due to hazard response or damage in the area. As for the population, an assessment occurred of exposure of critical facilities within the 0.25-mile buffer surrounding major roadways, railroads, pipelines, and within specified vulnerability radii of SARA facilities (Table 4.3.13-2 below).

Economic loss from environmental hazards and explosion incidents ranges from non-recordable to losses exceeding millions of dollars. Impact on the local economy from a single incident is almost impossible to measure because of complexities of predicting losses of work, revenue, and future business.



Table 4.3.13-2. Critical Facilities Vulnerable to Environmental Hazards

Municipality	Facility Types																								
	Airport	Bus	Communication	County Building	Dam	Dosing Tank	EMS	Emergency Operation Center	Fire Station	Hazmat	Library	Medical	Outflow	Police Station	Potable Facility	Potable Pump	Potable Tank	Rail	School	Senior	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Adamstown Borough	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Akron Borough	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	0	0	1	1	1	0	0	1	0
Bart Township	0	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	11	0	1	0	0	0	1
Brecknock Township	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	5	0	0	0	1	0	3
Caernarvon Township	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Christiana Borough	0	0	1	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1
Clay Township	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0
Colerain Township	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0
Columbia Borough	1	0	1	0	0	0	2	1	1	1	0	0	1	1	0	3	3	0	1	1	2	1	0	0	1
Conestoga Township	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conoy Township	0	0	2	0	2	0	0	1	1	1	0	0	2	0	0	1	1	0	1	0	1	0	2	3	2
Denver Borough	0	0	0	0	1	0	0	1	1	2	0	0	0	0	1	0	0	0	2	2	2	0	0	0	0
Drumore Township	0	0	1	0	1	0	0	1	0	2	0	0	0	0	0	0	0	0	6	0	0	1	0	0	0
Earl Township	0	0	0	1	3	0	0	0	1	9	1	0	0	0	0	1	1	0	15	1	1	0	4	7	2
East Cocalico Township	0	0	0	1	1	0	1	1	2	18	0	0	0	1	0	1	3	0	3	1	0	1	16	4	1
East Donegal Township	1	0	1	5	1	0	1	1	1	3	1	0	0	1	0	0	2	0	5	1	3	3	5	5	1
East Drumore Township	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	5	2	1	2	0	0	0
East Earl Township	0	0	0	0	1	0	0	1	1	3	0	0	0	1	0	1	2	0	4	0	1	0	0	0	0
East Hempfield Township	0	0	1	11	2	0	2	1	4	23	0	5	0	1	0	5	1	0	5	4	4	3	6	4	0
East Lampeter Township	1	0	0	1	3	0	0	1	3	13	1	0	0	2	0	7	0	0	12	0	5	1	0	7	0
East Petersburg Borough	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	2	0	1	0	1	0	1	1	0





SECTION 4.3.13: RISK ASSESSMENT - ENVIRONMENTAL HAZARD

Municipality	Facility Types																								
	Airport	Bus	Communication	County Building	Dam	Dosing Tank	EMS	Emergency Operation Center	Fire Station	Hazmat	Library	Medical	Outflow	Police Station	Potable Facility	Potable Pump	Potable Tank	Rail	School	Senior	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Eden Township	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	10	0	1	0	0	0	0
Elizabeth Township	0	0	0	0	3	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elizabethtown Borough	0	0	0	1	1	0	1	2	1	4	2	0	0	1	1	0	2	1	6	1	4	1	5	1	0
Ephrata Borough	0	0	1	1	2	0	2	2	2	5	1	2	0	1	1	1	5	0	9	4	6	1	4	5	1
Ephrata Township	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	6	1	0	0	0	6	1
Fulton Township	0	0	2	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	9	0	2	1	0	0	0
Lancaster City	0	1	5	12	0	0	2	1	3	20	3	2	0	3	0	4	1	1	32	4	7	6	0	1	0
Lancaster Township	0	0	0	0	2	0	1	0	1	1	0	0	0	0	0	1	0	0	2	3	0	1	0	4	1
Leacock Township	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	6	0	0	0	0	3	0
Lititz Borough	0	0	1	0	0	0	1	2	1	7	0	0	0	1	0	0	1	0	4	3	7	0	6	0	0
Little Britain Township	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0
Manheim Borough	0	0	1	1	0	0	1	1	1	4	1	0	0	1	1	2	2	0	3	0	0	1	2	1	0
Manheim Township	0	0	1	3	0	0	2	1	3	11	2	0	0	1	0	21	2	0	7	5	0	4	1	3	0
Manor Township	0	0	1	0	3	0	1	0	2	5	0	0	0	0	0	1	0	0	0	1	0	3	0	3	1
Marietta Borough	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Martic Township	0	0	1	0	2	0	0	1	2	1	0	0	0	0	0	0	0	0	3	0	1	1	0	0	0
Millersville Borough	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	0	2	0	1	0	0	1	0
Mount Joy Borough	0	0	1	1	0	0	1	1	1	3	0	0	0	1	0	1	2	1	1	1	0	1	0	3	0
Mount Joy Township	0	0	1	0	3	0	0	1	1	1	0	0	0	1	0	0	0	0	5	0	1	0	2	6	0
Mountville Borough	0	0	1	0	0	0	0	1	1	2	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0
New Holland Borough	0	0	0	0	0	0	2	2	2	7	0	0	0	1	0	0	0	0	2	0	2	2	1	3	0
Paradise Township	0	0	1	0	1	0	0	1	2	1	0	0	0	0	0	0	1	0	7	1	0	1	0	7	1





SECTION 4.3.13: RISK ASSESSMENT - ENVIRONMENTAL HAZARD

Municipality	Facility Types																								
	Airport	Bus	Communication	County Building	Dam	Dosing Tank	EMS	Emergency Operation Center	Fire Station	Hazmat	Library	Medical	Outflow	Police Station	Potable Facility	Potable Pump	Potable Tank	Rail	School	Senior	Shelter	Substation	Well	Wastewater Pump	Wastewater Facility
Penn Township	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	1	0	1	0	0	0	0	4	2
Pequea Township	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Providence Township	0	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	3	1	1	1	0	0	1
Quarryville Borough	0	0	1	1	0	0	1	1	1	2	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0
Rapho Township	0	0	0	0	3	1	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	2	2
Sadsbury Township	0	0	0	0	2	0	1	1	0	1	0	0	0	0	0	0	2	0	11	0	0	0	3	3	0
Salisbury Township	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	6	0	0	0	0	0	1
Strasburg Borough	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	4	0	0	0	0	0	0
Strasburg Township	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
Terre Hill Borough	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 Leacock Township	0	0	0	1	1	0	0	1	2	2	1	0	0	0	0	1	0	0	8	0	0	1	4	2	0
Warwick Township	0	0	0	1	1	0	0	0	1	4	0	0	0	0	0	0	0	0	1	1	3	1	2	6	1
West Cocalico Township	0	0	0	0	1	0	1	0	2	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0	1
West Donegal Township	0	0	0	0	1	0	1	0	1	8	0	0	0	0	0	1	1	0	1	5	1	0	1	10	1
West Earl Township	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	1	0	4	0	0	1	0	3	0
West Hempfield Township	0	0	0	0	1	0	0	0	0	15	0	0	0	0	0	6	1	0	2	1	0	4	0	3	0
West Lampeter Township	0	0	1	4	2	0	2	0	1	0	0	0	0	0	0	1	1	0	0	4	1	0	0	1	0
<b>Lancaster County</b>	<b>3</b>	<b>1</b>	<b>29</b>	<b>47</b>	<b>50</b>	<b>1</b>	<b>32</b>	<b>42</b>	<b>57</b>	<b>203</b>	<b>19</b>	<b>10</b>	<b>4</b>	<b>24</b>	<b>5</b>	<b>61</b>	<b>40</b>	<b>3</b>	<b>260</b>	<b>51</b>	<b>62</b>	<b>43</b>	<b>68</b>	<b>120</b>	<b>27</b>

Source: Lancaster County





### **Impact on the Environment**

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As discussed above, environmental hazards and explosion incidents can profoundly affect the surrounding environment. Contamination of soil, surface water, and groundwater can result in many direct impacts on surrounding populations and ecosystems. Local flora and fauna within hazard areas are also at risk.

### **Future Growth and Development**

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As discussed in Section 2.4, areas targeted for future growth and development have been identified across the County. Any areas of growth could be impacted by environmental hazards if located within identified hazard areas. The County intends to discourage development within vulnerable areas and the SFHA, or to encourage higher regulatory standards on the local level.



### 4.3.14 Nuclear Incident

Nuclear hazards and incidents generally refer to incidents involving (1) a release of significant levels of radioactive materials or (2) exposure of workers or the general public to radiation. Primary concerns following a nuclear incident or accident are the impact on public health from (1) direct exposure to a radioactive plume; (2) inhalation of radioactive materials; (3) ingestion of contaminated food, water, and milk; and (4) long-term exposure to deposited radioactive materials in the environment that may lead to either acute (radiation sickness or death) or chronic (cancer) health effects.

The nuclear industry has adopted pre-determined, site-specific Emergency Action Levels (EAL). The EALs provide the framework and guidance for observing, addressing, and classifying the severity of site-specific incidents and conditions that are communicated to off-site emergency response organizations (Nuclear Regulatory Commission [NRC] 2008). Additional EALs specifically deal with issues of security, such as threats of airborne attack, hostile action within the facility, or attack on the facility. These EALs ensure that appropriate notifications of a security threat will occur in a timely manner.

The NRC encourages the use of Probabilistic Risk Assessments (PRA) to estimate quantitatively the potential risk to public health and safety considering the design, operations, and maintenance practices at nuclear power plants. PRAs typically focus on accidents that can severely damage the core and that may challenge containment. Federal Emergency Management Agency (FEMA), Pennsylvania Emergency Management Agency (PEMA), and county governments have formulated Radiological Emergency Response Plans to prepare for radiological emergencies at the five nuclear power-generating facilities in the Commonwealth of Pennsylvania. These plans include a Plume Exposure Pathway Emergency Planning Zone (EPZ) (an area with a radius of 10 miles from each nuclear power facility) and an Ingestion Exposure Pathway EPZ (an area with a radius of 50 miles from each facility).

#### 4.3.14.1 Location and Extent

##### Stationary Facilities

There are five nuclear power generation stations located in the Commonwealth. While Lancaster County has no nuclear facilities within its borders, it is one of only two counties in Pennsylvania that have two nuclear facilities on its borders. The Peach Bottom Atomic Power Station (Peach Bottom) is located immediately to the west of Fulton Township in Peach Bottom Township, York County, and Three Mile Island Nuclear Generating Station (TMI) lies across the northwestern border in Londonderry Township, Dauphin County. Peach Bottom has two operating licensed units, while TMI has one operating licensed unit. Additionally, Lancaster County lies fewer than 50 miles from the Limerick Generating Station in Limerick Township, Montgomery County. Figure 4.3.14-1 provides visual representation of where Lancaster County falls in the Plume Exposure Pathway EPZ and Ingestion Exposure Pathway EPZ of nuclear power plants.





Figure 4.3.14-1. Lancaster County Jurisdictions in the 10-Mile Plume Exposure Pathway EPZ and 50-Mile Ingestion Exposure Pathway EPZ

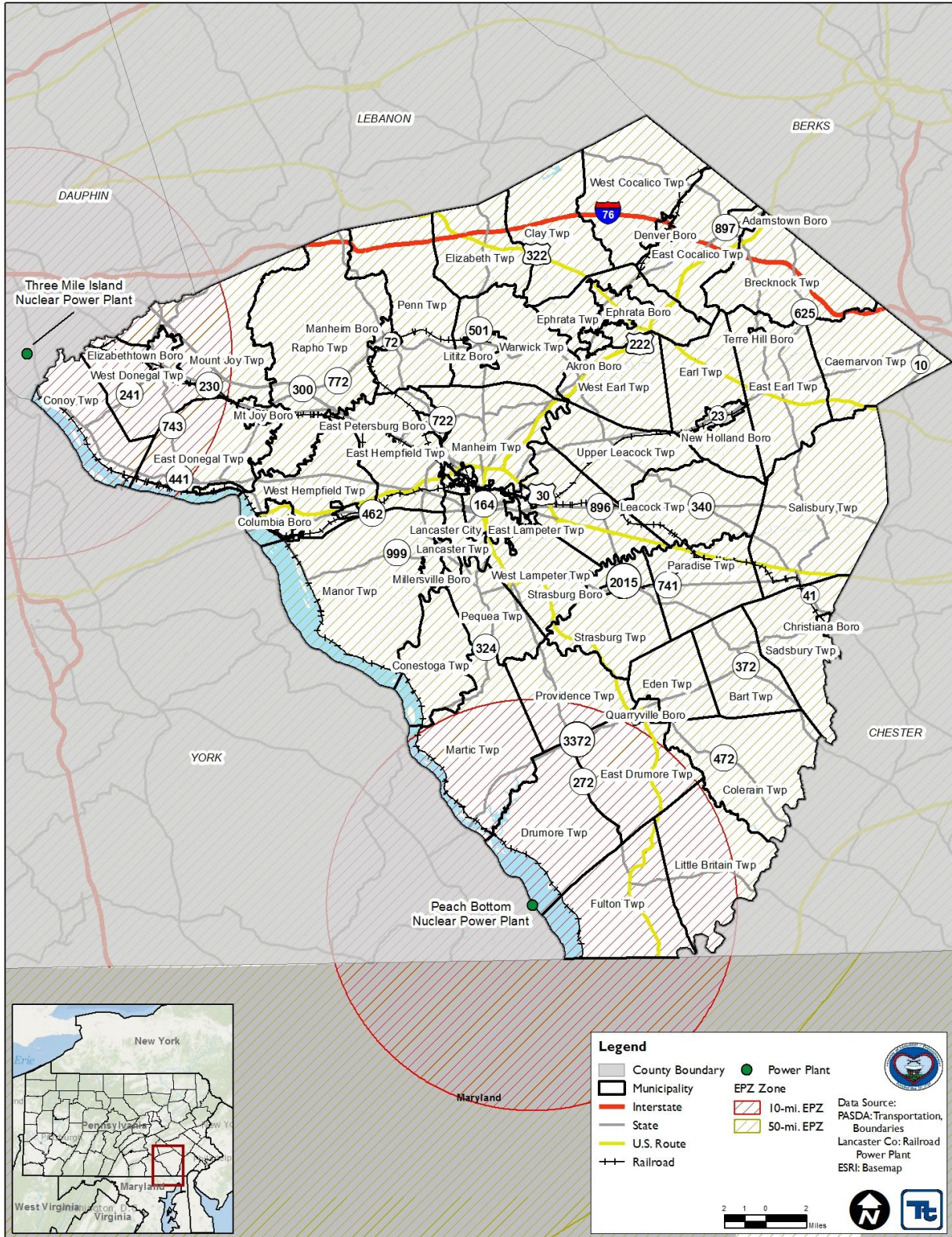






Table 4.3.14-1 lists the jurisdictions in Lancaster County that are located within the 10-mile EPZs for TMI and Peach Bottom.

**Table 4.3.14-1. Lancaster County Jurisdictions in the Plume Exposure Pathway EPZs**

Jurisdiction	10-Mile Plume Exposure Pathway EPZ - TMI	10-Mile Plume Exposure Pathway EPZ - Peach Bottom
Adamstown Borough	No	No
Akron Borough	No	No
Bart Township	No	No
Brecknock Township	No	No
Caernarvon Township	No	No
Christiana Borough	No	No
Clay Township	No	No
Colerain Township	No	No
Columbia Borough	No	No
Conestoga Township	No	No
Conoy Township	Yes	No
Denver Borough	No	No
Drumore Township	No	Yes
Earl Township	No	No
East Cocalico Township	No	No
East Donegal Township	Yes	No
East Drumore Township	No	Yes
East Earl Township	No	No
East Hempfield Township	No	No
East Lampeter Township	No	No
East Petersburg Borough	No	No
Eden Township	No	No
Elizabeth Township	No	No
Elizabethtown Borough	Yes	No
Ephrata Borough	No	No
Ephrata Township	No	No
Fulton Township	No	Yes
Lancaster City	No	No
Lancaster Township	No	No
Leacock Township	No	No
Lititz Borough	No	No
Little Britain Township	No	Yes
Manheim Borough	No	No
Manheim Township	No	No
Manor Township	No	No



Jurisdiction	10-Mile Plume Exposure Pathway EPZ - TMI	10-Mile Plume Exposure Pathway EPZ - Peach Bottom
Marietta Borough	No	No
Martic Township	No	Yes
Millersville Borough	No	No
Mount Joy Borough	No	No
Mount Joy Township	Yes	No
Mountville Borough	No	No
New Holland Borough	No	No
Paradise Township	No	No
Penn Township	No	No
Pequea Township	No	No
Providence Township	No	Yes
Quarryville Borough	No	No
Rapho Township	No	No
Sadsbury Township	No	No
Salisbury Township	No	No
Strasburg Borough	No	No
Strasburg Township	No	No
Terre Hill Borough	No	No
Upper Leacock Township	No	No
Warwick Township	No	No
West Cocalico Township	No	No
West Donegal Township	Yes	No
West Earl Township	No	No
West Hempfield Township	No	No
West Lampeter Township	No	No

### Hazards in Transit

The U.S. Department of Energy transports used nuclear fuel to the repository by rail and road inside sealed containers. The used fuel may be shipped along specified highway routes. Rail is used to transport nuclear waste as well. However, no nuclear fuel is transported through Lancaster County.

#### 4.3.14.2 Range of Magnitude

Plume Exposure Pathway EPZ refers to whole-body external exposure to radiation from a radioactive plume and from deposited materials and inhalation exposure from the passing radioactive plume. The duration of primary exposures could range in length from hours to days. The 50-Mile Ingestion Exposure Pathway EPZ refers to exposure primarily from ingestion of water or foods such as milk and fresh vegetables that have been contaminated with radiation. This kind of exposure can stem from any of the three categories of nuclear accident listed below. Although the 10-mile Plume Exposure EPZs include only portions of Lancaster County (refer to Figure 4.3.14-1 and Table 4.3.14-1), impacts are anticipated across the entire County via the ingestion exposure pathway.





Nuclear facility accidents are classified into three categories, and exposure to radiation can stem from any of the three types of accidents:

- **Criticality accidents:** Involves loss of control of nuclear assemblies or power reactors.
- **Loss-of-coolant accidents:** Occurs whenever a reactor coolant system experiences a break or opening large enough so that the coolant inventory in the system cannot be maintained by the normally operating make-up system.
- **Loss-of-containment accidents:** Involves the release of radioactivity from materials such as tritium; fission products; plutonium; and natural, depleted, or enriched uranium. Points of release have been containment vessels at fixed facilities or damaged packages during transportation accidents.

In accordance with regulations specified by FEMA and NRC, each facility is required to notify jurisdictional agencies of an incident or occurrence within that facility. NRC uses four classification levels for nuclear incidents (NRC 2008). PEMA and facility owners with whom PEMA coordinates use the following notification levels based on an internal trigger:

- **Unusual Event:** Incidents are occurring or have occurred that indicate potential degradation in the level of safety of the plant. No release of radioactive material requiring off-site response or monitoring is expected unless further degradation occurs.
- **Alert:** Incidents are in process or have occurred that involve actual or potential substantial degradation in the level of safety of the plant. Any releases of radioactive material from the plant are expected to be limited to a small fraction of the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAG).
- **Site Area Emergency:** Incidents are in process or have occurred that resulted in actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material are not expected to exceed EPA PAGs except near the site boundary.
- **General Emergency:** Incidents are in process or have occurred that have caused actual or imminent substantial core damage or melting of reactor fuel with potential for loss-of-containment integrity. Radioactive releases during a General Emergency can reasonably be expected to exceed the EPA PAGs over more than the immediate site area.

After a nuclear incident, the primary concern is the effect on the health of the population near the incident. The duration of primary exposure could range in length from hours to months depending on the proximity to the point of radioactive release. External radiation and inhalation and ingestion of radioactive isotopes can cause acute health effects (e.g., death, severe health impairment), chronic health effects (e.g. cancers) and psychological effects.

Potential environmental impacts specific to the 50-Mile Ingestion Exposure Pathway EPZ include the long-term effects of radioactive contamination in the environment and in agricultural products. Lancaster County can expect some radioactive contamination in very small amounts in the case of a nuclear incident. This is not a significant concern in terms of external exposure and immediate health risks, but even a small amount of radiation will require the protection of the food chain, particularly milk supplies. Small amounts of radiation ingested over time could lead to future health issues. As a result, in the case of a nuclear incident, foodstuffs, crops, milk, livestock feed and forage, and farm water supplies will need to be protected from and tested for contamination, in accordance with Commonwealth and local radiological emergency response procedures. Additionally, spills and releases of radiologically active materials from accidents can result in the contamination of soil and public water supplies.



## Scenario

The worst-case scenario nuclear incidents for Lancaster County would be if a General Emergency occurred at TMI or Peach Bottom that leaked sufficient radiation to create injuries and fatalities as well as longer-term damage in the form of contaminated water, soil, and food supplies in the County.

### 4.3.14.3 Past Occurrence

Nuclear incidents rarely occur, but the incident at TMI is the worst fixed-nuclear facility accident in U.S. history. The resulting contamination and state of the reactor core led to the development of a 14-year cleanup and scientific effort. Additionally, the President's Commission on the Accident at TMI examined the costs of the accident, concluding that "the accident at TMI on March 28, 1979, generated considerable economic disturbance. Some of the impacts were short term, occurring during the first days of the accident. Many of the impacts were experienced by the local community; others will be felt at the regional and national levels." The report concluded: "It appears clear that the major costs of the TMI Unit 2 accident are associated with the emergency management replacement power and the plant refurbishment or replacement. The minimum cost estimate of nearly \$1 billion supports the argument that considerable additional resources can be cost effective if spent to guard against future accidents."

Despite the severity of the damage, no injuries due to radiation exposure occurred. However, numerous studies were conducted to determine the measurable health effects related to radiation and/or stress. More than a dozen epidemiological and stress-related studies conducted to date have found no discernible direct health effects on the population in the vicinity of the plant. However, one study conducted by the Pennsylvania Department of Health's (PA DOH) TMI Health Research Program did find evidence of psychological stress, "lasting in some cases for five to six years." According to the Program Chief, "the people suffering from stress perceived their health as being poorer than it actually was when the Health Department checked the medical records."

The issue of radiation effects resulting from the accident at TMI will continue to be debated. Radiation science does accept thresholds of expected mortality and morbidity resulting from the exposure to radiation. Administrative standards have been incorporated into plans used by public health officials and emergency planners for the purpose of making protective action decisions pertaining to sheltering and evacuation.

The accident at TMI had a profound effect on the residents, emergency management community, government officials, and nuclear industry, not only in Pennsylvania but nationwide. There were minimal requirements for off-site emergency planning for nuclear power stations prior to this accident. Afterward, comprehensive, coordinated, and exercised plans were developed for the state, counties, school districts, special facilities (hospitals, nursing homes, and detention facilities), and municipalities to ensure the safety of the population. Costs associated with an incident at one of the Commonwealth's nuclear facilities, whether real or perceived, are significant. The mitigation efforts put in place immediately following the 1979 accident continue until today. The Commonwealth's nuclear/radiological plan, which is a successor of the original "Annex E," is a result of the Commonwealth's efforts to address the many components of mitigation planning. The comprehensive planning involved with the five nuclear facilities is an ongoing effort. Plans are reviewed and amended on an annual basis. Recent amendments to various planning documents and station procedures include the efforts to enhance station security measures and the means to bolster communications and response in the incident of terrorist activities.

Another incident occurred at TMI on February 7, 1993, when an individual drove his car through a chain-link fence and then slammed into a roll-up garage door leading into the facility's turbine building. Plant officials, fearing the worst, immediately declared a Site Area Emergency. Fortunately, the person who crashed the gate was found and apprehended. Other than property damage caused by the forcible entry through physical





structures, there was no lasting damage to the facility, according to the Lancaster County Emergency Management Agency.

There was also an Alert declared at TMI on October 5, 2015. There was a small electrical fire at the power plant, which was extinguished quickly and with no threat of the release of radiation (Associated Press 2015).

In addition to the TMI incidents, there has been one Alert-level incident at Peach Bottom. On July 4, 1992, a fire occurred around an off-site transformer, causing a loss of electrical power to the facility. Other than the power outage, there were no other consequences.

#### 4.3.14.4 Future Occurrence

Pennsylvania has the distinction of having experienced the only nuclear power plant General Emergency in the nation. Since the TMI incident, nuclear power has become significantly safer and is one of the most heavily regulated industries in the nation. Despite the knowledge gained since then, there is still the potential for a similar accident to occur again at one of the five nuclear generating facilities in the Commonwealth. The Nuclear Energy Agency of the Organization for Economic Co-Operation and Development notes that studies estimate the chance of failure of protective barriers in a modern nuclear facility at less than 1 in 100,000 per year (Lancaster County HMP 2012).

Across the United States, a number of Unusual Event and Alert classification level events occur each year at the 100+ nuclear facilities that warrant notification of local emergency managers. Of these, Alert emergencies occur less frequently. For example, in 1997, there were forty notifications of Unusual Events and three Alert events nationwide. Based on historical events, Site Area Emergency and General Emergency incidents are very rare. Based on available historical data and the lack of nuclear incident events impacting Lancaster County, the future occurrence of nuclear incident events can be considered *unlikely* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4).

#### 4.3.14.5 Vulnerability Assessment

Effects from a radiological incident at a fixed facility would vary depending on the product released (type of radiation), amount of radiation released, current weather conditions, and time of day. The priority following an incident at any of the facilities within the Commonwealth of Pennsylvania is the life and safety of all individuals within the area impacted. Secondary to health and safety would be effects on critical infrastructure, environment, property, and the economy.

Contamination of agriculture, livestock, and production can lead to loss of commerce with other regions of the state, country, and even the world. Recently, many countries halted imports of products from Japan for fear of contamination following the tsunami-related nuclear incident at the Fukushima Power Plant. This loss in revenue compounded losses that Japan and its region were already encountering following the initial disaster.

Impacts within the affected area can include loss of utility service, contamination of local crops and livestock, loss of residential property due to measurable quantities of nuclear materials, and increased risk to health and well-being of individuals within the area.

Only portions of Lancaster County are located within the 10-mile Plume EPZ of TMI or Peach Bottom, while the entire County is located within the 50-mile Ingestion EPZ. The total population and critical facilities within the 10-mile EPZ of each power plant is displayed in Table 4.3.14-2.



Table 4.3.14-2. Structures and Critical Facilities within the 10-mile EPZ of Power Plants

Municipality	Total Population in 10 mile EPZ of Peach Bottom	Total Critical Facilities in 10 mile EPZ of Peach Bottom	Total Population in 10 mile EPZ of TMI	Total Critical Facilities in 10 mile EPZ of TMI
Adamstown Borough	0	0	0	0
Akron Borough	0	0	0	0
Bart Township	0	0	0	0
Brecknock Township	0	0	0	0
Caernarvon Township	0	0	0	0
Christiana Borough	0	0	0	0
Clay Township	0	0	0	0
Colerain Township	0	0	0	0
Columbia Borough	0	0	0	0
Conestoga Township	0	0	0	0
Conoy Township	0	0	3,194	20
Denver Borough	0	0	0	0
Drumore Township	2,560	12	0	0
Earl Township	0	0	0	0
East Cocalico Township	0	0	0	0
East Donegal Township	0	0	4,771	20
East Drumore Township	3,129	9	0	0
East Earl Township	0	0	0	0
East Hempfield Township	0	0	0	0
East Lampeter Township	0	0	0	0
East Petersburg Borough	0	0	0	0
Eden Township	0	0	0	0
Elizabeth Township	0	0	0	0
Elizabethtown Borough	0	0	11,565	35
Ephrata Borough	0	0	0	0
Ephrata Township	0	0	0	0
Fulton Township	3,074	17	0	0
Lancaster City	0	0	0	0
Lancaster Township	0	0	0	0
Leacock Township	0	0	0	0
Lititz Borough	0	0	0	0
Little Britain Township	3,254	7	0	0
Manheim Borough	0	0	0	0
Manheim Township	0	0	0	0
Manor Township	0	0	0	0
Marietta Borough	0	0	0	0
Martic Township	4,146	12	0	0
Millersville Borough	0	0	0	0
Mount Joy Borough	0	0	0	0



Municipality	Total Population in 10 mile EPZ of Peach Bottom	Total Critical Facilities in 10 mile EPZ of Peach Bottom	Total Population in 10 mile EPZ of TMI	Total Critical Facilities in 10 mile EPZ of TMI
Mount Joy Township	0	0	8,131	18
Mountville Borough	0	0	0	0
New Holland Borough	0	0	0	0
Paradise Township	0	0	0	0
Penn Township	0	0	0	0
Pequea Township	0	0	0	0
Providence Township	2,174	3	0	0
Quarryville Borough	0	0	0	0
Rapho Township	0	0	0	0
Sadsbury Township	0	0	0	0
Salisbury Township	0	0	0	0
Strasburg Borough	0	0	0	0
Strasburg Township	0	0	0	0
Terre Hill Borough	0	0	0	0
Upper Leacock Township	0	0	0	0
Warwick Township	0	0	0	0
West Cocalico Township	0	0	0	0
West Donegal Township	0	0	8,260	32
West Earl Township	0	0	0	0
West Hempfield Township	0	0	0	0
West Lampeter Township	0	0	0	0
<b>Lancaster County</b>	<b>18,337</b>	<b>60</b>	<b>35,921</b>	<b>125</b>

Source: Lancaster County 2017; US Census 2010

For areas within the 50-mile EPZ, the County’s primary vulnerability to nuclear incidents comes in the form of food, soil, and water contamination. In terms of vulnerable land, the approximately 439,481 acres of farmland are vulnerable to radiological contamination in a nuclear incident. According the USDA 2012 Census of Agriculture, the market value of all agricultural products of these farms totaled approximately \$1.4 billion. While unlikely that all agricultural products would be lost in the event of a nuclear incident, the County can expect some portion to be lost. Time of year also impacts the vulnerability and losses estimated for a nuclear incident; an incident that occurs during the prime growing and harvesting season will have a larger impact on the County.

It is important to note that the entire County, not just the areas in the EPZ, may be impacted based on the flow of goods and services and where residents get their food supply. Water contamination is also a concern in nuclear incidents. Public water suppliers that operate in or provide water to the County, coupled with the County’s 15,652 domestic drinking water wells, are all vulnerable to the effects of a nuclear incident.



### 4.3.15 Transportation Accident

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the transportation accident hazard for the Lancaster County Hazard Mitigation Plan (HMP).

Transportation hazards include hazardous materials in transit, vehicular accidents, aviation accidents, at-grade railroad crossings, and roadways vulnerable to floods. 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 Lancaster County include roadways, railways, one commercial airport, and a few private airstrips. A major road accident in the County is probable; however, aviation or rail accidents are unlikely. All County systems and supporting transportation resources provide services locally, regionally, and nationally. Transportation accidents defined below include incidents involving road, air, and rail travel.

- **Vehicular Accidents:** A vehicular accident is an 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.
- **Aviation Accidents:** According to the International Civil Aviation Organization, an aviation accident is an occurrence during operation of an aircraft from 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: a person is fatally or seriously injured; the aircraft sustains damage or structural failure; or 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 (International Civil Aviation Organization 2015).

Lancaster County has one airport with a Federal Aviation Administration (FAA) tower, Lancaster Airport. Three privately owned airports are also available to the public:

- Donegal Springs Air Park (Mount Joy/Marietta)
- McGinnis Airport (Columbia)
- Smoketown Airport (Smoketown)
- **Hazardous Materials (HazMat) in Transit:** A HazMat 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. HazMats come in various forms, some of which can cause death; serious injury; long-lasting health effects; and damage to buildings, homes, and other property. HazMat substances include explosives, flammable solids, substances that become dangerous when wet, oxidizing substances, and toxic liquids. An accident involving a vehicle carrying HazMats becomes a HazMat incident if the HazMat 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 HazMats (Illinois Emergency Management Agency 2012).
- **Railway Accidents:** Railway accidents involve one or more trains. They can involve a train derailment or one train impacting another train, vehicle, or pedestrian. Presently, a total of 264.6 miles of rail lines are located within Lancaster County. Of this total, 259.2 miles of rail line are considered active.

Four railroads operate track within the County:

- Amtrak (National Railroad Passenger Corporation)
- Norfolk Southern



- Strasburg Railroad
- Delaware & Hudson/Canadian (Pacific Railroad)

Lancaster County is also served by two passenger rail services: Amtrak and Pennsylvanian & Three Rivers. Several short lines are also operated within Lancaster County. These lines serve varying purposes. Of note, are the following rail lines:

- Lancaster Northern Line (East Penn Railroad)
- Dillerville Rail Yard (Tybur Railroad)
- Columbia and Reading Railway (CORY)

One main freight rail line runs through Lancaster County. Previously, the Consolidated Railroad Corporation (Conrail) owned the line; however, in June 1999, Norfolk Southern Corporation (NS) acquired all of Conrail’s operations throughout the United States. The freight lines in Lancaster County were obtained and are now operated by NS. The Strasburg Railroad, “America’s Oldest Short-Line Railroad,” is one of Lancaster County’s leading tourist attractions. It also maintains a large museum housing numerous vintage railroad cars. Several passenger trains serve the County daily, via the Lancaster Railroad Station, located in Lancaster City.

#### 4.3.15.1 Location and Extent

##### Vehicular Accidents

Lancaster County is home to several major east-west roadways, including the Pennsylvania Turnpike (I-76), US-30, US-322, and PA-283. US-222 is the major north-south highway, running through the middle of the County from the Maryland line, through Lancaster City, and north toward Reading, Pennsylvania. Lancaster County, as a whole, is at risk for traffic accidents of all degrees.

Additional major roadways in Lancaster County include PA-72, PA-272, PA-372, and PA-501. Lancaster County has nearly 3,900 miles of roadways, divided as listed in Table 4.3.15-1, and illustrated on Figure 4.3.15-1. Transportation accidents can occur at any point along these roadways, with many occurring at an intersection of two or more roadways.

**Table 4.3.15-1. Lancaster County Transportation Network**

Category	Miles
Interstate Highway	30.6
Freeways/Expressways	49.6
Principal Arterials	104.1
Minor Arterials	291.0
Major Collectors	456.8
Minor Collectors	234.2
Local Roads	2,727.8
<b>Total</b>	<b>3,894.1</b>

Source: PennDOT 2017b

Structurally deficient bridges pose a risk for transportation accidents. 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 4.3.15-2 lists the total number of bridges in Lancaster County, as well as the number of those that are structurally deficient (in parentheses).





Table 4.3.15-2. Bridges in Lancaster County

On State Roads	On Local Roads
720 (101)	267 (67)

Source: PennDOT 2017a

There is no warning time for vehicular accidents. Factors contributing to these accidents are typically associated with the driver, vehicle, and the environment. Factors associated with the driver include error, speeding, lack of 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 may include severe traffic delays, lost sales to businesses, delayed commodity shipments, and increased insurance costs (Cova and Conger 2004).

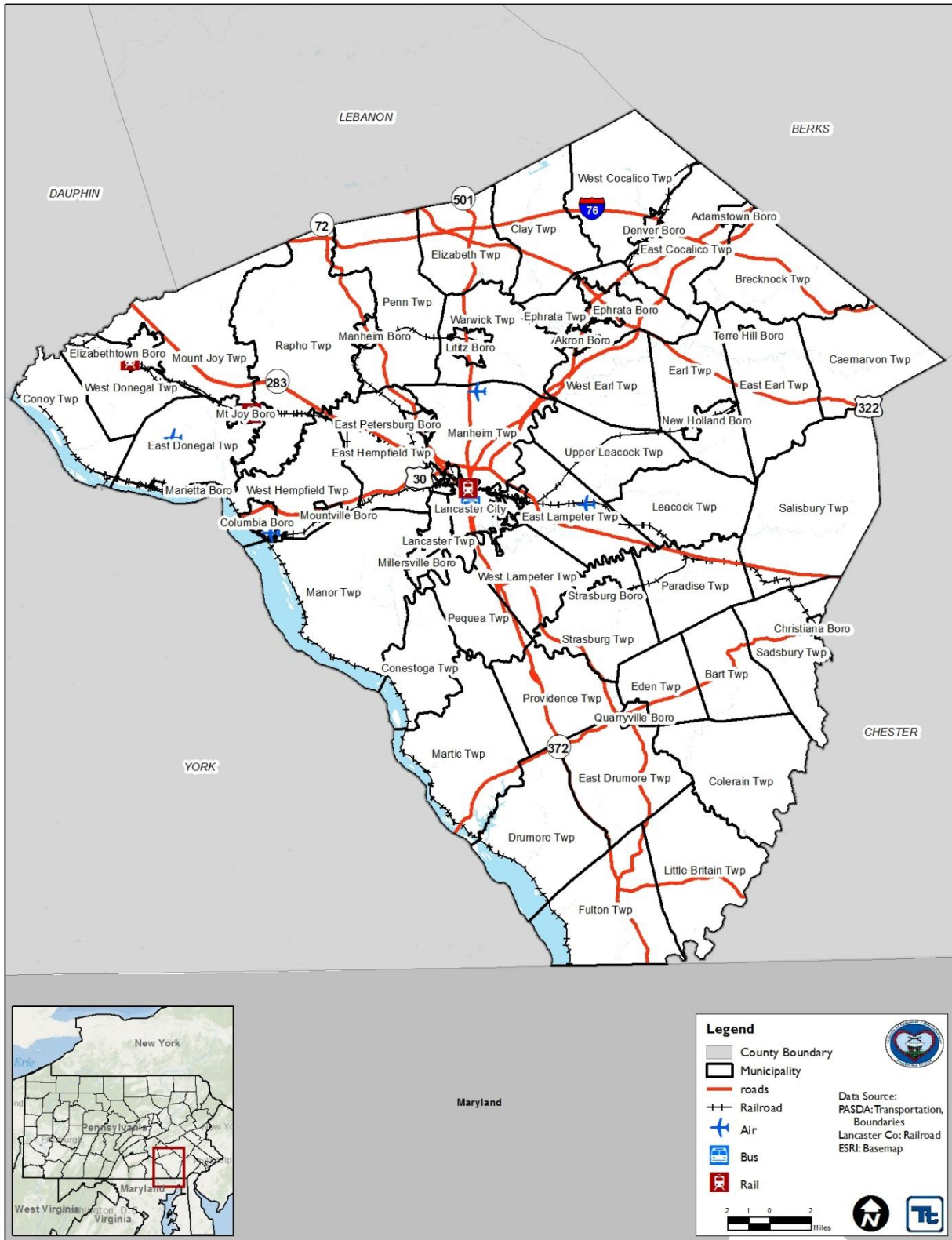
County and local officials identified the following areas as especially problematic for transportation accidents:

- US-30 at PA-441, particularly in the afternoon rush hour
- Espenshade Road and PA-230
- PA-23 at PA-897 South
- US-322 at PA-897
- PA-72 near the Turnpike (because tractor-trailers and car carriers have trouble going up the hill)
- US-30 at US-222
- US-30 at PA-462 and Oakview Road
- US-30 at Millstream Road



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Figure 4.3.15-1. Major Transportation Routes in Lancaster County



Source: Lancaster County 2017





### Railway Accidents

Pennsylvania offers freight, passenger, and commuter rail services. In its 2035 Intercity Passenger and Freight Rail Plan, the Pennsylvania Bureau of Rail Freight, Ports, and Waterways cites that the freight rail network totals 5,095 miles of track with over 60 railroads, making Pennsylvania the fifth-largest rail network in the nation and the state with the greatest number of railroads. Three railroad systems offer Pennsylvania passenger service: (1) Southeastern Pennsylvania Transportation Authority (SEPTA) – Rapid Transit, Trolley and Light Rail, and Commuter Rail; the Port Authority of Allegheny County (PAAC) – Light Rail; and Amtrak – Intercity Passenger Rail. Amtrak is the only rail service that crosses the entire commonwealth.

Rail accidents generally fit into one of three categories (PEMA 2013):

- Derailment – the train leaves the rails
- Collision – a train strikes another train or a vehicle
- Other – including objects on the rails, fires, or explosions.

### Aviation Accidents

Lancaster County contains one commercial air facility, the Lancaster Airport, as well as a handful of private air strips. In addition, aircraft traveling the major air route between Harrisburg and Philadelphia travel over Lancaster County.

Approximately 80 percent of all aviation accidents occur shortly before or during take-off and landing. Reportedly, most of these accidents are caused by human error. Mid-flight accidents are rare but not unheard of. A survey of 1,843 plane crashes between 1950 and 2006 showed that 53 percent were the result of pilot (human) error, 21 percent were caused by mechanical failure, 11 percent were caused by weather, 8 percent were attributed to other human error (lack of communication or improper maintenance), 6 percent were caused by sabotage and terrorism, and 1 percent resulted from other causes (Krasner 2009).

Aviation accidents are often devastating incidents that may result in serious injuries or fatalities. The Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) are the agencies responsible for monitoring air travel and investigating accidents. Some of the most common causes of aviation accidents occur as a result of violations of FAA and NTSB regulations. Some other causes of accidents include, but are not limited to, those listed below.

- Pilot or flight crew errors – Pilot error is the number one cause of aviation accidents and accounts for the highest number of fatalities. Pilots have the responsibility to transport passengers safely from one place to another and follow the FAA and NTSB regulations to better ensure passenger safety. If a pilot or flight crew member makes an error, an accident may occur.
- Faulty equipment – Faulty aircraft equipment is another common cause of aviation accidents.
- Aircraft design flaws – The manufacturer of an aircraft is responsible for an aviation accident if the structural design is flawed and results in an accident.
- Failure to properly fuel or maintain the aircraft – If any regulations and safety standards set by the FAA or NTSB are violated, an accident may occur.
- Negligence of Federal Air Traffic Controllers – Failure of air traffic controllers to properly monitor the airways is another cause of aviation accidents (*Aviation Law News* n.d.).

#### 4.3.15.2 Range of Magnitude

Roadway accidents in Lancaster County range from minor crashes to more serious incidents that involve injuries or fatalities, or result in a release of HazMats (described further in Section 4.3.13).

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.



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 with and for the public that could arise if one of these devices crashes. One of the worst transportation-related incidents in the County occurred in Marietta on August 1, 2002, when a plane crashed into a cornfield minutes after taking off from Donegal Springs Air Park, killing all four people on board.

A worst-case transportation accident scenario within the County would be the overturn of a tractor-trailer carrying an extremely hazardous substance (described in Section 4.3.13) resulting in a massive release of its cargo on a major roadway. This incident would block traffic on Lancaster County’s major transportation routes, and could threaten the health and safety of individuals on the roadways and in surrounding neighborhoods. In addition, a release could necessitate closure of County critical facilities near the accident. The most likely transportation accident in the County would involve a single vehicle hitting an object and sustaining minimal damage.

#### 4.3.15.3 Past Occurrence

Major roadway accidents (such as multi-vehicle accidents, those that close roads or bridges, or those involving school buses) are reported by Lancaster County to PennDOT. Table 4.3.15-3 summarizes these accidents from 2012 to 2016. While this table lists accidents reported to the counties and Commonwealth, significantly more minor accidents are not reported.

**Table 4.3.15-3. Summary of Major Roadway Accidents in Lancaster County, 2012 to 2016**

Year	Vehicle Accidents	Railroad Incidents	Aircraft Accidents	Fatalities
2012	5,249	2	4	47
2013	5,251	5	3	45
2014	5,339	2	0	62
2015	5,605	1	3	48
2016	5,931	1	1	44
<b>Total</b>	<b>27,375</b>	<b>11</b>	<b>11</b>	<b>246</b>

Source: PennDOT 2017b; FRA 2017

#### 4.3.15.4 Future Occurrence

Transportation hazards are impossible to predict accurately; however, areas prone to these hazards can be located, quantified through analysis of historical records, and plotted on county-wide and municipality base maps. Areas with certain characteristics that contribute to these hazards or increase vulnerability to these hazards can be identified.

Assuming that transportation accidents are as likely to occur in the future as they have occurred in the past, and based on the available data, Lancaster County can expect the following each year:

- Approximately 5,475 major vehicle accidents. (The actual number of vehicle accidents in Lancaster County may be much higher; however, this figure is based on vehicle accidents captured from PennDOT from 2012-2016.)
- Two aircraft incidents
- Two railroad incidents

Based on the Risk Factor Methodology Probability Criteria, the probability of a transportation accident in the categories listed above is considered to be *highly likely* (see Table 4.4-1).



#### **4.3.15.5 Vulnerability Assessment**

The entire County has been identified as the hazard area for transportation accidents. This section evaluates and estimates the potential impact of transportation hazards on Lancaster County in the following sections:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impacts on: (1) life, safety, and health; (2) general building stock; (3) critical facilities; (4) the economy; and (5) future growth and development
- Further data collections that will assist in understanding this hazard over time

##### **Overview of Vulnerability**

Several types of County transportation rely on use of roadways. Hazards associated with transportation can include natural hazards affecting the roadway, type of material being transported, or hazards pertaining to the transportation medium itself. Multiple major roadways (interstates and other major highways) within the County are used by residents and commuters, and these are means for transporting all types of materials, including HazMats. A major accident on any of these major roadways is possible and could minimally or severely affect the County.

##### **Data and Methodology**

Regarding this hazard, data were obtained from the County, local officials, and federal data sources. In addition, the Planning Team has identified roadways within the County that are vulnerable to other natural hazards (such as flooding).

##### **Impact on Life, Health, and Safety**

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 proportions of the population located indoors and outdoors.

The County and its municipalities are prepared to manage and respond to transportation hazards.

##### **Impact on General Building Stock, Critical Facilities, Economy and Future Development**

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. As discussed in Section 2.4 of this HMP, areas targeted for future growth and development have been identified across Lancaster County. Increased development in the County and region will lead to increased road traffic.

##### **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.

Lancaster 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





### ***SECTION 4.3.15: RISK ASSESSMENT – TRANSPORTATION ACCIDENT***

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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 (see Section 4.3.13 for a discussion of environmental impacts due to transportation accidents), or repair damaged infrastructure would be useful for developing mitigation options.



### 4.3.16 Utility Interruption

A utility interruption could include power failure, potable water service outage, telecommunications infrastructure failure, natural gas infrastructure failure, or sewer infrastructure failure. 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 the 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 the 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 Lancaster 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.

This section describes the location and extent, range of magnitude, past occurrence, future occurrence, and vulnerability assessment for the utility interruption hazard for the Lancaster County Hazard Mitigation Plan (HMP).

#### 4.3.16.1 Location and Extent

Utility interruptions occur throughout Lancaster County, but are usually of small scale and short duration. Utility interruptions in Lancaster County are primarily power failures and are often a secondary impact of another hazard event. For example, severe thunderstorms or winter storms could bring down power lines and cause widespread disruptions in electricity service. Strong heat waves may result in rolling blackouts causing loss of power for an extended period. Local outages may be caused by traffic accidents or wind damage.

Local companies, such as PPL, which provide electricity to Lancaster County are capable of handling minor interruptions (Section 2 of this plan describes other utilities in the County). Interruptions are possible anywhere utility service has been installed. Some utility facilities are especially vulnerable. For instance, potable water interruption is possible when water intakes and many water control facilities are in the 1 percent annual chance floodplain, a flood of this magnitude may seriously impair water service. Section 4.3.3 provides more detail on possible flood impacts.

#### 4.3.16.2 Range of Magnitude

Generally speaking, the most severe utility interruptions are regional power outages. Regional loss of power affects lighting; heating, ventilation, and air conditioning (HVAC) and other support equipment; communications; fire and security systems; and refrigerators, which can in turn cause loss of water and sewer service, and food spoilage. These effects are especially severe for individuals with functional needs and the elderly.

At a minimum, power outages can cause short-term disruption in the orderly functioning of businesses, government operations, and private citizen functions and activities. Examples of everyday functions that would be affected by power outages include traffic signals, elevators, and retail sales. A worst-case scenario for utility interruption in Lancaster County would be a countywide power outage during winter months, forcing the evacuation of vulnerable populations.

Sabotage also plays a role in some utility outages. Sabotage may be the direct result of a malicious attack against utilities, or may be the secondary effect of the theft of copper wiring. In a report published in October 2010 titled “An Updated Assessment of Copper Wire Theft from Electric Utilities,” the U.S. Department of Energy’s



(DOE) Office of Electricity Delivery and Energy Reliability reported that United States-based utilities suffer copper thefts costing several million dollars annually (DOE 2010). The estimated minutes of outages experienced by utilities nationwide as a result of copper theft were 456,000 or about 7,600 hours (American Public Power Association [APPA] 2012).

### 4.3.16.3 Past Occurrence

Every year, Lancaster County is susceptible to minor utility interruptions either through technological failure or as the result of inclement weather. Table 4.3.16-1 below shows major utility interruptions in the County since 2002. In all, there were 62 incidents that included downed utility lines from 2002 to July 2017. Events that simply included downed trees and power lines are not listed in Table 4.3.16-1.

**Table 4.3.16-1: Utility Interruptions from 2002–2017**

Dates of Event	Event Type	Losses / Impacts
September 18, 2003	Hurricane Isabel	Winds resulted in hundreds of reports of trees or tree limbs being knocked down. These took down utility poles and power lines in many parts of the region, causing numerous power outages as well as property damage, with the most significant damage over the lower Susquehanna region. 1.4 million people lost power throughout the Commonwealth.
February 4, 2006	Thunderstorm Winds	About 4,000 customers lost power because of the storm.
August 25, 2007	Thunderstorm Winds	More than 7,000 power outages (largely due to lightning strikes) were reported.
December 15, 2007	Winter Storm	Numerous trees and wires down, which resulted in over 11,000 reported power outages.
June 10, 2008	Thunderstorm Winds	All utility companies across the Commonwealth were affected by power outages. The overall outage affected approximately 230,000 customers.
December 31, 2008	High Winds	Over 1,000 PPL customers were without power.
February 12, 2009	High Winds	Dozens of downed trees and utility lines were reported from East Drumore to West Donegal Townships. The high winds knocked out power to nearly 7,000 PPL customers.
July 21–22, 2011	Excessive Heat	The heat also put significant stress on power stations and HVAC systems with localized rolling blackouts in some locations.
August 28, 2011	Hurricane Irene	Strong to damaging winds caused thousands of power outages.
September 11, 2011	Tropical Storm Lee	PPL ordered the evacuation of its Holtwood Hydroelectric Plant. The generating plant was shut down.
October 29, 2011	Heavy Snow	More than a half-million (520,000) power outages statewide at the height of the storm. Warming shelters were opened to accommodate the power outages. Several secondary roads were closed due to the downed trees and wires.
October 29–30, 2012	High Wind	13,000 customers were without power.
February 4, 2014	Winter Storm	Downed trees and utility lines caused power outages to nearly 850,000 people across Pennsylvania, primarily in the southeast.

Sources: NCDC 2017

### 4.3.16.4 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. Based on the assumption that the County will experience severe weather annually, in addition to outages from other causes,



the future occurrence of utility interruptions in Lancaster County should be considered *highly likely* as defined by the Risk Factor Methodology probability criteria.

#### 4.3.16.5 Vulnerability Assessment

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 4.3.16-2 shows the demographic change in children and the elderly from 2000 through 2016. The population of all three vulnerable groups listed in Table 4.3.16-2 has increased, but none as dramatically as the population 65 years and over, which grew by nearly 40 percent since 2000. Data on individuals with special medical needs was not available.

**Table 4.3.16-2: Demographic Trends for Vulnerable Populations**

Vulnerable Population	2000 Census	2010 Census	2016 Census Estimate	2000 to 2016 Change
Children under 5 years	32,680	35,521	35,765	+3,085
Under 18 years	125,291	129,015	128,457	+3,166
65 years and over	66,060	77,780	92,089	+26,029

Source: U.S. Census Bureau 2017

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 Lancaster County’s population.

No data regarding economic impacts from utility interruptions in Lancaster County are available. However, utility interruptions can cause economic impacts stemming from lost income, spoiled food and other goods, costs to the owners or operators of the utility facilities, and costs to government and community service groups.



## 4.4 HAZARD VULNERABILITY SUMMARY

This section describes the methodology and tools used to support the risk assessment process.

### 4.4.1 Methodology

The risk assessment process used for this hazard Mitigation Plan (HMP) update is consistent with the process and steps presented in the Federal Emergency Management Agency (FEMA) 386-2, State and Local Mitigation Planning How-to-Guide, Understanding Your Risks – Identifying Hazards and Estimating Losses (FEMA 2001). This process identifies and profiles the hazards of concern and assesses the vulnerability of assets (population, structures, critical facilities, and the economy) at risk in the community. A risk assessment provides the foundation for the community's decision makers to evaluate mitigation measures that can help reduce the impacts of a hazard when one occurs (mitigation measures are described in Section 6). The risk assessment process consists of the following steps:

**Step 1:** The first step of the risk assessment process is to identify the hazards of concern. FEMA's current regulations only require an evaluation of natural hazards. Natural hazards are natural events that threaten lives, property, and other assets. Natural hazards often can be predicted to reoccur the same geographical locations because they are related to weather patterns or physical characteristics of an area.

**Step 2:** The next step of the risk assessment is to prepare a profile for each hazard of concern. These profiles assist communities in evaluating and comparing the hazards that can impact their area. Each type of hazard has unique characteristics that vary from event to event. That is, the impacts associated with a specific hazard can vary depending on the magnitude and location of each event (a hazard event is a specific, uninterrupted occurrence of a particular type of hazard). Further, the probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Finally, each hazard will impact different communities in different ways based on geography, local development, population distribution, age of buildings, and mitigation measures already implemented.

**Steps 3 and 4:** To understand risk, a community must evaluate its assets (Step 3) and determine which assets are exposed or vulnerable to the identified hazards of concern (Step 4). Hazard profile information—combined with data regarding population, demographics, general building stock, and critical facilities at risk—prepares the community to develop risk scenarios and estimate potential damages and losses for each hazard. Critical facilities in Lancaster County are presented in Section 2.6 of this HMP.

### Tools

To address the DMA 2000 requirements and better understand potential vulnerability and losses associated with hazards of concern, Lancaster County used standardized tools combined with local, state, and federal data and expertise to conduct the risk assessment. Tools used by Lancaster County to support the risk assessment are described in the sections below.

#### Hazards U.S. – Multi-Hazard (HAZUS-MH)

In 1997, FEMA developed a standardized model for estimating losses caused by earthquakes known as Hazards U.S. (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 geographic information system (GIS)-based software tool that applies engineering and scientific risk calculations that 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 utilities. To generate this information, HAZUS-MH has default data for inventory, vulnerability, and hazards. These default data can be supplemented with local data to provide a more refined analysis. Damage reports can include induced damage (such as inundation, fire, and threats posed by hazardous materials and debris) and direct economic and social losses (such as 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 current and future data output, and standardization of data collection and storage. The guidance "Using HAZUS-MH for Risk Assessment: How-to Guide" (FEMA 433) was relied upon to support the application of HAZUS-MH for this risk assessment and plan (FEMA 2015a). More information on HAZUS-MH is available at <https://www.fema.gov/hausus>.

In general, probabilistic analyses were performed to develop estimates of long-term average losses (annualized losses) for the earthquake and tornado/windstorm hazards, as well as an expected or estimated distribution of losses (mean return period losses) for the earthquake; flood, flash flood, and ice jam; and tornado/windstorm hazards. The probabilistic hazard analyses generate estimates of damage and loss for specified return periods. For annualized losses, HAZUS-MH 3.2 calculates the maximum potential annual dollar loss resulting from various return periods averaged on a per-year basis. The analysis consists of 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 (earthquake, flood, and wind hazards) each year is calculated.

The following custom methodologies in HAZUS-MH 3.2 (HAZUS-MH) were used to assess potential exposure and losses associated with hazards of concern for Lancaster County:

- **Inventory:** The default demographic data in HAZUS-MH 3.2, based on the 2010 U.S. Census, were used for the potential loss analysis (such as for sheltering and injuries) for each hazard model.

The default building inventory in HAZUS-MH 3.2 was used for Lancaster County. The occupancy classes available in HAZUS-MH 3.2 were condensed into categories (residential, commercial, industrial, agricultural, religious, government, and educational) to facilitate the analysis and the presentation of results. Residential loss estimates address both multi-family and single-family dwellings. Building replacement cost values are based upon 2014 RS Means Company, Inc. (RS Means) valuations. Both layers were merged and used to calculate the exposure for each hazard.

An updated critical facility inventory was also developed and incorporated into HAZUS-MH, replacing the default essential facility (police, fire, schools, etc.), transportation facility, and utility inventories for the earthquake, flood, and wind hazard models. This comprehensive inventory was developed by gathering input from the Lancaster County Emergency Management Agency and Lancaster County IT Department - GIS Division, participating municipalities, and the Planning Team.

The "user-defined facilities" category includes all assets that Lancaster County deemed critical to include in the inventory and that do not fit within a pre-defined HAZUS-MH facility category. These facilities include County buildings, senior care facilities, and municipality-owned buildings.



HAZUS-MH 3.2 incorporates two types of census block-based data: homogenous and dasymetric. Homogenous census blocks display the full extent of each block, while the dasymetric census blocks have had homogenous undeveloped areas (bodies of area, forests, etc.) removed. The dasymetric blocks were developed to provide more accurate loss estimates by excluding uninhabited and undeveloped areas of a census block.

- **Earthquake:** A probabilistic assessment was conducted for Lancaster County for the 500-year mean return period (MRP) in HAZUS-MH 3.2 to analyze the earthquake hazard and provide a range of loss estimates for Lancaster County. Default demographic and building stock data from HAZUS-MH 3.2 and updated critical facility inventories were used for the analysis. The probabilistic method uses information from historic earthquakes and inferred faults, locations, and magnitudes and computes the probable ground-shaking levels that may 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 a factor of two or more*” (FEMA 2015a). However, the HAZUS potential loss estimates are acceptable for the purposes of this HMP.

Ground shaking is the primary cause of earthquake damage to manmade 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 Reduction Program (NEHRP) developed five soil classifications that impact the severity of an earthquake, ranging from A to E. Soil classified as 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 Lancaster County at the time of this analysis. Soils were estimated as NEHRP soil Type D across Lancaster 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.

- **Flood, Flash Flood, and Ice Jam:** The FEMA Digital Flood Insurance Rate Map (DFIRM) dated April 2016 was used to evaluate exposure for the 1- and 0.2-percent annual chance flood events and determine potential future losses for the 1 percent annual chance event in Lancaster County. These flood events are generally considered by planners and evaluated under federal programs such as the National Flood Insurance Program (NFIP). A 1 percent annual chance flood depth grid was generated by FEMA (Risk Map 2016) for use in HAZUS-MH 3.2 to estimate potential losses within the County. Additional areas of the floodplain not included in the depth grid were generated utilizing the FEMA floodplains and digital elevation model (DEM) generated from the County’s 5-foot contour data.
- **Tornado/Windstorm:** After reviewing historic data, a HAZUS-MH 3.2 probabilistic analysis was performed for the 100-year and 500-year MRP events to analyze the wind hazard losses for Lancaster County. The probabilistic hurricane hazard contains data on historic hurricane events and wind speeds; the model activates a database of thousands of potential storms with tracks and intensities reflecting the full spectrum of Atlantic hurricanes observed since 1886, and then identifies those storms with tracks associated with the County. It also includes surface roughness and vegetation (tree coverage) maps for the County. Surface roughness and vegetation data support the modeling of wind force across various types of land surfaces. Default demographic and building stock data (homogenous census block) from HAZUS-MH 3.2 and updated critical facility inventories were used for the analysis.



### ESRI ArcGIS

For the following hazards, ArcGIS was used to assess potential exposure for hazards of concern with delineated hazard areas in Lancaster County. The defined hazard areas were overlaid upon the asset data (population, building stock, critical facilities) to estimate the exposure to each hazard. The limitations of these analyses are recognized, and as such the analyses are only used to provide a general estimate:

- **Environmental Hazards:** The Federal Superfund Amendments and Reauthorization Act (SARA), the Emergency Planning and Community Right to Know Act, and the Commonwealth of Pennsylvania set up requirements for producing, storing, and transporting hazardous materials. These hazardous materials are susceptible to spilling at the facilities or during transit. The Pennsylvania Department of Transportation State Roads layer (2011) was used to define the hazard area around major roadways. The hazard area was defined as a ¼ mile buffer around the Interstate, State, and U.S. roadways. A ¼ mile buffer was also placed around the pipelines and rail lines provided by the County GIS Division. Additionally, SARA II facilities were provided by the County, along with specified vulnerability radii for each facility. These in conjunction with the ¼ roadway buffer were used to estimate the exposure to the asset data.
- **Nuclear Incident:** Populations and critical facilities within the Plume Exposure Pathway Emergency Planning Zone (EPZ), which is a 10-mile radius around the facility, or the Ingestion Exposure Pathway EPZ, which is a 50-mile radius around the facility, of a nuclear power plant are susceptible to a nuclear incident. Lancaster County is located within both the Plume Exposure EPZ the Ingestion Exposure Pathway EPZs of the Three Mile Island Nuclear Power Plant located in Dauphin County, PA and the Peach Bottom Nuclear Power Plant in York County, PA. The entire County is located within the 50-mile EPZ for both nuclear power plants; therefore, the 10-mile EPZs were used to define the hazard area for a nuclear incident.
- **Wildfire:** The wildfire urban interface (WUI), obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison was used to define the wildfire hazard areas. The University of Wisconsin-Madison wildland fire hazard areas are based on the 2010 Census and 2006 National Land Cover Dataset and the Protected Areas Database. For the purposes of 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. The defined hazard area was overlaid upon the asset data (population, building stock, critical facilities) to estimate the exposure to each hazard.

#### 4.4.2 Ranking Results

As discussed in Section 4.2, Hazard Identification, a comprehensive range of natural and non-natural hazards that pose significant risk to Lancaster County were selected and considered in this plan. However, the communities in Lancaster 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 most effectively and efficiently manage risk.

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 Pennsylvania Emergency Management Agency’s (PEMA) All-Hazard Planning Standard Operating Guide (PEMA October 2013). 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:

**Example Equation**

$$\text{RF Value} = [(Probability \times .30) + (Impact \times .30) + (Spatial \text{ Extent} \times .20) + (Warning \text{ Time} \times .10) + (Duration \times .10)]$$

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 4.4-1 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 4.4-2 shows the five risk assessment categories' values for each of Lancaster County's hazards and each hazard's RF.



Table 4.4-1. Summary of Risk Factor (RF) Approach

Summary of Risk Factor (RF) Approach				
Risk Assessment Category	Degree of Risk			Weight Value
	Level	Criteria	Index	
<b>PROBABILITY</b> <i>What is the likelihood of a hazard event occurring in a given year?</i>	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 PROBABILITY	4	
<b>IMPACT</b> <i>In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?</i>	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	
<b>SPATIAL EXTENT</b> <i>How large of an area could be impacted by a hazard event? Are impacts localized or regional?</i>	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	
<b>WARNING TIME</b> <i>Is there usually some lead time associated with the hazard event? Have warning measures been implemented?</i>	MORE THAN 24 HRS	SELF-DEFINED	1	10%
	12 TO 24 HRS	SELF-DEFINED	2	
	6 TO 12 HRS	SELF-DEFINED	3	
	LESS THAN 6 HRS	SELF-DEFINED	4	
<b>DURATION</b> <i>How long does the hazard event usually last?</i>	LESS THAN 6 HRS	SELF-DEFINED	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 2013





Table 4.4-2. Risk Ranking for Lancaster County

HAZARD RISK	HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
<b>HIGH</b>	Flood, Flash Flood, and Ice Jam	4	4	2	3	3	3.4
	Tornado, Windstorm	3	3	4	4	2	3.2
	Invasive Species	4	2	4	1	4	3.1
	Pandemic	2	4	4	1	4	3.1
	Utility Interruptions	4	3	4	4	2	3.1
	Winter Storm	3	2	4	2	2	2.7
	Environmental Hazards	4	2	1	4	2	2.6
	Drought	3	1	4	1	4	2.5
	Hailstorms	3	1	4	4	1	2.5
<b>MODERATE</b>	Transportation Accidents	4	1	2	4	1	2.4
	Radon Exposure	3	1	3	1	4	2.3
	Earthquake	2	1	4	4	1	2.2
	Wildfire	4	1	1	4	1	2.2
	Subsidence and Sinkholes	3	1	1	4	3	2.1
<b>LOW</b>	Nuclear Incidents	1	2	2	4	2	1.9
	Dam Failure	1	1	1	3	2	1.3

Based on these results, there are 9 high-risk hazards, 5 moderate-risk hazards, and 2 low-risk hazards in Lancaster County. Mitigation actions were developed for all high-risk, moderate-risk, and low-risk 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. Mitigation actions related to future public outreach and emergency service activities are identified to address low-risk hazard incidents.

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 4.4-3 shows the different municipalities in Lancaster County and whether their risk is greater than (>), less than (<), or equal to (=) the RF assigned to the County as a whole.



Table 4.4-3. Jurisdictional Risk by Municipality

Municipality	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1
Adamstown Borough	=	>	=	=	>	=	=	=	=	>	=	<	<	<	=	=
Akron Borough	<	=	=	=	<	>	=	<	=	<	=	=	>	<	=	=
Bart Township	=	=	=	=	=	=	>	<	=	<	=	=	>	=	=	=
Brecknock Township	=	=	=	=	=	=	=	<	=	>	=	=	<	=	=	=
Caernarvon Township	>	=	=	=	=	=	=	=	=	>	>	<	=	<	=	=
Christiana Borough	<	=	>	=	<	>	=	<	=	<	=	=	>	<	=	=
Clay Township	=	=	=	=	=	=	=	=	=	>	=	=	<	=	=	=
Colerain Township	=	=	=	=	=	=	>	<	=	<	=	=	>	=	=	=
Columbia Borough	<	=	<	<	<	>	=	=	=	<	<	<	=	>	>	<
Conestoga Township	>	>	>	=	=	<	=	=	=	>	=	=	>	=	<	=
Conoy Township	=	=	=	=	=	=	=	<	=	>	=	=	>	>	=	=
Denver Borough	=	=	=	=	=	=	=	>	=	<	=	<	>	<	>	>
Drumore Township	=	=	=	=	=	=	>	<	=	>	=	=	>	>	=	=
Earl Township	=	=	=	=	=	=	=	<	=	>	=	=	>	=	=	=
East Cocalico Township	=	=	=	=	=	=	=	>	=	=	>	=	=	<	>	=
East Donegal Township	=	=	=	=	=	=	<	>	=	<	=	=	>	>	=	=
East Drumore Township	=	=	=	=	=	=	>	<	=	<	=	=	>	>	=	=
East Earl Township	>	=	>	=	>	=	=	>	=	>	=	=	<	<	=	=
East Hempfield Township	=	=	=	=	=	>	=	=	=	=	=	<	=	<	>	=
East Lampeter Township	>	=	>	=	=	=	=	>	=	=	=	>	=	<	>	>



SECTION 4.4: HAZARD VULNERABILITY SUMMARY

Municipality	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1
East Petersburg Borough	=	=	=	=	=	=	=	=	=	=	=	<	=	<	=	=
Eden Township	>	=	>	=	=	=	=	<	=	<	>	=	>	<	=	=
Elizabeth Township	=	=	=	=	=	=	=	<	=	>	=	=	<	=	=	=
Elizabethtown Borough	<	=	=	=	<	>	=	<	=	>	=	=	>	>	=	=
Ephrata Borough	=	=	=	=	>	=	=	>	>	=	=	=	=	<	=	=
Ephrata Township	=	=	=	=	=	=	=	>	=	<	=	=	=	<	=	=
Fulton Township	<	<	<	<	<	<	<	<	<	>	>	>	<	>	>	>
Lancaster City	<	=	=	=	<	>	=	>	=	>	=	=	>	<	=	=
Lancaster Township	=	=	>	=	=	=	=	>	=	<	=	=	<	=	=	=
Leacock Township	>	=	=	=	=	<	=	>	>	<	>	<	<	<	=	=
Lititz Borough	<	=	>	=	=	=	=	>	=	<	=	<	=	<	=	=
Little Britain Township	=	=	=	=	=	=	=	<	=	<	=	=	>	>	=	=
Manheim Borough	<	=	>	=	<	>	>	>	=	<	=	=	>	<	=	=
Manheim Township	=	=	=	=	=	=	>	<	=	>	=	=	<	=	=	=
Manor Township	=	=	=	=	=	=	=	>	=	<	=	=	<	=	=	=
Marietta Borough	=	=	=	=	<	=	=	>	=	=	=	=	=	<	>	=
Martic Township	=	=	=	=	=	=	>	<	=	>	=	=	>	>	=	=
Millersville Borough	<	=	<	=	=	=	=	>	=	<	=	<	=	<	<	=
Mount Joy Borough	<	=	=	=	<	>	=	>	=	>	=	=	>	<	=	=
Mount Joy Township	=	=	<	=	=	=	=	=	=	=	=	=	=	>	>	=
Mountville Borough	<	=	=	=	<	>	=	<	=	<	=	=	<	<	=	=
New Holland Borough	<	=	<	=	<	>	=	<	=	<	=	=	>	<	=	=





SECTION 4.4: HAZARD VULNERABILITY SUMMARY

Municipality	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1
Paradise Township	=	=	=	=	=	<	>	=	=	=	>	=	>	<	>	>
Penn Township	>	=	<	=	<	>	=	<	=	>	=	>	=	<	=	=
Pequea Township	=	=	=	=	=	=	=	>	=	<	=	=	<	=	=	=
Providence Township	=	=	=	=	=	=	>	<	=	>	=	=	>	>	=	=
Quarryville Borough	<	=	>	=	<	>	=	>	=	>	=	=	>	<	=	=
Rapho Township	=	=	>	=	>	=	=	>	=	>	=	<	>	<	>	=
Sadsbury Township	>	=	<	=	=	>	=	=	<	=	=	=	<	=	>	<
Salisbury Township	=	=	=	=	=	=	=	<	=	>	=	=	<	=	=	=
Strasburg Borough	=	=	=	=	=	=	>	>	=	=	=	<	=	<	=	=
Strasburg Township	=	=	=	=	=	=	>	=	=	=	=	<	=	=	=	=
Terre Hill Borough	<	=	<	=	=	=	=	<	=	<	=	<	=	<	=	=
Upper Leacock Township	>	=	=	=	=	=	=	=	=	=	=	=	>	<	>	=
Warwick Township	=	=	=	=	=	=	=	=	=	=	=	=	=	<	=	=
West Cocalico Township	<	=	<	<	=	=	>	<	>	>	=	<	>	=	<	=
West Donegal Township	=	=	=	=	=	=	=	<	=	>	=	=	>	>	=	=
West Earl Township	>	=	=	=	>	=	=	=	=	=	=	=	>	<	>	=
West Hempfield Township	=	=	=	=	=	=	=	=	=	<	=	<	=	>	>	=
West Lampeter Township	=	=	<	=	<	=	>	>	=	<	=	<	=	=	=	=



### 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. In events that are localized, losses may be lower, 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 and Appendix A. As summarized in the Methodology subsection the 2010 U.S. Census demographic data and default building inventory (2015) and associated replacement cost value of the structures and contents in HAZUS-MH 3.2 were used for Lancaster County. Replacement cost value is the current cost of returning an asset to its pre-damaged condition, using present-day cost of labor and materials. A comprehensive critical facility inventory update was developed by gathering input from the Lancaster County Emergency Management Agency, Lancaster County Department of Information Technology – GIS Division, participating municipalities, and the Planning Team.

Potential loss estimates provided in Section 4.3 (Hazard Profiles) were either based on historic losses, current-condition losses, and/or predictive losses by performing spatial analyses in GIS and hazard probabilistic modeling. In summary, HAZUS-MH was used to estimate potential losses for the earthquake, flood, and hurricane/tropical storm/Nor'easter hazards. For many of the hazards evaluated, historic 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: environmental hazards; flood, flash flood, and ice jam; landslide; nuclear incident; 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.

For this risk assessment, the 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 and the amount of advance notice residents have to prepare for a specific hazard event

These factors can result in a range of uncertainty in loss estimates, possibly by a factor of 2 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, Lancaster County will collect additional data to assist in developing refined estimates of vulnerabilities to natural and non-natural hazards.

For more details on the potential loss estimates for each hazard, refer to Section 4.3 (Hazard Profiles).

### 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 main indicators of vulnerability change in Lancaster County.

Although Lancaster County experienced a 14.41 percent increase in population from 2000 to 2016, as summarized in Section 2, according to the Pennsylvania Population Projections from the Center for Rural Pennsylvania, the population in Lancaster County is projected to increase over the coming decades. Unfortunately, the population projections are not available at the municipal-level.

Continued analysis of the age structure in Lancaster County will provide deeper understanding on future vulnerability to at-risk populations. Approximately 16.2 percent of Lancaster County's population is age 65 or older. As these residents continue to age in the County, they may have increased special needs. For example, many residents in this age bracket may be unable to drive; therefore, development of special evacuation plans for them may be necessary. They may 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. Lancaster County's combined under-5-years-of-age and over-65 populations constitute approximately 22.8 percent of its population.

Approximately 2.5 percent of Lancaster County's population lives in group quarters, which are communal settings that can include inmates in a prison, students in a dorm, or elderly or mentally disabled in group-care homes. Many residents living in group quarters have special needs. It is important to ensure that each group-quarter facility has its own emergency plan to account for the unique needs of its residents during a hazard event.

Approximately 5.8 percent of Lancaster County's population is not proficient in English. Future hazard mitigation strategies should consider addressing language barriers to ensure that all residents can receive emergency instructions.

In addition, remote and sparsely populated municipalities also face higher vulnerability to hazards because they do not have as easy access to care facilities or response personnel. For instance, the sparsely populated municipalities such as Drumore Township face increased vulnerability to tornadoes, windstorms, and winter storms due to isolation, access issues, and longer emergency response times.

The aging housing stock in Lancaster County is another source of current and future vulnerability in many hazard events. According to the American Community Survey Estimate (2012-2016, there are over 45,000 structures in Lancaster County built earlier than 1940 (22 percent of the building stock). As discussed throughout the risk assessment (Section 4), Lancaster County can experience strong gusts of wind during windstorms, tornadoes, hurricane, tropical storms, or Nor'easters. The structure of these older houses may be more at risk of destruction under these strong wind conditions. These structures may 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. 44 municipalities in Lancaster County have adopted subdivision regulations and 45 municipalities have adopted local zoning regulations. The Lancaster County Planning Commission reviews and reports on subdivisions, land developments, comprehensive plans, and municipal land use ordinance amendments. This broad range of planning review services is separated into two areas of activity: subdivision and land development reviews and community planning reviews. Most types of reviews are presented to the commission for its consideration at a public meeting prior to them being forwarded on to the respective municipalities and/or applicants.



Lancaster County and its municipalities have identified areas of potential new urban growth and will work with nonprofit and private-sector partners to plan and pursue these projects. A spatial analysis was conducted utilizing the urban growth areas and the delineated hazard areas to determine if any are potentially at risk. Where the urban growth areas intersect with the delineated hazard areas is shown in Figure 4.4-1 through Figure 4.4-4.



Figure 4.4-1. Urban Growth and Hazard Areas - West

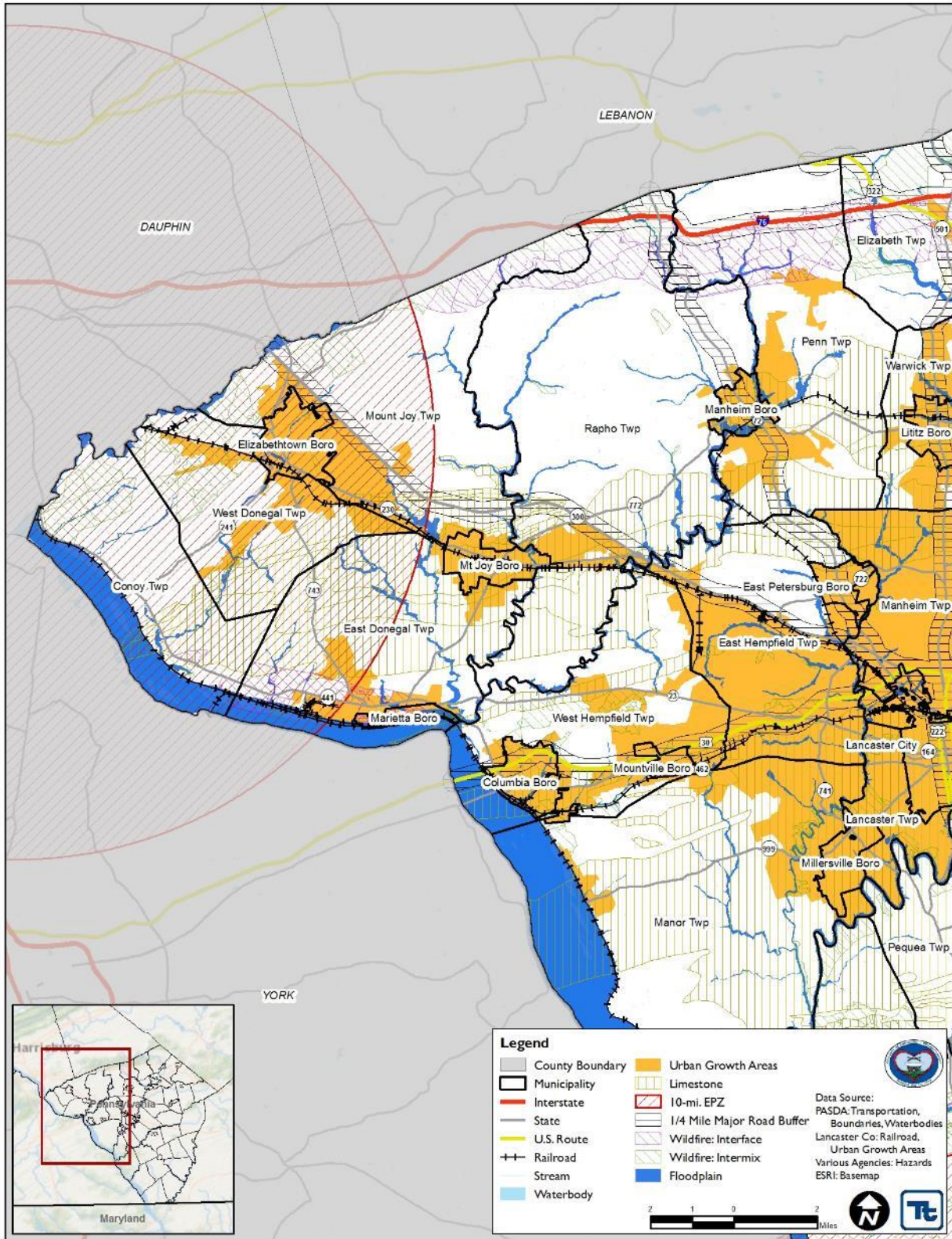






Figure 4.4-2. Urban Growth and Hazard Areas - North/East

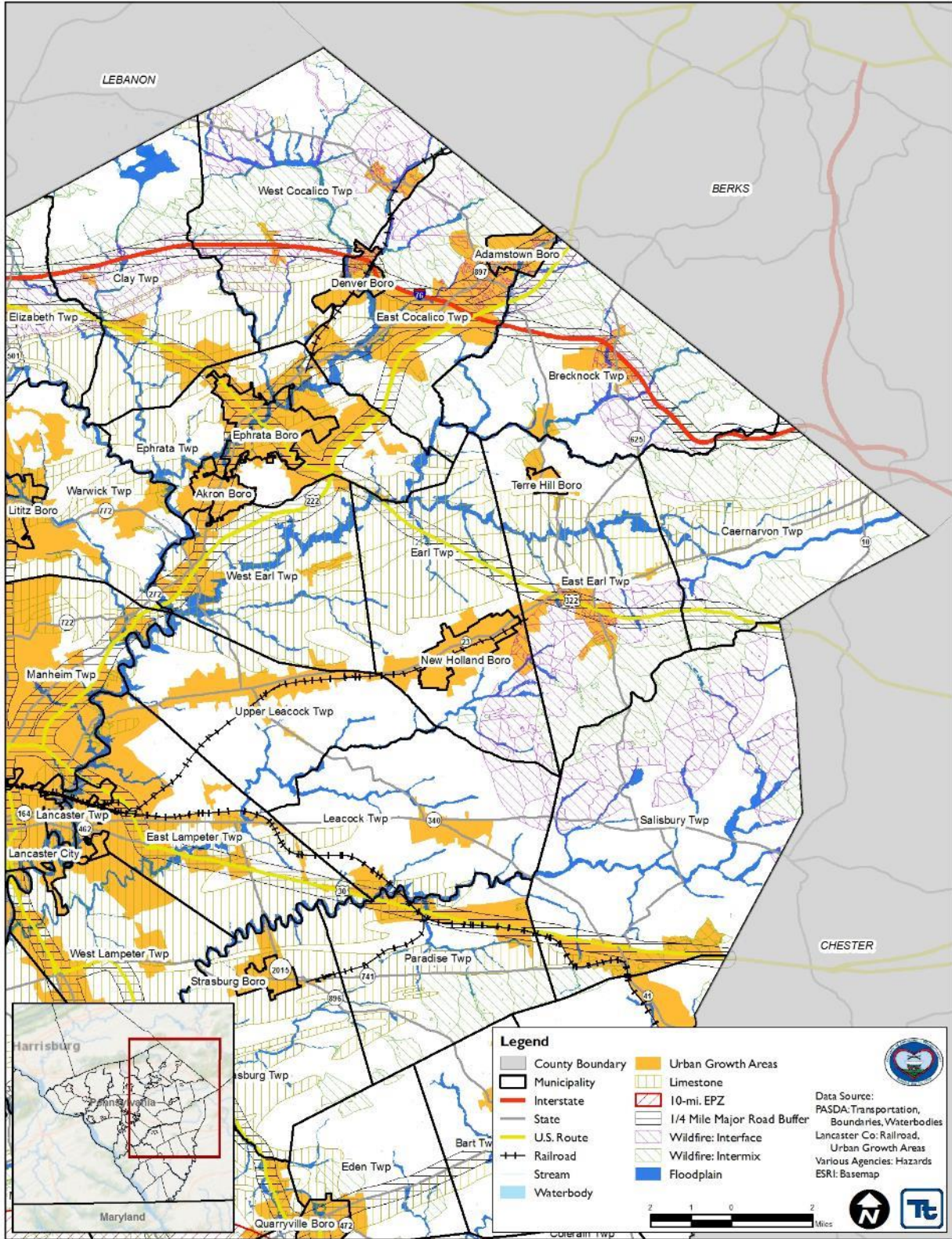






Figure 4.4-3. Urban Growth and Hazard Areas - Central/South

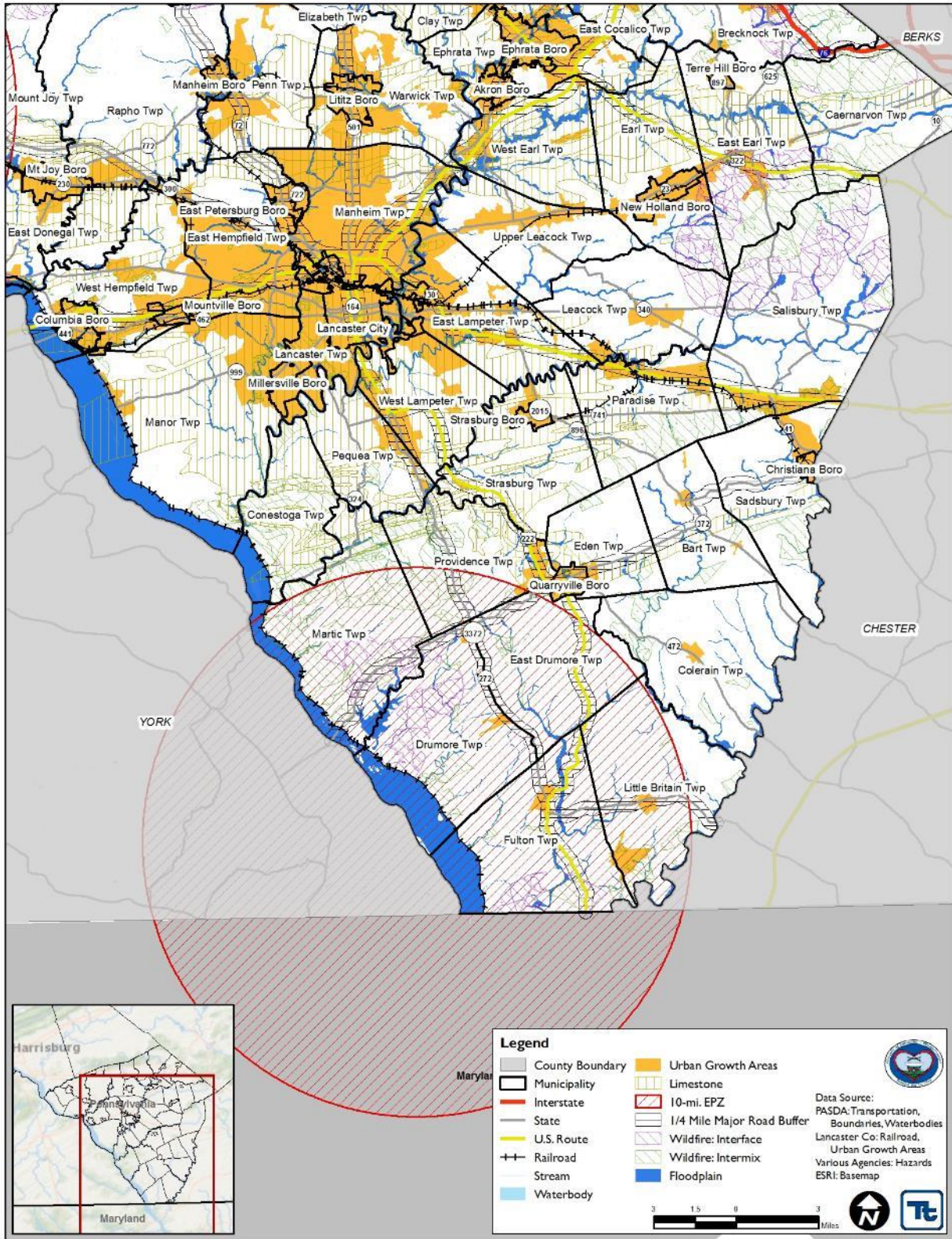
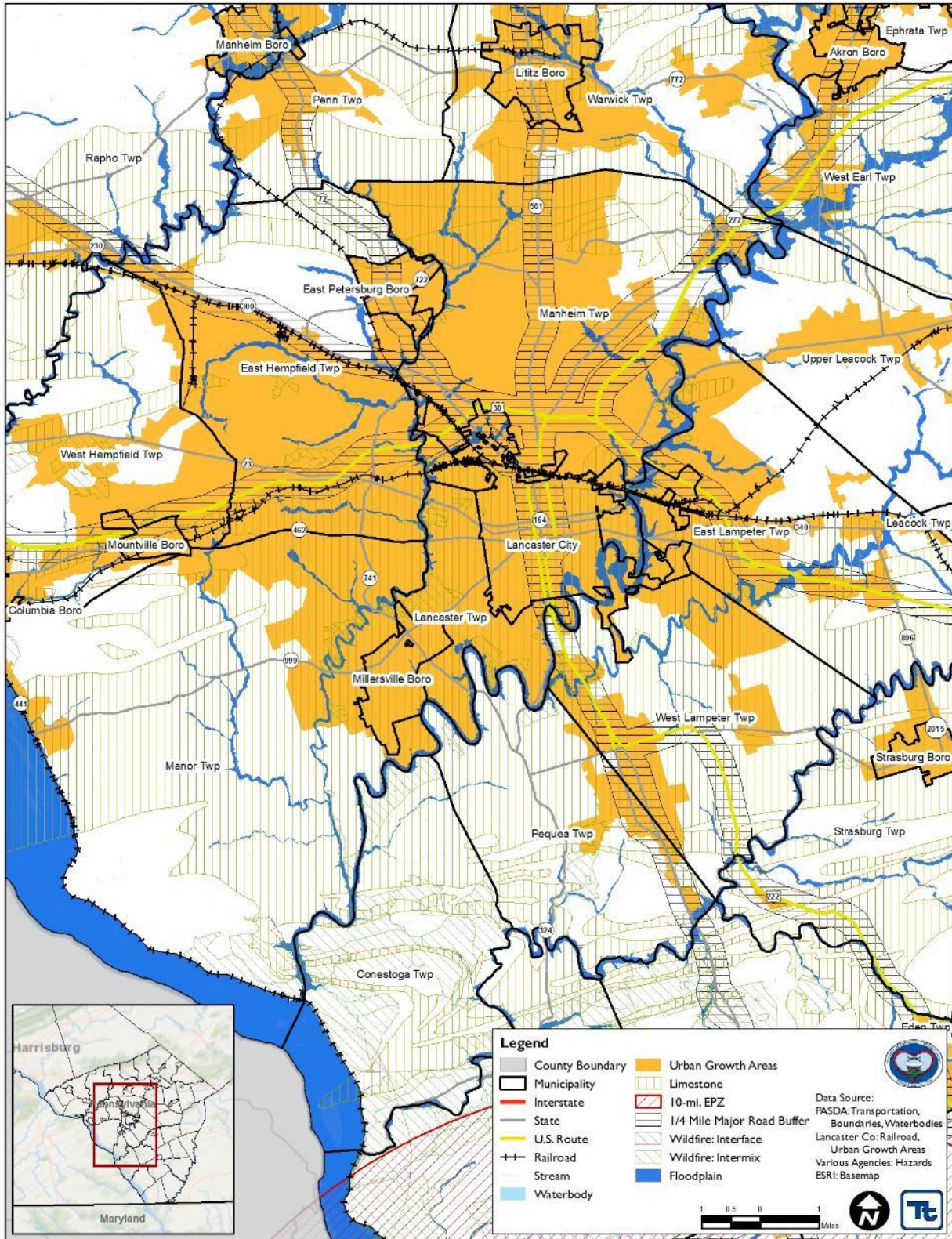






Figure 4.4-4. Urban Growth and Hazard Areas - Central





## 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.

The first step in organizing hazard mitigation capabilities or resources is to describe the basic approaches available to reduce hazard risks. According to the 2013 Pennsylvania Emergency Management Agency (PEMA) All-Hazard Mitigation Planning Standard Operating Guide (SOG), the following four general approaches 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, and may also include 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 2013) 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. Technical/technological resources 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.

During this plan update process, Lancaster County and all participating municipalities were surveyed to provide an updated assessment of their mitigation planning capabilities. Each municipality was provided with a Capability Assessment Survey, which was created based on the Capability Assessment Survey provided in Appendix 3 of the October 2013 edition of the PEMA All-Hazard Mitigation Planning SOG. The survey was provided to each of the municipal planning points of contact during the kickoff meetings and throughout the





planning process as needed. Capability Assessment Surveys completed by the municipalities are provided in Appendix D.

This section describes and summarizes the federal, state, county, and local capabilities to address hazard risk in Lancaster County.

## **5.1 UPDATE PROCESS SUMMARY**

During the plan update process, Lancaster 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 2013 edition of the PEMA All-Hazard Mitigation Planning SOG (PEMA 2013). The survey was provided to each of the municipal planning points of contact at the Planning Team kickoff meeting. Completed Capability Assessment Surveys, whether completed by hand, electronically, or filled in working alongside the planning consultant, are provided in Appendix D.

Lancaster 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 Lancaster County communities.

This section describes and summarizes the federal, state, county, and local capabilities to address hazard risk in Lancaster 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 Lancaster County's municipalities have a direct effect on establishing new capability functions in the community or strengthening existing capabilities.

Lancaster County and most of its municipalities updated and completed the Capability Assessment Survey (Appendix D). If municipalities did not update or partially updated their capabilities information, the same information provided by those municipalities for the 2014 Hazard Mitigation Plan (HMP) was carried forward into this plan 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.



## County and Municipal Planning Capabilities

### Lancaster County Comprehensive Plan

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 comprehensive plan. In addition, the MPC requires counties to update the comprehensive plan every 10 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.

The County's comprehensive plan, "Envision Lancaster County," is slated to guide Lancaster County until 2030. The "Envision Lancaster County" comprehensive plan is composed of three components: a policy element, a growth management element, and six functional elements.

The policy element, entitled "Revisions," contains the vision and goals of the comprehensive plan. The comprehensive plan also includes six key focus areas and policies and actions that need to be implemented to reach the vision for the future. This structure is designed to show the close relationship and interconnectedness between different planning issues. In addition, this element of the plan is designed to help Lancaster County focus its energy on the issues that the community has said concerns them the most.

- Protecting and Preserving our natural and cultural heritage
- Revitalizing our urban communities
- Developing livable communities
- Creating a sustainable economy
- Celebrating, investing in, and mobilizing the talents of Lancaster County's human resources
- Promoting strong leadership, awareness, responsibility, and involvement in community issues

"Balance," the growth management element of the comprehensive plan, was updated in 2006. This update is a guide for growth and preservation in Lancaster County through 2030. The growth management element establishes a framework for future land use and development in Lancaster County and its municipalities consistent with the vision and key focus areas set forth in "Revisions," the policy element.

The growth management element establishes the overall direction, tools, and an agenda for action by municipalities and Lancaster County to work together to realize the future to which Lancastrians aspire. Key policies and objectives build on the two previous versions of the growth management element (1993 and 1997) while setting some significant new directions for the management of growth in Lancaster County over the next 25 years.

The six functional elements are as follows:

- **Heritage**, the cultural heritage element, provides a blueprint for the creation of a well-organized, smoothly functioning preservation system of Lancaster County's cultural heritage.
- **Greenscapes**, the green infrastructure element, provides a blueprint for accommodating appropriate growth and development while preserving the region's most valuable natural resources, native species, cultural assets, and agricultural economy.
- **Choices**, the housing element, provides a plan to meet the housing needs of all current and future residents regardless of cost or location.
- **Tourism**, the tourism element plans to increase the economic, social, and environmental benefits of tourism in Lancaster County.



- **Connections**, the transportation element, provides a long-range transportation plan for Lancaster County. It lays the groundwork for a multi-modal transportation system to meet Lancaster County's needs in the 21<sup>st</sup> century.
- **Blueprints**, the water resources element, promotes watershed-based integrated water resources planning and management to protect, conserve, and improve water resources in Lancaster County.

Although the MPC requires that municipal plans be in accord with the County plan, the code provides no measures for ensuring this occurs. Several municipalities have adopted single- or multi-jurisdictional regional comprehensive plans. The County is also working on a new comprehensive plan to be entitled Places 2040 adopted in the fall of 2018.

### 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 provide 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.

The Lancaster County Board of Commissioners adopted “Blueprints: An Integrated Water Resources Plan for Lancaster County (Act 247 and 167)” (referred to as “Blueprints”) on October 10, 2012 as an element of the Lancaster County Comprehensive Plan. The element promotes watershed-based integrated water resources planning and management to protect, conserve, and improve water resources in Lancaster County. It advances the concepts of integrated water resources planning (IWRP) and integrated water resources management (IWRM) by emphasizing the relationships among water resource issues and programs, such as stormwater management and drinking water supply or source water protection and manure management, and recommending strategies to address these issues more effectively.

Blueprints was developed as a strategic plan containing only three strategies that, when implemented, will protect, conserve, and improve surface and groundwater resources for human and non-human use. To realize the goal of protecting, conserving, and improving water resources, the following objectives were identified:

- Provide water, sewer, and stormwater infrastructure to accommodate 85 percent of future growth in Urban Growth Areas.
- Deliver essential infrastructure services to both urban and rural settlements in a cost-effective manner.
- Reduce the number of miles of impaired streams.
- Institutionalize Integrated Water Resources Management in Lancaster County.
- Increase the use of green infrastructure in water resources management.

The Act 167 provisions contained in Blueprints, including the model ordinance, were approved by the Pennsylvania Department of Environmental Protection (PA DEP) on May 21, 2013. According to Section 11(b) of Act 167, municipalities subject to the Stormwater Management Plan must enact or amend and implement such ordinances as necessary to regulate development in a manner consistent with the Stormwater Management Plan by November 21, 2013. Municipalities are encouraged to use the model ordinance included in the plan.

### Natural Resource Planning

Lancaster County has contributed to several documents related to natural resource planning. The 2008 Natural Heritage Inventory was compiled and written by the Pennsylvania Natural Heritage Program (PNHP) of the Western Pennsylvania Conservancy (WPC). It builds on the original Natural Areas Inventory of Lancaster





County completed in 1990 by the Pennsylvania Science Office of The Nature Conservancy. The document is intended as a conservation tool and includes information on the locations of rare, threatened, and endangered species and of the highest quality natural areas in Lancaster County.

The Alternative Energy Guide lists policy points that municipal officials should address in determining the appropriate location and scale of alternative energy systems, including wind, solar, manure digesters, outdoor wood-fired boilers, and geothermal. The list addresses both smaller scale accessory-type applications most typically seen in residential and in some non-residential zoning districts as well as more land-consumptive and impact-intensive uses typically seen in rural and agricultural zoning districts. A second part of the guide provides examples of specific zoning ordinance language.

The Lancaster Planning Commission also has developed two zoning tools for municipalities to consider integrating into existing zoning ordinances: the first is a collection of Natural Resource Protection Standards that would be in the nature of an “overlay”, applicable in all zoning districts of a municipality; and the second is a suggested set of regulations for a Model Conservation District. Both are focused on incorporating natural resource identification and protection into subdivision and development proposals through site specific performance standards.

Finally, the Lancaster County Conservation District encourages stewardship and conservation of natural resources. A Board of Directors made up of local citizen volunteers leads the Conservation District, studying natural resource issues and making decisions that enhance and protect communities within Lancaster County. The Conservation District employs managers and staff personnel to serve clientele from both farm and urban communities reflecting complex and ever changing environmental and land use issues. The Conservation District provides assistance to citizens, landowners, organizations, agencies, and local governments in critical land use decisions (both regulatory and non-regulatory), water quality issues, nonpoint source pollution abatement, and other resource-related areas. The Conservation District, under delegated authority from the PA DEP and the Pennsylvania Conservation Commission, administered the Erosion and Sediment Pollution Control Program at a Level II authority under the Chapter 102 regulations and the Pennsylvania Clean Streams Law. It also operates the Dirt, Gravel, and Low Volume Road Program; Environmental Stewardship and Watershed Protection Grant Program; Chesapeake Bay Program; Agricultural Land Preservation; and numerous environmental education programs.

### Open Space Planning

Lancaster County has prepared several plans with the goal of preserving open space in the County for recreational and environmental purposes. These plans include chapters in the Lancaster County Comprehensive Plan (Lancaster County Planning Commission 2006) and the Connections in Our Landscape Greenways and Open Space Network Plan (The Southern Alleghenies Planning and Development Commission 2007). A greenway is a corridor of open space. The plan identifies regional conservation and cultural, recreational, conservation, and scenic greenways and evaluates ways local ordinances may protect greenways.

As part of the Places 2040 update of the County comprehensive plan, the Lancaster County: Growing & Preserving, 2002–2015 Report takes stock of how Lancaster County has changed between 2002 and 2015, how it has grown (in terms of land development), and what land has been preserved during that time. The report builds on the “Envision Lancaster County” comprehensive plan, which provided a strong foundation of policies and actions to direct growth to appropriate areas, protect agricultural and natural resources, and encourage intermunicipal cooperation.

The Lancaster County: Buildable Lands, 2015–2040 report is also part of the Places 2040 update and further builds upon the Growing and Preserving Report. The report aims to determine how much of the land remaining inside Lancaster County’s Urban Growth Areas (UGAs) and Village Growth Areas (VGAs) could potentially be developed. The report contains an inventory of buildable lands inside the County’s UGAs and VGAs as of 2015.

The Steering Committee will comment on open space issues identified in these plans during project reviews.



## Informational Resources

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Lancaster County has a variety of informational resources available, and many of the publications discussed previously are available for review by the public on the Lancaster County Planning Commission website: <https://lancastercountypanning.org/>. Information is also posted on municipal websites, and hard copies of informational materials are available in municipal offices.

## Lancaster County Emergency Management

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The Lancaster County Emergency Management Agency (LEMA) maintains a strong emergency management capability that supports Lancaster County. The County operates an emergency 9-1-1 call center and activates its own emergency operations center (EOC) during emergencies. In addition, the County provides or supports emergency service programs and measures, including emergency response, public alert and warning systems, emergency communications systems, hazard event monitoring systems, and public information and outreach programs. Capabilities include the 9-1-1 center, EOC, emergency service measures, emergency response planning, public information programs, and geographic information system, which are described in the sections below.

### 9-1-1 Center

9-1-1 is the telephone number used to report emergencies. Citizens use the service in the event of the presence or potential for an immediate threat to life or property and to request response from police, fire, or emergency medical services (EMS) agencies. Examples include reporting a crime that has just occurred or is in progress; describing an odor such as gas or reporting a fire; or calling for assistance with a sick or injured person who requires treatment and possibly transportation to a hospital emergency department. The 9-1-1 system is capable of accepting calls from hearing or speech-impaired callers using a Telecommunications Device for the Deaf (TDD), and text messages. Each county in Pennsylvania operates a 9-1-1 Public Safety Answering Point (PSAP). Personnel at these PSAPs would need to coordinate their efforts in a regional hazard event. Computerized mapping of streets with address information is critical for emergency response purposes. The 9-1-1 center is also used to alert citizens during an emergency.

### Emergency Operations Center

In the event of an impending emergency or disaster, Lancaster County would activate its EOC. The purpose of the EOC is to manage an emergency response and coordinate the distribution of resources to a disaster incident. When the EOC is activated and becomes operational, it is staffed with highly trained, experienced personnel who have the authority, flexibility, imagination, and initiative needed to take command and make coordinated decisions relative to their field of expertise. EOC staffing includes personnel with skills from the disciplines below, in accordance with the National Response Framework (NRF) and the Commonwealth Emergency Operations Plan (EOP). Each discipline is assigned a coordinating agency and at least one primary agency and one support agency. In cases where more than one agency has primary jurisdiction over a discipline, a coordinating agency is designated from among them. Where there is only one agency with primary jurisdiction, that agency is also the coordinating agency. EOC disciplines are listed below:

- Transportation
- Communications and Warning
- Public Works and Engineering
- Firefighting
- Emergency Management
- Mass Care, Evacuation and Human Services
- Logistics Management and Resource Support
- Public Health and Medical Services
- Search and Rescue
- Oil and Hazardous Materials /Radiation
- Agriculture and Natural Resources



- Energy and Utilities
- Public Safety and Security
- Long-Term Community Recovery
- Public Information Officer (PIO) External Affairs

When activated, the EOC is in constant communication with the 9-1-1 center to ensure coordination of activities.

The LEMA/9-1-1 capabilities fall under two categories: emergency service measures and emergency response planning. These capabilities are described below.

### Emergency Service Measures

Emergency service measures protect people during and immediately following a disaster. The County monitors several systems that will disseminate emergency information and warnings. These monitoring systems include: Satellite Emergency Voice Alerting Network (SEVAN), Radio Amateur Civil Emergency Services (RACES), National Oceanic and Atmospheric Administration (NOAA) radios, 800-megahertz (MHz) Statewide radios, and EMNet, which are described below.

- SEVAN is the voice component of the satellite warning system. This allows PEMA, Pennsylvania counties, regional offices, and cities to communicate directly in real time regardless of the status of the telephone system. Warning messages are routinely broadcast by PEMA using the system.
- RACES is a group of amateur radio operators who donate their services in times of natural disaster or emergency. They provide communication to fire, police, and other agencies that need assistance. Amateur radio is a newer resource for Lancaster County, and is still in the process of being implemented.
- NOAA Weather Radio All-Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from a nearby National Weather System (NWS) office. NWR broadcasts NWS warnings, watches, forecasts, and other hazard information 24 hours a day. NWR also broadcasts warning and post-event information for all types of hazards, including natural, human-caused (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 9-1-1 telephone outages).
- The 800-MHz radio system provides two-way voice and data communications for all Lancaster County and State agencies. The primary function of this system is to provide redundant communications between the County and partner agency facilities in the event that the primary means of communication becomes interrupted.
- EMNet is a fast, reliable alert and warning system, with 362 terminals across Pennsylvania over 214 broadcast stations and 62 cable networks. It provides an avenue for text-based messages to be sent among system users.

### Emergency Response Planning

#### Emergency Operations Plan

The Lancaster County EOP documents the County's emergency preparedness planning. The EOP includes County-specific emergency response procedures during significant emergency events. Lancaster County's EOP complies with the National Incident Management System (NIMS) and is updated every 2 years. The updated risk assessment information from this HMP will be incorporated into subsequent updates to the EOP. The County's EOP was last adopted in 2010 and updated in 2018.

#### Mutual Aid Agreements

Lancaster County has mutual aid agreements (formal agreements) with the contiguous Pennsylvania counties as a result of the Pennsylvania Intrastate Mutual Assistance Program. Every county participates in this program. Lancaster County is also part of a larger county consortium, the South Central Task Force (SCTF), which works together and shares resources during times of emergency. Originally formed in response to the increasing threat of weapons of mass destruction (WMD) and other terroristic activity, the Task Force also provides all-hazards



preparedness, mitigation, prevention, response, and recovery services to citizens in its purview. This unprecedented intergovernmental agreement is between the following counties:

- Adams
- Cumberland
- Dauphin
- Franklin
- Lancaster
- Lebanon
- Perry
- York

### Regional Planning Initiatives

Lancaster County also assists in County or regional planning and preparation for the following:

- Local (Municipal) EOPs
- Medical facilities
- Dams
- Airports
- Pandemic
- Mass casualty/fatality incidents
- Counterterrorism preparedness
- Special events, such as concerts, parades, etc.
- School emergency planning
- Day care, group home, and special needs facilities
- Evacuation and Detour Plan
- Superfund Amendments and Reauthorization Act of 1986 (SARA) – The Local Emergency Planning Committee program is based on the SARA of 1986, Title III. This legislation requires local planning by businesses and response agencies (such as fire departments and hazardous materials teams) whenever hazardous materials are involved. SARA also requires the establishment of a system in each community that informs the citizens of chemicals used, manufactured, and stored locally.
- In cooperation with the American Red Cross, the County has designated shelters that may be used during emergencies and disasters.

### Local Emergency Management Capabilities

According to Pennsylvania Title 35 (Emergency Management Services Code), Chapter 7500, the following stipulations apply:

- Each political subdivision of this Commonwealth is directed and authorized to establish a local emergency management organization in accordance with the plan and program of PEMA. Each local organization shall have responsibility for emergency response and recovery within the territorial limits of the political subdivision within which it is organized and, in addition, shall conduct such services outside of its jurisdictional limits as may be required under this part.
- The governing body of a political subdivision may declare a local disaster emergency upon finding a disaster has occurred or is imminent. The effect of a declaration of a local disaster emergency is to activate the response and recovery aspects of any and all applicable local emergency management plans and to authorize the furnishing of aid and assistance.



- Each local organization of emergency management shall have a coordinator who shall be responsible for the planning, administration, and operation of the local organization.
- Each political subdivision shall adopt an Intergovernmental Cooperation agreement with other political subdivisions to accomplish the following:
  - Prepare, maintain, and keep current a disaster emergency management plan for (1) the prevention and minimization of injury and damage caused by a disaster, (2) prompt and effective response to disaster, and (3) disaster emergency relief and recovery consistent with the Pennsylvania Emergency Management Plan.
  - Establish, equip, and staff an EOC (integrated with warning and communication systems) to support government operations in emergencies, and provide other essential facilities and equipment for agencies and activities assigned emergency functions.
  - Provide individual and organizational training programs to ensure prompt, efficient, and effective disaster emergency services.
  - Organize, prepare, and coordinate all locally available manpower, materials, supplies, equipment, facilities, and services necessary for disaster emergency readiness, response, and recovery.
  - Adopt and implement precautionary measures to mitigate the anticipated effects of a disaster. Execute and enforce such rules and orders as the agency shall adopt and promulgate under the authority of this part.
  - Cooperate and coordinate with any public and private agency or entity in achieving any purpose of this part.
  - Have available for inspection at its EOC all emergency management plans, rules, and orders of the Governor and PEMA.
  - Provide prompt and accurate information regarding local disaster emergencies to appropriate Commonwealth and local officials and agencies and the general public.
  - Participate in all tests, drills, and exercises—including remedial drills and exercises—scheduled by the agency or by the federal government.
  - Participate in the program of integrated flood warning systems under Section 7313 (6) (relating to powers and duties).
- Direction of disaster emergency management services is first the responsibility of the lowest level of government affected. When two or more political subdivisions within a county are affected, the county organization shall exercise responsibility for coordination and support to the area of operations. When two or more counties are involved, coordination shall be provided by PEMA or by area organizations established by PEMA.
- When all appropriate locally available forces and resources are fully committed by the affected political subdivision, assistance from a higher level of government shall be provided.
- Local coordinators of emergency management shall develop mutual aid agreements with adjacent political subdivisions for reciprocal emergency assistance. The agreements shall be consistent with the plans and programs of PEMA.

### **Mutual Aid Agreements**

Lancaster County has formal mutual aid agreements in place with its municipalities.

### **Emergency Operations Centers**

In the event of an impending emergency or disaster, the local EOC may be activated. The purpose of the EOC is to manage the emergency response and coordinate distribution of resources to a disaster incident at the local level.





### Emergency Response

Each municipality is responsible for providing emergency response to their municipality consisting of EMS, fire, and police. If a municipality does not have one of these providers in their community, they should have mutual aid agreements with an adjacent political subdivision or the Commonwealth (e.g., law enforcement coverage by the Pennsylvania State Police [PSP]) to respond.

### Monitoring Systems

The municipalities may also be equipped with several systems to monitor emergency information and warnings, including RACES and the NWS, which have been described previously.

### Emergency Response Planning

The municipalities may also assist with planning for:

1. Municipal EOPs
2. Medical facilities
3. Dams
4. Counterterrorism preparedness
5. Special events
6. School emergency planning
7. Day care, group homes, and special needs facilities
8. Evacuation

A summary of existing federal, state, regional, and county programs (regulatory and otherwise) to manage specific hazard risks may be found in the hazard profiles in Section 4 of this plan update. 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 other regulatory programs at the federal and state levels.

### Participation in the National Flood Insurance Program

According to Federal Emergency Management Agency's (FEMA) 2002 NFIP: Program Description, the U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA 2002). The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.

Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction and substantial improvements in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an alternative to disaster assistance and reduce the escalating costs of repairing damage to buildings and their contents caused by floods (FEMA 2002).

NFIP-participating communities in Lancaster County are required to adopt a flood damage prevention ordinance (also sometimes called a "floodplain" or "floodplain management ordinance") and update this ordinance whenever the regulatory NFIP Flood Insurance Rate Maps (FIRM) are officially updated. The Pennsylvania Department of Community and Economic Development (PA DCED) (Commonwealth-coordinating agency for the NFIP) provides support to municipalities by providing suggested text for floodplain management ordinances.

All of the County's municipalities except New Holland Borough and Terre Hill Borough participate in the NFIP. Neither borough is located within the 1 percent annual chance floodplain, and neither borough has an identified flood hazard. Lancaster County's municipalities' FIRMs were made effective in April 2016. All participating municipalities have adopted a floodplain ordinance, and many have adopted a stormwater management ordinance.



The municipalities' floodplain administrators, who are often either the code enforcement officer or zoning officer for the municipality, enforce the floodplain ordinances locally. Throughout Lancaster County, all municipalities enforce the Uniform Construction Code, and most enforce zoning regulations. Rather than using a specific Floodplain Development Permit, the County's municipalities include on zoning and/or building permit applications a space for applicants to state whether the proposed development is in the floodplain. The permit application reviewer confirms whether the property in question is in the floodplain. If it is, the municipal floodplain administrator reviews the proposed development against the municipality's floodplain management ordinance. The floodplain administrator conducts similar reviews of any revisions to the permit application until all requirements are met. As the proposed activity is conducted, the floodplain administrator works with the code enforcement officer and/or zoning officer to conduct inspections and ensure that the proposed activity is carried out as it was permitted.

NFIP-participating communities in Lancaster County are required to make current NFIP FIRMs available to their residents for review and may provide mapping assistance through their floodplain administrators. Typically, this mapping is available at the municipal offices in each community. Floodplain administrators provide information about mapping to their residents using established outreach methods such as municipal websites, newsletters, and mailings. At the time of this plan update, the Lancaster County FEMA Digitized Flood Insurance Rate Maps (DFIRM) (dated April 2016) were used to evaluate exposure and determine potential future losses.

Floodplain administrators also use established outreach methods to provide information about flood insurance to residents and business owners. They can provide information on the availability of flood insurance, how to get a flood insurance policy, and determining the appropriate level of coverage.

Municipal participation in and compliance with the NFIP is supported at the federal level by FEMA Region III and the Insurance Services Organization (ISO) and at the state level by the PA DEP, PA DCED, and PEMA. The County's Planning Commission and Conservation District both support flood mitigation efforts, associated training, and public education and awareness programs.

Flood hazard risk management in Lancaster County is further supported by Blueprints (see above). Ideally, this plan will continue to reduce the effects of flooding in certain areas of the County.

Additional information on the NFIP program and its implementation within the County can be found in the flood hazard profile in Section 4.3.3.

### **Community Rating System (CRS)**

In the 1990s, the Flood Insurance Administration (FIA) established the CRS to encourage local governments to increase their standards for floodplain development. The goal of the program is to encourage communities, through flood insurance rate adjustments, to implement standards beyond the minimum required in order to:

- Reduce losses from floods
- Facilitate accurate insurance ratings
- Promote public awareness of the availability of flood insurance

CRS is a voluntary program designed to reward participating jurisdictions for their efforts to create more disaster-resistant communities using the principles of sustainable development and management. By enrolling in CRS, municipalities can leverage greater flood protection while receiving flood insurance discounts.

There are 10 CRS classes that provide varied 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 Lancaster County municipalities participate in the CRS Program, though Manheim Borough is considering entry into the program. Increased participation will be supported by the County and will be



promoted through the local emergency management coordinators as identified in the updated mitigation strategies. As part of the HMP update, Lancaster County conducted a seminar in May 2018 for local officials about the NFIP and CRS Program to help officials determine if joining the CRS Program would be appropriate for their municipalities.

### **Municipal Capabilities**

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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. Detailed information regarding Lancaster County municipalities' planning and regulatory capabilities can be found in the municipal survey responses provided in Appendix D.



Table 5-1. Planning and Regulatory Capability

Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	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
Lancaster County	X	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	-	-
Adamstown Borough	X	X				X	-	X														
Akron Borough	X	X				X	-	X														
Bart Township	X	X	-	-	X	X	-	X	X	X	X	X	-	X	-	-	-	-	X	X	-	-
Brecknock Township	X	X	-	-	-	X	-	X	X	X	X	X	-	X	-	-	-	-	X	X	-	-
Caernarvon Township	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	X	X	-	-
Christiana Borough	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	X	-	-	-	X	X	-
Clay Township	X	X	-	-	-	X	-	X	X	X	X	X	X	X	X	X	-	-	-	X	X	X
Colerain Township	X	X	-	-	-	X	-	X	-	X	X	X	-	X	-	-	-	-	-	X	-	-
Columbia Borough	X	X	+	X	+	X	-	X	+	X	X	X	+	X	-	X	X	X	-	X	X	-
Conestoga Township	X	X				X	-	X														
Conoy Township	X	X				X	-	X														
Denver Borough	X	X	-	-	+	X	-	X	X	X	X	X	X	X	-	X	-	-	-	X	-	-
Drumore Township	X	X	-	X	-	X	-	X	-	X	X	X	X	X	-	-	-	-	-	X	X	-
Earl Township	X	X				X	-	X														
East Cocalico Township	X	-	-	-	-	X	-	X	X	X	X	X	X	X	-	+	-	-	-	X	-	-
East Donegal Township	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	-	X	-	-
East Drumore Township	X	X				X	-	X														
East Earl Township	X	X	-	-	-	X	-	X	-	X	X	X	X	X	-	-	-	-	-	X	-	-
East Hempfield Township	X	X	+	+	+	X	-	X	X	X	X	X	X	X	+	+	+	+	X	X	-	-
East Lampeter Township	X	X	-	-	-	X	-	X	-	X	X	X	+	X	-	-	-	-	-	X	X	X
East Petersburg Borough	X	X	X	X	X	X	-	X	X	X	X	-	+	X	-	-	-	-	-	X	-	-



SECTION 5: CAPABILITY ASSESSMENT

Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	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	
Eden Township	X	X	-	X	-	X	-	X	X	X	X	+	-	X	-	-	-	-	-	X	-	-	
Elizabeth Township	X	X	-	-	-	X	-	X	-	X	-	X	X	X	X	X	X	X	X	X	X	X	-
Elizabethtown Borough	X	X	X	X	X	X	-	X	-	X	X	X	X	X	-	X	-	-	-	X	X	-	
Ephrata Borough	X	X	X	X	X	X	-	X	X	X	X	X	-	X	-	X	+	-	-	X	X	-	
Ephrata Township	X	X	-	-	-	X	-	X	-	X	X	X	X	X	-	-	-	-	-	X	-	-	
Fulton Township	X	X	X	X	-	X	-	X	X	X	X	X	X	X	-	X	-	-	X	X	X	-	
Lancaster City	X	X	-	X	X	X	-	X	-	X	X	X	X	X	X	X	X	X	-	X	X	-	
Lancaster Township	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Leacock Township	X	X	-	-	-	X	-	X	X	X	X	X	-	X	-	-	-	-	-	X	-	-	
Lititz Borough	X	X	-	-	+	X	-	X	+	X	X	X	X	X	-	+	X	X	-	X	X	-	
Little Britain Township	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manheim Borough	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	-	X	X	-	
Manheim Township	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manor Township	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Marietta Borough	X	X	X	X	X	X	-	X	X	X	X	X	-	X	-	-	X	-	-	-	-	-	
Martic Township	X	X	-	-	-	X	-	X	X	X	X	X	-	X	-	-	-	-	X	X	-	-	
Millersville Borough	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	
Mount Joy Borough	X	X	-	X	X	X	-	X	-	X	X	X	X	X	-	-	-	-	-	X	X	-	
Mount Joy Township	X	-	-	-	-	X	-	X	-	X	X	X	X	X	-	X	-	-	-	X	-	-	
Mountville Borough	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
New Holland Borough	X	X	-	-	-	-	-	-	X	X	X	X	+	X	-	-	-	-	-	X	-	-	
Paradise Township	X	X	+	+	+	X	+	X	X	X	X	X	X	X	+	+	+	-	X	X	X	-	
Penn Township	X	X	-	-	-	X	-	X	-	X	X	X	-	X	-	-	-	-	-	X	-	X	
Pequea Township	X	X	-	X	-	X	-	X	-	X	X	X	-	X	-	-	-	-	-	X	-	-	







Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	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
Providence Township	X	X	-	X	-	X	-	X	X	X	X	X	-	X	-	-	-	-	-	X	-	-
Quarryville Borough	X	X	-	X	X	X	-	X	-	X	-	X	-	X	-	-	-	X	-	X	-	-
Rapho Township	X	X	X	X	X	X	-	X	X	X	X	X	X	X	-	X	X	-	-	X	X	-
Sadsbury Township	X	X				X	-	X														
Salisbury Township	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	X	X	-	-
Strasburg Borough	X	X	X	X	X	X	-	X	-	X	X	X	X	X	-	X	-	X	-	X	-	-
Strasburg Township	X	X	X	X	+	X	-	X	X	X	X	X	X	X	-	-	-	X	X	X	-	-
Terre Hill Borough	X	X	-	-	-	-	-	-	-	-	X	X	X	X	X	-	-	-	-	X	-	-
Upper Leacock Township	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	-	X	X	X	-
Warwick Township	X	X	-	-	+	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
West Cocalico Township	X	X	-	-	X	X	-	X	-	X	X	X	-	X	-	X	-	-	X	X	-	-
West Donegal Township	X	X	-	X	-	X	-	X	X	X	X	-	X	X	-	-	-	-	X	X	-	-
West Earl Township	X	X	X	X	X	X	-	X	X	X	X	+	-	X	-	X	X	-	X	X	X	-
West Hempfield Township	X	X				X	-	X														
West Lampeter Township	X	X	-	-	X	X	-	X	-	X	X	X	-	X	X	X	X	X	-	X	X	-

Notes:  
 "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.  
 Clay Township – Other – Ephrata Area Wastewater Plan (1995)  
 "N/A": Not applicable  
 Blank space indicates no response was received from the municipality.



## 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 in order 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, the majority of 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 Lancaster County.

### Federal and Commonwealth Capabilities

Federal agencies that can provide technical assistance for mitigation activities include, but are not limited to:

- U.S. Army Corp of Engineers
- Department of Housing and Urban Development
- Department of Agriculture
- Economic Development Administration
- Emergency Management Institute
- Environmental Protection Agency
- FEMA
- Small Business Administration

Commonwealth agencies which can provide technical assistance for mitigation activities include, but are not limited:

- Pennsylvania Department of Community and Economic Development
- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Department of Environmental Protection
- Pennsylvania Silver Jackets

### 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. Copies of the individual municipal responses are found in Appendix D.



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 Manager	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	Staff with expertise or training in Benefit-Cost Analysis	Other
Lancaster County	X	X	X	X	-	-	X	X	X	-	-
Adamstown Borough	-	-	-	X	X	-	-	-	-	-	-
Akron Borough				X	X						
Bart Township	X	-	-	X	X	-	-	-	-	-	-
Brecknock Township				X	X						
Caernarvon Township	X	-	-	X	-	-	-	-	-	-	-
Christiana Borough	X	X	X	X	X	X	-	X	-	-	-
Clay Township	X	X	X	X	X	X	X	X	X	X	X
Colerain Township	X	X	X	X	X	-	-	X	-	-	-
Columbia Borough	X	X	X	X	X	-	X	-	X	X	
Conestoga Township				X	X						
Conoy Township				X	X						
Denver Borough	-	-	-	X	X	-	-	-	X	-	-
Drumore Township	-	X	X	X	X	X	X	X	-	-	-
Earl Township				X	X						
East Cocalico Township	X	X	X	X	X	X	X	X	X	X	-
East Donegal Township	X	-	-	X	X	-	-	-	-	-	-
East Drumore Township				X	X						
East Earl Township	X	X	X	X	X	X	X	X	-	-	-
East Hempfield Township	X	X	-	X	X	-	-	X	-	X	-
East Lampeter Township	X	X	X	X	X	-	-	X	-	-	-
East Petersburg Borough	X	-	X	X	X	-	-	X	X	-	-
Eden Township	X	-	X	X	X	-	-	X	-	-	-
Elizabeth Township	-	-	-	X	X	-	-	-	-	-	-
Elizabethtown Borough	X	-	X	X	X	-	-	X	X	-	-
Ephrata Borough	X	X	X	X	X	-	X	X	-	X	-
Ephrata Township	X	X	X	X	X	X	-	X	X	-	-
Fulton Township	X	X	X	X	X	-	-	-	-	-	-
Lancaster City	X	X	X	X	X	X	X	X	X	-	-
Lancaster Township				X	X						
Leacock Township	-	-	-	X	X	-	-	-	-	-	-
Lititz Borough	X	X	X	X	X	-	X	X	X	-	-
Little Britain Township				X	X						



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 Manager	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	Staff with expertise or training in Benefit-Cost Analysis	Other
Manheim Borough	X	-	X	X	X	-	-	-	-	X	-
Manheim Township	-	-	-	X	X	-	-	-	-	-	-
Manor Township				X	X						
Marietta Borough	X	X	X	X	X	-	-	-	-	-	-
Martic Township	X	-	-	X	X	-	-	-	-	-	-
Millersville Borough	X	X	X	X	X	-	-	X	X	X	-
Mount Joy Borough	X	X	X	X	X	-	X	X	X		-
Mount Joy Township	X	X	X	X	X	-	X	X	X	-	-
Mountville Borough	X	X	X	X	X	-	-	-	X	X	-
New Holland Borough				X	-						
Paradise Township	X	X	X	X	X	X	-	X	X	-	-
Penn Township	X	X	X	X	X	-	-	X	X	X	-
Pequea Township				X	X						
Providence Township	-	-	-	X	X	-	-	-	-	-	-
Quarryville Borough	X	X	X	X	X	X	X	X	X		-
Rapho Township	-	-	-	X	X	-	-	X	X	-	X
Sadsbury Township	X	-	-	X	X	-	-	-	-	-	-
Salisbury Township	X	-	-	X	X	-	-	-	-	-	-
Strasburg Borough	X	X	X	X	X	X	-	X	-	-	-
Strasburg Township	X	-	X	X	X	-	-	X	-	-	-
Terre Hill Borough	X	X	X	X	X	-	X	X	X	X	-
Upper Leacock Township	X	X	X	X	X	X	X	-	X	X	-
Warwick Township	X	X	X	X	X	X	X	X	X	X	-
West Cocalico Township	X	X	X	X	X	-	-	X	X	-	-
West Donegal Township	X	X	X	X	X	-	-	-	-		-
West Earl Township	X	X	X	X	X	X	-	X	X	X	-
West Hempfield Township				X	X						
West Lampeter Township	X	-	X	X	X	-	-	-	-		-

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 through 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.

#### 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 who are eligible for the HMGP include state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. 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 HMGP is applied to parts of a facility that were actually damaged by a disaster, 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, and of this 25 percent, no more than half can be provided as in-kind contributions from third parties. 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 as long as they meet either the Repetitive Loss Properties (RLP) or Severe Repetitive Loss (SRL) property definitions as described in Section 4.3.3 of this plan.





### Pre-Disaster Mitigation Program

The Pre-Disaster Mitigation (PDM) Program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75 percent of a project's cost up to \$3 million. As with the HMGP and FMA, a FEMA-approved local HMP is required to be approved for funding under the PDM program.

### 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 Lancaster, which receives CDBG funding directly from U.S. HUD.

### 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 like heating system modifications and 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 of floodplain easements. The program is designed for installation of recovery measures.

### **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

### **Marcellus Shale Legacy Fund - Act 13 of 2012**

*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 of the municipalities in Lancaster 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.

### Municipal Capabilities

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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.

### Capital Improvement Planning

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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 their known or anticipated capital projects as a way to help prioritize their execution and to develop awareness that mitigation grants may be available to help fund such projects.

### Special purpose taxes

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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.

### Gas/electric utility fees

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In the same way that special taxes can be levied to fund mitigation projects, another avenue for financing a project that a community may utilize is to dedicate a portion of homeowners’ gas and electric utilities’ fees to upgrade and maintain the related infrastructure. Burying transmission lines, thereby mitigating from the effects of winds and ice storms, is expensive. These fees help to offset that cost.

### Water/sewer fees

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#### Water Authorities and Fees

Water authorities are multipurpose authorities with water projects, many of which 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.

**Stormwater Utility Fees**

Stormwater utility fees are assessed and collected to offset the cost of maintaining and upgrading stormwater management structures such as drains, retention ponds, and culverts.

**Development Impact Fees**

Development impact fees are one-time fees assessed to offset the cost of providing public services to a new development. They may be dedicated to providing the related new water or sewer infrastructure, roads, parks and recreational areas, libraries, schools, etc. The new infrastructure may be less vulnerable to hazard impacts.

**General Obligation, Revenue, and/or Special Tax Bonds**

Jurisdictions may simply decide to dedicate general fund or similar financing to implement hazard mitigation projects.

**Partnering Arrangements or Intergovernmental Agreements**

Intergovernmental cooperation is one manner of accomplishing common goals, solving mutual problems, and reducing expenditures. There are 60 municipalities within Lancaster 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.

**Circuit Rider Program (Engineer)**

The Circuit Rider Program is an example of intergovernmental cooperation. This program offers municipalities 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 the engineer can offer. Municipalities can jointly obtain what no single municipality could obtain on its own.

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. Copies of the individual municipal responses are found in Appendix D.

**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
Lancaster County	-	-	-	-	-	-	-	-	-	-
Adamstown Borough										
Akron Borough	X	-	-	-	X	-	-	-	X	-
Bart Township	-	-	-	-	-	-	-	-	-	-
Brecknock Township	-	-	-	-	X	-	-	-	-	-
Caernarvon Township	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
Christiana Borough	-	-	-	-	X	-	X	-	X	-
Clay Township	X	X	-	-	X	X	-	-	-	-
Colerain Township	-	-	-	-	-	-	-	-	-	-
Columbia Borough	X	X	-	-	-	-	-	X	X	-
Conestoga Township										
Conoy Township										
Denver Borough	X	X	-	-	X	-	-	X	X	-
Drumore Township	-	-	-	-	-	-	-	-	-	-
Earl Township										
East Cocalico Township	X	X	X	-	X	X	X	X	X	-
East Donegal Township	-	-	-	-	-	-	-	-	-	-
East Drumore Township										
East Earl Township	-	X	X	-	X	-	-	X	X	-
East Hempfield Township	X	-	-	-	-	-	-	-	X	-
East Lampeter Township	-	-	-	-	X	-	-	-	-	-
East Petersburg Borough	-	-	X	-	X	-	X	-	-	-
Eden Township	-	-	-	-	-	-	-	-	-	-
Elizabeth Township	-	-	-	-	-	-	X	-	-	-
Elizabethtown Borough	X	-	-	-	X	-	-	X	X	-
Ephrata Borough	X	-	-	-	-	-	-	-	-	-
Ephrata Township	X	X	-	-	-	-	-	X	X	-
Fulton Township	-	-	-	-	-	-	-	-	-	-
Lancaster City	X	X	-	-	X	X	-	X	-	-
Lancaster Township										
Leacock Township	-	X	-	-	X	-	-	X	X	-
Lititz Borough	X	X	-	-	X	-	-	X	-	-
Little Britain Township										
Manheim Borough	X	X	X	-	-	-	-	X	X	-
Manheim Township	-	-	-	-	-	-	-	-	-	-
Manor Township										
Marietta Borough	-	-	-	-	-	-	-	-	-	-
Martic Township	X	-	-	-	-	-	-	-	-	-
Millersville Borough	X	X	-	-	-	X	-	-	-	-
Mount Joy Borough	X	-	-	-	-	-	-	X	-	-
Mount Joy Township	X	X	X	-	-	-	X	X	X	-
Mountville Borough										





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
New Holland Borough	X	-	-	-	X	-	-	-	X	-
Paradise Township	-	X	X	-	X	-	-	X	X	-
Penn Township	-	-	-	-	X	-	-	X	X	-
Pequea Township										
Providence Township	-	X	-	-	-	-	-	-	-	-
Quarryville Borough	-	X	X	-	X	-	X	X	X	-
Rapho Township	X	-	X	-	-	-	X	X	X	-
Sadsbury Township										
Salisbury Township	X	-	-	-	-	-	-	-	-	-
Strasburg Borough	X	-	X	-	X	-	X	X	X	-
Strasburg Township	-	-	X	-	X	-	X	X	X	-
Terre Hill Borough	-	X	X	-	X	-	-	X	X	-
Upper Leacock Township	X	X	X	-	X	X	X	-	X	-
Warwick Township	X	X	-	-	X	X	X	-	-	-
West Cocalico Township	-	-	-	-	-	-	-	X	-	-
West Donegal Township	-	-	-	-	X	-	X	X	X	-
West Earl Township	-	X	X	-	X	-	-	-	X	-
West Hempfield Township										
West Lampeter Township	X	-	-	-	-	-	X	X	X	-

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.

### 5.2.4 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.



## Public Information Programs

### Flood Maps

Flood maps and flood data, including new digital maps for Lancaster County, are available at the municipal offices. County and municipality maps, tax maps, and property assessment records are available at the Property Assessment and GIS Services offices, 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.

- *Are You Ready?:* This is an in-depth program for citizen preparedness (individual, family, and community) that provides a step-by-step approach to disaster preparedness by walking the participant through steps to become informed about local emergency plans, identify hazards that affect their area, and develop and maintain an emergency communications plan and disaster supply kit. Other topics include evacuation, emergency public shelters, animal handling during disasters, and information specific to people with disabilities. The program includes actions that can be taken before, during, and after each hazard type and provides in-depth information on specific hazards such as the following:
  - Floods
  - Tornadoes
  - Hurricanes
  - Thunderstorms and lightning
  - Winter storms and extreme cold
  - Extreme heat
  - Earthquakes
  - Volcanoes
  - Landslide and debris flows (mudslide)
  - Tsunamis
  - Fires and wildfires
  - Hazardous materials incidents
  - Household chemical emergencies
  - Nuclear power plants
  - Terrorism (explosion, biological, chemical, nuclear, and radiological hazards)



- *ReadyPA Campaign*: Established by the Commonwealth of Pennsylvania, [www.readypa.org](http://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.
- *Community Emergency Response Teams (CERT)*: CERT provides training to educate citizens about disaster preparedness and instruction in basic disaster response skills, such as fire suppression, medical operations during disasters, light search and rescue, team organization, disaster psychology, and terrorism awareness. The goal of this program is for emergency personnel to train members of neighborhoods, community organizations, or workplaces in basic response skills. If a disastrous event overwhelms or delays the community's professional response, CERT members can assist others by applying the basic response and organizational skills that they learned during training. These skills can help save and sustain lives following a disaster until help arrives. Although the County does not have a current and active CERT, Millersville University maintains a CERT that serves the university, Millersville Borough, and surrounding communities.
- Emergency management courses are provided through the County EMA to local coordinators and elected officials, including Duties and Responsibilities of the Local Emergency Management Coordinator (LEMC), Damage Assessment, and Basic Orientation.

### Local Emergency Planning Committee

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The Local Emergency Planning Committee (LEPC) works closely with the business industry community to form a safety net around the chemical industry to protect the general population from the possible outcome of hazardous material incidents. The following features of the LEPC demonstrate the capability of the LEPC to support County emergency management and preparedness initiatives.

- The LEPC shall have a minimum of seven members, with at least one representative from each of the following groups:
  - Group 1 – Elected official representing local government within the County
  - Group 2 – Local law enforcement, first aid, health, environmental, hospital, and transportation personnel
  - Group 3 – Firefighting personnel
  - Group 4 – Civil defense and emergency management personnel
  - Group 5 – Broadcast and print media personnel
  - Group 6 – Community groups not affiliated with emergency service groups
  - Group 7 – Owners and operators of facilities subject to the requirements of SARA Title III
- *Reporting Facilities*: The minimum reporting threshold for which facilities are required to have or prepared a Material Safety Data Sheet is 10,000 pounds of hazardous chemicals. This document provides workers and emergency personnel with procedures for handling or working with hazardous materials in a safe manner. It includes information on the chemicals' physical properties, toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures.
- *Planning Facilities*: The reporting threshold for Extremely Hazardous Substances (as designated under Section 302 of Title III) is 500 pounds or the threshold planning quantity, whichever is lower. Qualifying facilities are subject to additional reports and accident prevention regulations.

### Technical Assistance

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The County EMA 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.



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. Copies of the individual municipal responses are found in Appendix D.

**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
Lancaster County		X					
Adamstown Borough		X					
Akron Borough		X					
Bart Township	-	X	X	X	-	-	-
Brecknock Township		X					
Caernarvon Township	-	-	-	-	-	-	-
Christiana Borough	-	X	-	-	-	-	-
Clay Township	-	X	-	X	-	X	-
Colerain Township	-	X	-	-	-	-	-
Columbia Borough	-	X	X	X	-	X	-
Conestoga Township		X					
Conoy Township		X					
Denver Borough	-	X	-	X	-	X	-
Drumore Township	-	X	-	-	-	-	-
Earl Township		X					
East Cocalico Township	X	X	-	-	-	X	-
East Donegal Township	-	X	-	X	-	-	-
East Drumore Township		X					
East Earl Township	-	-	-	-	-	-	-
East Hempfield Township	-	-	X	X	X	X	-
East Lampeter Township	-	X	-	X	-	X	-
East Petersburg Borough	-	X	-	X	-	-	-
Eden Township	-	X	-	-	-	-	-
Elizabeth Township	-	X	-	-	-	-	-
Elizabethtown Borough	-	-	-	X	X	-	-
Ephrata Borough	-	X	X	X	X	X	X
Ephrata Township	-	X	X	X	-	-	-
Fulton Township	-	X	X	X	X	X	-
Lancaster City	-	X	-	X	-	X	-
Lancaster Township		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
Leacock Township	-	X	-	-	-	-	-
Lititz Borough	-	X	-	X	-	X	-
Little Britain Township		X					
Manheim Borough	-	X	-	X	-	X	-
Manheim Township	-	X	-	-	-	-	-
Manor Township		X					
Marietta Borough	-	X	-	-	-	-	-
Martic Township	-	X	-	X	-	-	-
Millersville Borough	-	X	-	X	-	-	-
Mount Joy Borough	-	X					
Mount Joy Township	-	X	-	-	-	-	-
Mountville Borough		X					
New Holland Borough	-	X	X	X	-	-	-
Paradise Township	-	X	-	X	-	-	
Penn Township	-	X	-	X	-	X	X
Pequea Township		X					
Providence Township	-	X	-	-	-	X	-
Quarryville Borough	-	X					
Rapho Township	-	X	X	X	-	X	-
Sadsbury Township		X					
Salisbury Township	-	X	-	X	-	-	-
Strasburg Borough	-	X	X	X	X	X	-
Strasburg Township	-	X	X	X	X	X	-
Terre Hill Borough	-	-	-	-	-	X	-
Upper Leacock Township	-	X	X	X	X	X	-
Warwick Township	-	X	-	X	-	X	-
West Cocalico Township	-	X	-	X	-	-	-
West Donegal Township	-	X					
West Earl Township	-	X	X	X	X	X	-
West Hempfield Township		X					
West Lampeter Township	-	X					

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.





“Other” values: Ephrata Borough listed crime prevention and safety programs. Penn Township listed a “swift 911 emergency notice.”

### 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.” Table 5-5 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
Lancaster County	H	L	L	L
Adamstown Borough				
Akron Borough				
Bart Township	L	L	L	M
Brecknock Township				
Caernarvon Township	M	L	M	L
Christiana Borough	L	L	L	L
Clay Township	M	M	H	M
Colerain Township	M	M	L	L
Columbia Borough	M	L	L	M
Conestoga Township				
Conoy Township				
Denver Borough	M	M	L	H
Drumore Township	M	M	L	L
Earl Township				
East Cocalico Township	M	M	M	M
East Donegal Township	M	L	L	M
East Drumore Township				
East Earl Township	M	M	L	L
East Hempfield Township	M	H	H	M
East Lampeter Township	L	L	L	L
East Petersburg Borough	L	L	L	L
Eden Township	L	L	L	M
Elizabeth Township	L	L	L	L
Elizabethtown Borough				
Ephrata Borough	M	M	L	M
Ephrata Township	M	M	L	M
Fulton Township				
Lancaster City	M	M	L	M
Lancaster Township				



Municipality	Capability Category			
	Planning and Regulatory Capability	Administrative and Technical Capability	Financial Capability	Education and Outreach Capability
Leacock Township	L	M	L	M
Lititz Borough	H	M	M	L
Little Britain Township				
Manheim Borough	M	L	L	M
Manheim Township	L	L	L	L
Manor Township				
Marietta Borough	M	M	L	L
Martic Township	M	L	M	L
Millersville Borough	M	M	L	L
Mount Joy Borough	M	H	M	
Mount Joy Township	M	M	L	L
Mountville Borough				
New Holland Borough	M	M	H	L
Paradise Township	M	M	M	M
Penn Township	M	M	M	M
Pequea Township				
Providence Township	M	M	L	M
Quarryville Borough	M	M	M	
Rapho Township	H	H	H	H
Sadsbury Township				
Salisbury Township	M	L	M	L
Strasburg Borough	L	L	L	L
Strasburg Township	L	L	L	L
Terre Hill Borough	M	M	L	M
Upper Leacock Township	M	M	M	M
Warwick Township	H	H	H	H
West Cocalico Township	L	M	M	L
West Donegal Township	M	M	L	
West Earl Township	M	M	M	M
West Hempfield Township				
West Lampeter Township	M	H	H	

Note:  
Blank space indicates no response was received from the municipality.

Detailed information regarding the municipalities’ capabilities self-assessments can be found in the municipal survey responses provided in Appendix D.

### 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 Lancaster 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. Further, the sample adoption resolution (located in Section 8 of this HMP) includes a resolution item stating the intent of the local governing body to incorporate mitigation planning as an integral component of government and partner operations. 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, Lancaster 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 Lancaster County HMP was last updated in 2014. 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, certain plans (including Blueprints) were incorporated directly into this HMP update. All participating jurisdictions recognize that this information can be invaluable in making decisions under other planning programs, such as comprehensive, capital improvement, and emergency management plans. Figure 5-1 illustrates the interrelationships between the HMP, the Lancaster 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.



## **Administrative**

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Administrative processes include departmental or organizational work plans, policies, or procedural changes that can be addressed by the following departments:

- Behavioral Health & Developmental Services
- Countywide Communications (911)
- Emergency Management Agency
- Facilities Management
- Housing & Redevelopment Authority
- Lancaster County Solid Waste Management
- Planning Commission
- Sheriff's Office

Additional administrative measures may include the creation of paid or unpaid internships to assist in HMP maintenance, such as those created as part of the County EMA's Intern Academy.

The Lancaster County EMA is responsible for preparing and maintaining the County EOP, including a minimum biennial review. Whenever portions of the plan are implemented in an emergency event or training exercise, a review is performed, and changes are made where necessary. The Lancaster County EMA posts the County EOP online. Municipalities are notified of changes to the EOP and directed to the EOP website. The risk assessment information presented in the 2014 HMP was used to update the hazard Vulnerability Assessment section of the County EOP. The updated risk assessment information will affect subsequent updates to the EOP. Recommended changes to the HMP, based on changes to the EOP, will then be coordinated with the Planning Team.

The Lancaster County Planning Commission is responsible for maintaining and updating the County comprehensive plan, which covers all 60 municipalities. The Planning Commission meets every two weeks to review, discuss, and comment on municipal subdivision and land development plans, municipal floodplain ordinances, municipal stormwater management plans and ordinances, and other community planning and development matters. Since the adoption of the original Lancaster County HMP, these reviews have included informal cross-referencing of the planned development or regulatory activity with the provisions of the HMP. It uses this information to identify necessary revisions and to amend the County comprehensive plan. The Planning Commission's meetings are open to the public and are advertised according to the Pennsylvania Sunshine Act (65 PA C.S.A.).

The administrative practices described above will continue through the development of subsequent Lancaster County comprehensive plan updates using the information in this updated HMP. In return, the Lancaster County comprehensive plan, located on the Lancaster County Planning Commission's website, was incorporated into multiple aspects of this HMP. Information from the comprehensive plan and other documents was used to formulate the County profile, identify the history of individual hazards, and detail the population projections in Lancaster County.

## **Budgetary Process**

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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.

## **Regulatory Measures**

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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 storm water 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.

### **Funding**

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The County and its jurisdictions will consider multiple grant sources to fund eligible projects. These opportunities may include, but are not limited to:

- Federal
  - Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Program (PDM)
  - FEMA Flood Mitigation Assistance Program (FMA)
  - FEMA Hazard Mitigation Grant Program (HMGP) – Stafford Act, Section 404
  - U.S. Department of Housing and Urban Development (HUD) – Community Development Block Grant (CDBG)
  - U.S. Department of Agriculture (USDA) – USDA Community Facilities
  - U.S. Economic Development Administration (EDA) Public Works Program
- Commonwealth
  - Pennsylvania Department of Transportation (PennDOT) Pennsylvania Infrastructure Bank
  - Act 13 Marcellus Shale Legacy Funds – Flood Mitigation Program
- Nonprofit organizations, foundations, and private sources

Other potential federal funding sources include:

- 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 as yet to be defined





## Partnerships

The following opportunities for partnerships will be encouraged to provide a broader support and understanding of hazard mitigation:

### Existing Committees and Councils

- Local Government Committees:
  - Lancaster County Agricultural Preserve Board (<https://co.lancaster.pa.us/126/Agricultural-Preserve-Board>)
  - Lancaster County Conservancy (<http://www.lancasterconservancy.org/>)
  - Lancaster County Conservation District (<http://lancasterconservation.org/>)
  - Lancaster County Economic Development Company (<http://edclancaster.com/>)
  - Lancaster County Housing and Redevelopment Authority (<http://www.lchra.com/>)
  - Lancaster County Land Bank
  - Lancaster County Local Emergency Planning Committee (<https://www.lancema.us/hmpd.php?Local-Emergency-Planning-Committee-3>)
  - Lancaster County Transportation Authority

### Creative Partnerships for Funding and Incentives

- Public-private partnerships, including utilities and businesses
- State cooperation
- In-kind resources

### Working with other Federal and Commonwealth Agencies

- U.S. Army Corps of Engineers (USACE)
- Department of Homeland Security (DHS)
- Federal Emergency Management Agency (FEMA)
- National Oceanic and Atmosphere Administration (NOAA)
- National Weather Service (NWS)
- Pennsylvania Department of Transportation (PennDOT)
- Pennsylvania Department of Environmental Protection (PADEP)
- Pennsylvania State Police (PSP)
- United States Department of Agriculture (USDA)
- United States Department of Transportation (USDOT)
- United States Geological Service (USGS)

### American Red Cross

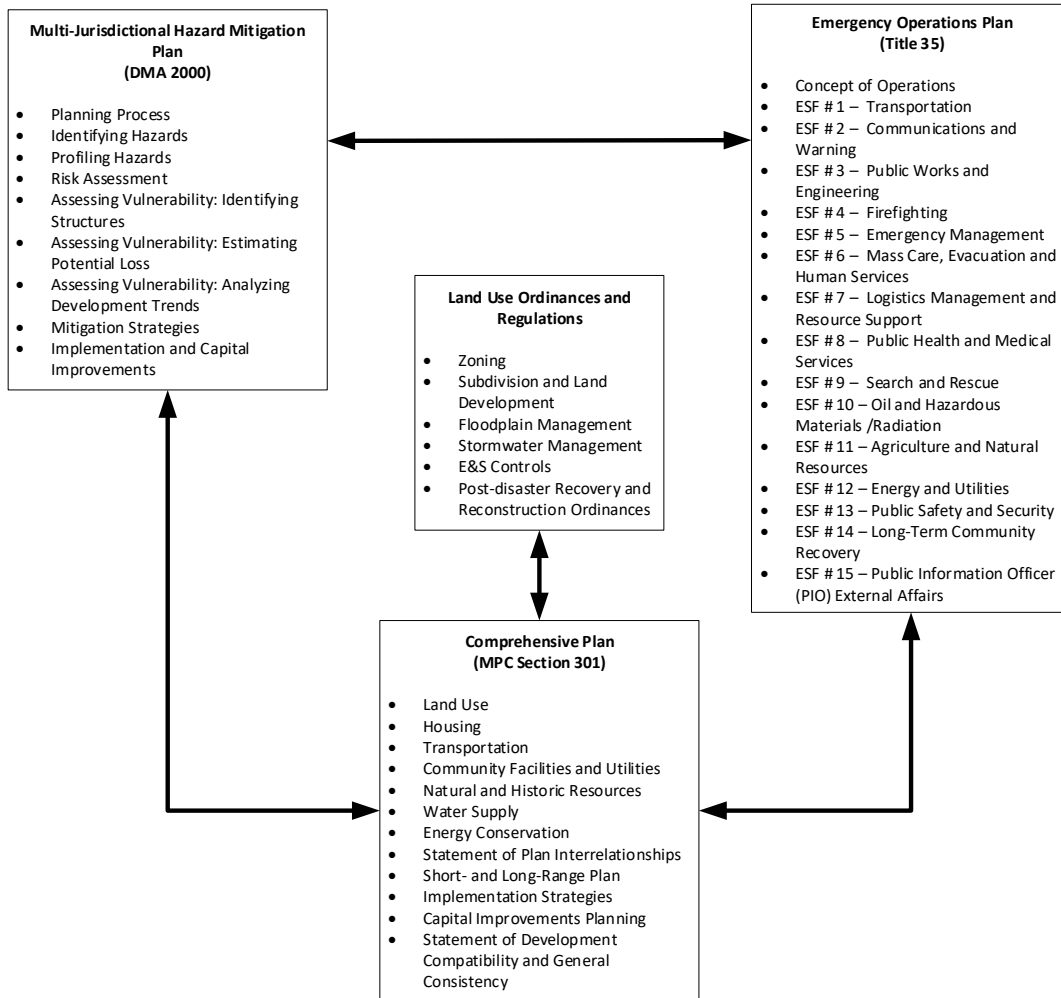
### Watershed Associations

- Chiques Creek Watershed Alliance (<http://chiquescreekwatershed.org/>)
- Cocalico Creek Watershed Association
- Donegal Chapter of Trout Unlimited (<http://www.donegaltu.org/>)
- Donegal Fish & Conservation Association
- Friends of Fishing Creek (<http://www.friendsoffishingcreek.com/>)



- Lititz Run Watershed Alliance (<http://www.warwicktownship.org/LRWA>)
- Little Conestoga Watershed Alliance (<http://www.littleconestoga.org/>)
- Mill Creek Preservation Association
- Octoraro Watershed Association (<http://www.theowa.org/>)
- Pequea Creek Watershed Association
- Tri-County Conewago Creek Association (<http://conewagocreek.org/>)

Figure 5-1. Plan Interrelationships



Note:  
 E&S Erosion and Sedimentation  
 MPC Municipal Planning Code

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.



## SECTION 6 MITIGATION STRATEGY

This section describes the process by which the Lancaster 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 Lancaster County's population, economy, and general building stock.

This section provides a summary of the 2019 HMP update process, outlines the mitigation goals and objectives set forth in the 2019 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 Lancaster 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 2013):

- 1. Review of Existing Mitigation Plan Goals, Objectives, and Mitigation Action Plan:** Existing mitigation goals and objectives, and the 2014 HMP mitigation actions were first examined at the Kick-Off Meeting and revisited during the Mitigation Solutions Workshops and the Mitigation Strategy Review Meeting. All 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 Workshops and Mitigation Strategy Review Meeting for final review and approval. Plan participants continued to review and provide progress on the 2014 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

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The mitigation goals identified in the 2014 version of the HMP are listed below:

- **Goal 1:** Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention).
- **Goal 2:** Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection).
- **Goal 3:** Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures).
- **Goal 4:** Maintain and/or implement flood control measures in Lancaster County (Structural Projects).
- **Goal 5:** Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection).
- **Goal 6:** Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs).

Table 6-1 shows the results of the Steering Committee and Planning Team review of the 2014 goals and objectives.



Table 6-1. Steering and Planning Team Evaluation of 2014 Goals and Objectives

2014 Lancaster County Hazard Mitigation Plan Goals and Objectives		Evaluation
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County. (Prevention)</b>	Update to prevent injury/death and damage, instead of mitigating the potential. Remove parenthetical text.
Objective 1.1	Develop regulations limiting development in hazard-prone areas.	Keep as is; still applies.
Objective 1.2	Direct new growth away from hazard-prone areas.	Update wording to include maintaining natural hazard buffers between development and hazard areas.
Objective 1.3	Encourage property owners in the 1-percent annual chance floodplain to purchase flood insurance.	Update to include insuring against all hazard impacts, including flood coverage through the National Flood Insurance Program (NFIP).
Objective 1.4	Protect the health of County residents.	Update to specify protecting health from disease, and include under Goal 2.
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards. (Property Protection)</b>	Still applies. Remove parenthetical text.
Objective 2.1	Protect existing structures from damage that can be caused by hazards.	Update to specifically refer to critical facilities as well.
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property.	Remove. Management and regulatory procedures that would reduce the impacts of hazards have been integrated into jurisdictional operations, and are considered an ongoing capability.
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards.	Combine with Objective 2.1.
Objective 2.4	Elevate or acquire flood-prone repetitive loss structures.	Update to include relocation and retrofitting options.
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards. (Emergency Services Measures)</b>	Still applies. Remove parenthetical text.
Objective 3.1	Improve coordination and communication between departments.	Keep as is; still applies.
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.	Keep as is; still applies.
Objective 3.3	Ensure adequacy of equipment and technology.	Keep as is; still applies.





2014 Lancaster County Hazard Mitigation Plan Goals and Objectives		Evaluation
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County. (Structural Projects)</b>	Remove. Incorporate structural projects under Goal 2 regarding property protection.
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property.	Remove. Incorporate structural projects under Goal 2 regarding property protection.
Objective 4.2	Implement and/or maintain existing flood control systems.	Remove. Incorporate structural projects under Goal 2 regarding property protection.
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County. (Natural Resource Protection)</b>	Remove. Relevant objective is incorporated under Goal 1.
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards.	Keep as is; still applies. Include under Goal 1 regarding prevention measures.
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County.	Remove. Redundant with Objective 1.2.
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	Still applies. Remove parenthetical text.
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation.	Keep as is; still applies.
Objective 6.2	Educate property owners in hazard risk areas regarding their risks and the precautions they can take.	Keep as is; still applies.



### 6.1.2 Past Mitigation Action Status and Update of Mitigation Strategies

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In the 2014 HMP, Lancaster County identified 47 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 2014 mitigation actions was evaluated during the 2019 update process.

Lancaster 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 2014 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 2014 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
Action 1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas.	Countywide	Continuous	<ul style="list-style-type: none"> <li>All new information is reviewed to ensure that it is located out of hazard-prone areas (Ephrata T).</li> <li>Has been integrated into the municipality's normal operations (Eden T, Penn T, Rapho T).</li> <li>Ongoing with review of building and zoning permit applications (Ephrata B).</li> </ul>
Action 1.2.1 Acquire properties in hazard areas, notably in the 1 percent annual chance floodplain, to convert them to open space.	Countywide	Continuous	<ul style="list-style-type: none"> <li>No funds available for acquisition (Ephrata B).</li> </ul>
Action 1.2.2 Ensure safety buffer between industrial facilities and population.	Countywide	Continuous	<ul style="list-style-type: none"> <li>Regulations in the zoning ordinance – ongoing review (Ephrata B).</li> <li>Has been integrated into the municipality's normal operations (Eden T, Penn T, Rapho T).</li> </ul>
Action 1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance.	Countywide	Continuous	<ul style="list-style-type: none"> <li>To be included in newsletter (Eden T).</li> <li>Information is sent to all property owners whose property was being affected by the new FEMA floodplain maps (Ephrata T).</li> <li>Completed (Lancaster City).</li> <li>Has been integrated into the municipality's normal operations (West Lampeter T).</li> <li>Volunteer emergency management coordinator (EMC) and deputy EMC lack sufficient resources to do this work (Drumore T).</li> <li>As residents in flood-prone area apply for permits or contact the municipality we review it verbally with them (Ephrata B.)</li> </ul>
Action 1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations.	Countywide	Continuous	<ul style="list-style-type: none"> <li>South Central Transit Authority should be included (Lancaster County).</li> <li>Maintained for Radiological Emergency Response Procedures (REPP)- not web-based due to HIPPA/security concerns (Drumore T).</li> <li>Community emergency management planning, but relying on population to provide us with information (Lititz B, Warwick T).</li> <li>Community emergency management planning, but relying on population to provide us with information (Lititz B).</li> <li>Quarterly updates of medical certifications requiring electric power (Ephrata B).</li> </ul>
Action 1.4.2 Coordinate with PA DOH on issues related to pandemics.	Countywide	Continuous	<ul style="list-style-type: none"> <li>No resources to coordinate with PA DOH; defer to Lancaster County Emergency Management Agency (LEMA) (Drumore T).</li> <li>Pandemics 2007, Avian Flu 2015, Swine Flu 2016 (Ephrata B).</li> <li>Participates in the PA HAN (Lancaster City).</li> </ul>
Action 1.4.3 Ensure Emergency Planning Zone (EPZ) municipalities have access to Potassium Iodide (KI).	Countywide	Continuous	<ul style="list-style-type: none"> <li>Part of REPP (Drumore T).</li> <li>Provided to Twp. (East Donegal T).</li> </ul>
Action 1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters.	Countywide	Continuous	<ul style="list-style-type: none"> <li>Defer to Lancaster County EMA (Drumore T).</li> <li>Distribution points at Ephrata High School (Ephrata B).</li> </ul>



Description	Jurisdiction	Status	Review Comments
Action 1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings.	Countywide	Complete	<ul style="list-style-type: none"> <li>• There is a lack of support for requirement for residential sprinkler systems (Lancaster County).</li> <li>• Statewide Bldg. Code (Caernarvon T, East Cocalico T).</li> <li>• Completed for commercial (Christiana B).</li> <li>• Only required in commercial (Colerain T, Rapho T).</li> <li>• Statewide Building Code (Denver B).</li> <li>• Dept. of Labor &amp; Industry (East Lampeter T).</li> <li>• Enforcement of the PA State Wide Building Code (Ephrata T).</li> <li>• UCC (Leacock T).</li> <li>• Following adopted building codes (Lititz B).</li> <li>• Building code requires (Martic T).</li> <li>• State Code (New Holland B).</li> <li>• Enforce PA UCC to require sprinklers in multi-family and required commercial/industrial properties (Ephrata B).</li> </ul>
Action 2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding.	Countywide	Complete	<ul style="list-style-type: none"> <li>• Activity has been integrated into the municipality's normal operations (Caernarvon T, West Lampeter T).</li> <li>• No bridges (East Petersburg B).</li> <li>• All bridges and culverts are inspected (Ephrata B).</li> <li>• PennDOT inspects the one locally owned bridge every 2 years. Culverts inspected annually by borough staff (Ephrata T).</li> </ul>
Action 2.2.1 Regularly inspect and maintain bridges and culverts.	Countywide	Complete	<ul style="list-style-type: none"> <li>• Through zoning ordinance (East Lampeter T).</li> <li>• No Bridges (East Petersburg B).</li> <li>• All Bridges and Culverts are inspected (Ephrata B).</li> <li>• PennDOT inspects the one locally owned bridge every 2 years. Culverts inspected annually by borough staff (Ephrata T).</li> <li>• Floodplain overlay zone identified (Rapho T).</li> </ul>
Action 2.2.2 Require special use permits for hazard-prone areas.	Countywide	Complete	<ul style="list-style-type: none"> <li>• There is no formal policy in place (Colerain T).</li> <li>• County GIS (East Lampeter T).</li> <li>• 2 programs for tracking data (Rapho T).</li> <li>• Integrated into municipality's normal operations (West Lampeter T).</li> <li>• Most information regarding parcels is obtained from the County (Ephrata B).</li> </ul>
Action 2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies.	Countywide	Complete	<ul style="list-style-type: none"> <li>• Pine Grove Dam is maintained and monitored by the Chester Water Authority (Colerain T).</li> <li>• Maintained by EMC (Drumore T).</li> <li>• Based on County data (Eden T.)</li> <li>• All critical facilities within the borough are mapped on our GIS (Ephrata B).</li> </ul>
Action 2.3.1 Create and maintain a database and map of all critical facilities in the County.	Countywide	Complete	<ul style="list-style-type: none"> <li>• Pine Grove Dam is maintained and monitored by the Chester Water Authority (Colerain T).</li> <li>• All facilities are inspected annually by insurance carriers as well as ongoing inspections by personnel using/servicing the facilities (Ephrata B).</li> </ul>



Description	Jurisdiction	Status	Review Comments
Action 2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster.	Countywide	Complete	<ul style="list-style-type: none"> <li>Shared GIS data between Ephrata Borough and Ephrata Township (Ephrata T).</li> <li>Integrated into the municipality's normal operations (Rapho T, West Lampeter T.)</li> <li>Multiple departments maintain information. There is no policy for sharing (Ephrata B).</li> </ul>
Action 3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use.	Countywide	Complete	<ul style="list-style-type: none"> <li>ECT Police (East Cocalico T).</li> <li>With Fire Co. and EMA (East Petersburg B).</li> <li>Warwick Emergency Services Commission/LB EMA (Lititz B).</li> <li>Recent Active Shooter Event full-scale exercise at Ephrata Wellspan (Ephrata B).</li> </ul>
Action 3.2.1 Encourage multi-jurisdictional exercises and drills.	Countywide	Complete	<ul style="list-style-type: none"> <li>Activity has been integrated into the municipality's normal operations (Caernarvon T, West Lampeter T).</li> <li>Lancaster City and Manheim Township work together on exercises.</li> </ul>
Action 3.3.1 Implement the new Lancaster County radio system.	Countywide	Complete	<ul style="list-style-type: none"> <li>Fire Dept. (Caernarvon T)</li> <li>Too expensive and is not working properly (Colerain T).</li> <li>System in place, upgrades being made to it (Lititz B).</li> <li>P25 project completed (Ephrata B).</li> </ul>
Action 3.3.2 Inventory all available equipment and technology used for emergency response.	Countywide	Continuous	<ul style="list-style-type: none"> <li>This could be kept in a spreadsheet (Colerain T).</li> <li>Completed (East Drumore T).</li> <li>Completed as part of the Emergency Operations Plan (Ephrata T).</li> <li>Continuously being analyzed by local emergency services (Lititz B).</li> <li>Continue to update inventory lists (Salisbury T).</li> <li>Yearly updates on rolling stock and equipment (Ephrata B).</li> </ul>
Action 4.1.1 Ensure that the County's dams are structurally sound.	Countywide	Continuous	<ul style="list-style-type: none"> <li>Borough-owned dams are inspected regularly (Ephrata B).</li> </ul>
Action 4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community.	Countywide	In Progress	<ul style="list-style-type: none"> <li>The Chester Water Authority has an Emergency Operations Plan for the Pine Grove Dam. It is in good condition (Colerain T).</li> <li>Completed (East Drumore T).</li> <li>Herr Bridge (covered) being removed on Pequea Creek (East Lampeter T).</li> </ul>
Action 4.2.1 Continue mitigation efforts/programs already in place to address flooding issues.	Countywide	Continuous	<ul style="list-style-type: none"> <li>Looking into a Grant to replace a Bridge that floods often (Colerain T).</li> <li>Part of MS4 Program – PRP (East Cocalico T).</li> <li>Through enforcement of the Floodplain regulations contained in the Zoning ordinance (Ephrata T).</li> <li>Encourage mitigation efforts for redevelopments (Ephrata B).</li> </ul>
Action 5.1.1 Develop and implement source water protection plans.	Countywide	Continuous	<ul style="list-style-type: none"> <li>Borough complete (Christiana B).</li> <li>Part of MS4 Program – PRP (East Cocalico T).</li> <li>Through the Ephrata Area Joint Water Authority Plan (Ephrata T).</li> <li>Plan dated June 6, 2014 (Ephrata B).</li> <li>Complete (Lancaster City).</li> </ul>





Description	Jurisdiction	Status	Review Comments
Action 5.1.2 Reduce the number of miles of impaired streams in the County.	Countywide	Continuous	<ul style="list-style-type: none"> <li>Part of MS4 Program – PRP (East Cocalico T).</li> <li>Through the MS4 program and the Ephrata Township Pollution Reduction Plan (Ephrata T).</li> <li>Working with farmers to clean up streams (Salisbury T).</li> <li>WLT portions only (West Lampeter T).</li> <li>Follow requirements of the MS4 permit (Ephrata B).</li> </ul>
Action 5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains.	Countywide	Complete	<ul style="list-style-type: none"> <li>No improvements allowed in Floodplain (Colerain T).</li> <li>Township has Riparian Buffer Ordinance that considers 100-year floodplain (East Cocalico T).</li> <li>Completed (East Drumore T).</li> <li>Through zoning ordinance (East Lampeter T).</li> <li>Integrated into the municipality’s normal operations (Eden T, Salisbury T).</li> <li>Enforce Floodplain Regulations that prohibit new development in floodplains (Ephrata T).</li> <li>The Zoning Officer updates the Zoning Hearing Board on coordination efforts (Ephrata B).</li> <li>Ongoing effort with the City Zoning Hearing Board (Lancaster City).</li> </ul>
Action 6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation.	Countywide	Complete	<ul style="list-style-type: none"> <li>Items put on website at times (Colerain T).</li> <li>Through MS4 Program (East Lampeter T).</li> <li>Newsletter by year (Rapho T).</li> </ul>
Action 6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk.	Countywide	Complete	<ul style="list-style-type: none"> <li>Have a Township website, and do put on information occasionally that is received from various agencies (Colerain T).</li> <li>Are there County links to be added to the Township website (East Cocalico T).</li> <li>Our website will post tips prior to an event if applicable (East Petersburg B).</li> </ul>
Action 6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation.	Countywide	Complete	<ul style="list-style-type: none"> <li>Strong relationship with BR Channel 11 and Ephrata Review on all-hazards approach to public safety (Ephrata B).</li> </ul>
Action 6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation.	Countywide	Complete	<ul style="list-style-type: none"> <li>Schools do on their own (East Petersburg B).</li> <li>Police and EMA serve on school district safety committee to continuously evaluate risks (Lititz B).</li> <li>EPD Officer that serves as School Resource Officer (SRO) to local school district has taken an all-hazards approach to overall school safety (Ephrata B).</li> </ul>
Action 6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities.	Countywide	No Progress	
Action 6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures.	Countywide	In Progress	



Description	Jurisdiction	Status	Review Comments
Action 6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures.	Countywide	Continuous	<ul style="list-style-type: none"> <li>• Could put this information in our yearly Newsletter, mailings are expensive (Colerain T).</li> </ul>
Action 6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas.	Countywide	No Progress	<ul style="list-style-type: none"> <li>• 1 workshop hosted by elected official (Rapho T).</li> </ul>
Action 6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes.	Countywide	Continuous	<ul style="list-style-type: none"> <li>• Featured in recent newsletter (Rapho T).</li> </ul>
Action 6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	Countywide	Continuous	
Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	Caernarvon Township	In Progress	
Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	Caernarvon Township	No Progress	
Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	Caernarvon Township	No Progress	
Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	Caernarvon Township	Complete	
Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.	Columbia Borough	Continuous	Testing of vacant and blighted properties is routine.
Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood-prone area and to another location on Main Street in Denver Borough.	Denver Borough	In Progress	<ul style="list-style-type: none"> <li>• Spoke with property owner. Unable to relocate to another facility in the Borough (Denver B).</li> </ul>
Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	East Earl Township	In Progress	<ul style="list-style-type: none"> <li>• Provided info to land owners.</li> </ul>
Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church Street, Snapper Dam Road, and Nolt Road. The three roads are subject to frequent flooding.	East Hempfield Township	No Progress	<ul style="list-style-type: none"> <li>• MS4 planning changed the priority of this project but it remains on the list (East Hempfield T).</li> </ul>
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property, so it would not require acquisition of land. This is conceptual.	Ephrata Borough	No Progress	<ul style="list-style-type: none"> <li>• Remains as a concept for when funding becomes available.</li> </ul>



Description	Jurisdiction	Status	Review Comments
Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100-year floodplain.	Lancaster City	In Progress	<ul style="list-style-type: none"> <li>In 2013 this facility was moved and raised above 100-year floodplain; however, the new 2016 FIRMs put the finished floor elevation 1'-1.5'ft below the 100-year flood elevation. Not possible to relocate again at this time.</li> </ul>
Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100-year floodplain.	Lancaster City	In Progress	<ul style="list-style-type: none"> <li>In 2013 this facility was moved and raised above 100-year floodplain; however, the new 2016 FIRMs put the finished floor elevation 1'-1.5'ft below the 100-year flood elevation. Not possible to relocate again at this time.</li> </ul>
Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100-year floodplain.	Lancaster City	In Progress	<ul style="list-style-type: none"> <li>In 2013 this facility above 100-year floodplain; however, the new 2016 FIRMs put the finished floor elevation 1'-1.5'ft below the 100-year flood elevation. Not possible to relocate again at this time.</li> </ul>
Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.	Manheim Township	No Progress	
West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	Manheim Township	No Progress	
Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.	Mount Joy Borough	No Progress	
Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.	Rapho Township	Complete	<ul style="list-style-type: none"> <li>Culvert replaced August 2017</li> </ul>
Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	Sadsbury Township	No Progress	



Description	Jurisdiction	Status	Review Comments
MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.	West Lampeter Township	Complete	<ul style="list-style-type: none"> <li>• These activities have been implemented and are ongoing.</li> </ul>
Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	West Lampeter Township	In Progress	<ul style="list-style-type: none"> <li>• In progress and part of a larger development project along Hollinger Road. Construction is estimated to conclude by the end of 2018.</li> </ul>



### 6.1.3 Additional Past Mitigation Accomplishments

Lancaster County and its municipalities are dedicated to mitigation activities and comprehensive all-hazards planning. To that end, the County has engaged in mitigation activities beyond those identified in its 2014 HMP. Stakeholders throughout the County have demonstrated a proactive approach, commitment to resiliency, and desire to protect both physical assets, environment, and citizens against hazard losses through the following additional accomplishments:

- Chiques Creek Sediment Removal – 800 linear feet of sediment removal from the Chiques Creek, completed in 2016.
- Christiana Borough – The Borough worked to map and replace/add gate valves in the drinking water main supply lines.
- Denver Borough – The Borough is working to continue to improve stormwater flows on Locust Street, including installing rain gardens and infiltration areas on a major commercial/industrial site.
- East Hempfield Township at Lime Spring Square – 4,350 linear feet of floodplain restoration along Brubaker Run, completed in 2017.
- East Lampeter Township – The Township is working with Amtrak to obtain easements for a larger stormwater piping system along Greenfield Road.
- Lititz Borough, New Street Park Phase 2 – Bank stabilization of the Santo Domingo Creek. The project included stream bank stabilization, riparian buffers, and bio-retention areas. The project was completed in 2016.
- Manheim Borough, at Logan Park - Floodplain restoration of Rife Run at Logan Park. The project included removal of 10,000 cubic yards of sediment, relocating and restoring 1,500 linear feet of the stream channel, and 2.5 acres of wetland creation, seeding, stabilization, and planting. The project was completed in 2015.
- Rapho Township at the Lancaster Liederkrantz – Streambank stabilization, installation of a bio-swale, and wetland protection along Chiques Creek, completed in 2014.
- Warwick Township, at the Rock Lititz property – 17-acre, 4,300-foot floodplain restoration project along the Santo Domingo Creek completed in 2014.
- West Hempfield Township at Clipper Magazine – 700 linear feet of floodplain restoration along the West Branch of the Little Conestoga Creek, completed in 2016.

In addition, Lancaster City reported that the continued area-wide disconnection of separate storm sewers with the City, Manheim Township, and Amtrak right-of-way will improve drainage at the New Holland Avenue, Plum Street, and Wabank Street underpasses.

## 6.2 MITIGATION GOALS AND OBJECTIVES

This section describes the mitigation goals and objectives set forth in the 2019 HMP update.

### 6.2.1 2019 Mitigation Goals

The Steering Committee reviewed the 2014 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 Workshops. The Planning Team reviewed and approved the updated goals for the 2019 HMP. The 2019 County HMP goals are in line with State 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 2019 County HMP goals are listed below:

1. **Goal 1:** Prevent injury/death and damage from natural and human-made hazards in Lancaster County.
2. **Goal 2:** Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards.
3. **Goal 3:** Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards.
4. **Goal 4:** Increase public education and awareness of existing and potential hazards in Lancaster County.

### 6.2.2 2019 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 2014 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 2014. The revised and updated objectives were presented to the Planning Team and finalized at the May 2018 Mitigation Strategy Review Meeting. Objectives related to each of the goals are listed below, and Table 6-1 summarizes the evaluation of all goals and objectives from the 2014 HMP.

#### **Goal 1: Prevent injury/death and damage from natural and human-caused hazards in Lancaster County.**

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct growth in designated growth areas away from hazard-prone areas, and maintain natural hazard buffers in the County.
- Objective 1.3 Lessen impacts on natural resources from natural and human-caused hazards.

#### **Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards.**

- Objective 2.1 Protect existing structures, including critical facilities, from damage that can be caused by hazards.
- Objective 2.2 Acquire, relocate, elevate, and/or retrofit existing structures located in hazard areas.
- Objective 2.3 Acquire, relocate, elevate, and/or retrofit repetitive loss properties from flood-prone areas.
- Objective 2.4 Improve and maintain stormwater management systems to reduce backup and flooding.
- Objective 2.5 Protect the health of County residents from disease.

#### **Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards.**

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.



**Goal 4: Increase public education and awareness of existing and potential hazards in Lancaster County.**

- Objective 4.1 Develop public education and outreach programs on hazards and hazard mitigation.
- Objective 4.2 Educate property owners in hazard risk areas regarding their risks and the precautions they can take.
- Objective 4.3 Encourage residents to implement hazard mitigation and preparedness measures on their properties.
- Objective 4.4 Encourage homeowners, renters, and businesses to insure their properties against all hazards, including flood coverage under the National Flood Insurance Program (NFIP).
- Objective 4.5 Encourage local participation in the Community Rating System (CRS) Program.

**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 Workshops 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 2019 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	✓	✓		✓
Drought	✓			✓
Earthquake	✓			✓
Environmental Hazards	✓	✓		✓
Flood, Flash Flood, and Ice Jam	✓	✓	✓	✓



Hazard	Local Plans and Regulations	Structure and Infrastructure Projects	Natural Systems Protection	Education and Awareness Programs
Hailstorm	✓			✓
Invasive Species	✓			✓
Nuclear Incident	✓			✓
Pandemic	✓			✓
Radon Exposure				✓
Subsidence and Sinkholes				✓
Tornadoes and Windstorms	✓			✓
Transportation Accidents	✓	✓		✓
Utility Interruption	✓	✓		✓
Wildfire	✓			✓
Winter Storm	✓			✓

## 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 2014 update that are still relevant or in progress. This section describes 2019 mitigation initiatives, mitigation strategy prioritization and implementation, and prioritization of mitigation actions.

### 6.4.1 2019 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 Workshops. Refer to Appendix G for a blank version of the Mitigation Action Worksheet and to Appendix H 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. 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 2014 version of the HMP may have been reworded and given a new initiative designation to conform to current needs and procedures. The County-Wide actions apply to the County as an entity and participating municipalities. For most County-Wide actions, the action applies to all participating municipalities. See Appendix H for action worksheets that specify to which municipalities other County-Wide actions apply.

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>County-Wide (Multiple Municipalities)</b>												
LC-1	Acquire properties in hazard areas, notably those in the 1 percent annual chance floodplain, to convert them to open space.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP	Long	Medium	SIP
LC-2	Educate residents in flood-prone areas about the benefits of purchasing flood insurance.	N/A	Flood, Flash Flood, and Ice Jams	4	LEMA	Municipal Floodplain Administrators	Low	Low	Operating Budget	Short	Low	EAP
LC-3	Elevate structures at risk of flooding.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP	Short	Medium	SIP
LC-4	Acquire repetitive loss properties to convert them to open space.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP	Long	Medium	SIP
LC-5	Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community.	Existing	Dam Failure	2	LEMA	DPW, Municipal EMCs, PA DEP Dam Safety	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
LC-6	Work with hazardous materials facilities in the floodplain to floodproof structures up to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	DPW, Municipal EMCs	High	Low	Operating Budget; LEPC	Short	Medium	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
LC-7	Work with the Lancaster Conservancy to provide information at the Welsh Mountain Nature Preserve regarding the potential for wildfires and how visitors can prevent them.	N/A	Wildfire	4	LEMA	Municipal EMCs	Medium	Low	Operating Budget	Short	Low	EAP
LC-8	Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land.	New	Flood, Flash Flood, and Ice Jams	2	LEMA	DPW, Municipal EMCs	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
LC-9	Work with the railroad and property owners to provide a wider buffer between the tracks and vegetation.	N/A	Wildfire	4	LEMA	Railroad, Municipal EMCs	High	Medium	Operating Budget	Short	Low	EAP
LC-10	Protect the structures in Chickie's Park to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	Parks and Recreation	DPW, Municipal EMCs, LEMA	High	Medium	FEMA HMPG, PDM; Operating Budget	Short	Medium	SIP
LC-11	Work with PPL to protect the Conestoga KV Substation to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs	High	High	Operating Budget	Short	Medium	SIP
LC-12	Work with the Safe Harbor Water Power Corporation to protect their facilities to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs, Safe Harbor Water Power Corporation	High	High	Operating Budget	Short	Medium	SIP
LC-13	Work with PPL to protect the Holtwood facility to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs	High	High	Operating Budget	Short	Medium	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
LC-14	Develop a hazard information page on the County website, and link from each municipality's website.	N/A	Drought; Earthquake; Flood, Flash Flood, and Ice Jam; Hailstorm; Invasive Species; Pandemic; Radon Exposure; Subsidence/ Sinkhole; Tornado and Windstorm; Wildfire; Winter Storm; Dam Failure; Environmental Hazards; Nuclear Incident; Transportation Accident	4	LEMA	Municipal EMCs	Low	Low	Operating Budget	Short	Medium	EAP
LC-15	Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas.	N/A	Flood, Flash Flood, and Ice Jams; Subsidence/ Sinkholes; Wildfire; Dam Failure; Environmental Hazards; Nuclear Incident	4	LEMA	Municipal EMCs, Floodplain Administrators	Low	Low	Operating Budget	Short	Medium	EAP
LC-16	Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes.	N/A	Radon Exposure	4	LEMA	Municipal EMCs, Code Enforcement Officers	Medium	Low	Operating Budget	Short	Low	EAP
LC-17	Provide information to the public about the dangers of radon exposure.	N/A	Radon Exposure	4	LEMA	Municipal EMCs, Code Enforcement Officers	Medium	Low	Operating Budget	Short	Low	EAP
LC-18	Work with the Amish community to protect their critical facilities (e.g., schools) in the floodplain.	Existing	Flood, Flash Flood, and Ice Jams	2	LEMA	Municipal EMCs	Medium	Low	Operating Budget	Short	Low	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
LC-19	Enforce building codes, floodplain management ordinances, and other local regulations to protect new structures constructed in hazard-prone areas.	New	Earthquake; Flood, Flash Flood, and Ice Jam; Hailstorm; Radon Exposure; Subsidence/ Sinkhole; Tornado and Windstorm; Wildfire; Winter Storm; Dam Failure; Environmental Hazards	1, 2	Municipal Chief Executive Officers	Municipal Code Enforcement Officers; Municipal Zoning Officers; Municipal Floodplain Administrators	High	Low	Operating Budget	Short	High	LPR
<b>Akron Borough (not currently eligible for FEMA funding – community did not participate in the planning process)</b>												
AkB-1	Protect Wastewater Pump #126 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
AkB-2	Upgrade sewer infrastructure in the Heritage Development to prevent stormwater infiltration.	Existing	Flood, Flash Flood, and Ice Jams; Utility Interruption	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	Medium	SIP
<b>Brecknock Township (not currently eligible for FEMA funding – community did not participate in the planning process)</b>												
BrkT-1	Protect the Northern Lancaster County Authority facility to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	Public Works Director	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



SECTION 6: MITIGATION STRATEGY

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
BrkT-2	Protect the Northern Lancaster County Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
BrkT-3	Protect Well #7 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
<b>Caernarvon Township</b>												
CaeT-1	Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
CaeT-2	Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Columbia Borough</b>												
ColB-1	Improve stormwater drainage at 10 <sup>th</sup> Street and Ridge Avenue.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
ColB-2	Protect the Columbia Municipal Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ColB-3	Provide information at the overlook regarding the potential for wildfires on the hill below, and how visitors can prevent them.	N/A	Wildfire	4	Municipal EMC	Fire Department	Medium	Low	Operating Budget	Short	Low	EAP
ColB-4	Install a backup generator that can power the entire Municipal Building.	Existing	Utility Interruption	2	DPW	Municipal EMC	High	Medium	FEMA HMPG, PDM; RACP	Short	Medium	SIP
<b>Conestoga Township</b>												
ConesT-1	Improve drainage at the low spot in the road at Kendig Road and Elm Street.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP





**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ConT-1	Protect the Bainbridge Water Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	Medium	SIP
<b>Denver Borough</b>												
DenB-1	Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood-prone area and to another location on Main Street in Denver Borough.	Existing	Flood, Flash Flood, and Ice Jams	2	Municipal EMC	Denver Beer Distributor	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP	Short	Low	SIP
DenB-2	Protect Filtration #3 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
<b>Earl Township</b>												
EarlT-1	Relocate businesses along US-322 west of Martindale Road.	Existing	Flood, Flash Flood, and Ice Jams	2	Board of Supervisors		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>East Cocalico Township</b>												
ECT-1	Protect the District Justice Office 1 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
ECT-2	Protect the Reamstown EMS facility to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
ECT-3	Protect Well #8 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
ECT-4	Replace the Dogwood Drive bridge over Fry's Run with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
ECT-5	Replace the Miller Road bridge over the Little Cocalico Creek with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
ECT-6	Replace the Reinholds Road bridge over Fry's Run with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ECT-7	Replace the Smokestown Road bridge over Fry's Run with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
ECT-8	Replace the Stony Run culvert under Hill Road with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
ECT-9	Replace the White Oak Road bridge over Fry's Run with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
<b>East Donegal Township</b>												
EDT-1	Protect the Mount Joy Borough Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EDT-2	Protect Wastewater Pump #50 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
EDT-3	Protect Well #33 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
EDT-4	Protect Well #79 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
<b>East Earl Township</b>												
EET-1	Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	Existing	Flood, Flash Flood, and Ice Jams	2	Emergency EMC	PA DEP	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
EET-2	Work with PENNDOT to realign and install a traffic light at the intersection of US-322 and PA-897.	Existing	Transportation Accident	2	DPW	PENNDOT	Medium	High	Operating Budget	Short	Medium	SIP
EET-3	Work with PENNDOT to realign the intersection of Routes 23 and 897.	Existing	Transportation Accident	2	DPW	PENNDOT	Medium	High	Operating Budget	Short	Medium	SIP
<b>East Hempfield Township</b>												
EHT-1	Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church Street, Snapper Dam Road, and Nolt Road. The three roads are subject to frequent flooding.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP	Short	Medium	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
EHT-2	Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
EHT-3	Protect Potable Pump #37 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
EHT-4	Protect Potable Pump #38 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
EHT-5	Protect Well #22 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
EHT-6	Replace old and undersized culverts along the Swarr Run located at Church St.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
EHT-7	Replace old and undersized culverts along the Swarr Run located at Nolt Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
EHT-8	Replace old and undersized culverts along the Swarr Run located at Snapper Dam Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
<b>East Lampeter Township</b>												
ELT-1	Backup generator – Purchase 10 more generators for use along Route 30 and Route 340 to make them functional emergency routes.	New	Transportation Accident; Utility Interruption	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM; Capital Improvement Budget; RACP	Long	Medium	SIP
ELT-2	Backup generator – Install backup generators in two fire stations that are not yet equipped with backup power.	New	Utility Interruption	2	DPW	Municipal EMCs	High	Medium	FEMA HMPG, PDM; RACP	Long	Medium	SIP
ELT-3	Identify mitigation or structural projects to reduce vulnerability to stormwater flooding incidents along Millcross Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Low	Low	Operating Budget	Long	Low	SIP
ELT-4	Improve the design of the intersections at Oakview, Rte. 462, and Millstream along Rte. 30.	Existing	Transportation Accident	2	DPW	PENNDOT, LC MPO	High	High	TIP; PENNDOT	Long	High	SIP
ELT-5	Install stormwater management infrastructure at Gibson’s Park at Nolt Mill.	New	Flood, Flash Flood, and Ice Jams	2	Parks and Recreation	DPW	Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Long	Medium	SIP
ELT-6	Investigate retrofitting or other flood hazard mitigation measure for Oaks 1 Pump Station.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	Medium	Operating Budget	Long	Medium	SIP
ELT-7	Investigate retrofitting or other flood hazard mitigation measure for properties along Hale Drive.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	Medium	Operating Budget	Long	Low	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ELT-8	Investigate retrofitting or other flood hazard mitigation measure for properties along the south side of Millstream Road between Gridley and Strasburg Pike.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	Medium	Operating Budget	Long	Low	SIP
ELT-9	Investigate the removal of dam structures at Flory Park.	Existing	Dam Failure; Flood, Flash Flood, and Ice Jams	2	Parks and Recreation	DPW, DEP, DCED, Mill Creek Association, and Property Owners	Medium	Medium	PA DEP	Long	Medium	SIP
ELT-10	Investigate the removal of dam structures at Gibson's Park at Nolt Mill.	Existing	Dam Failure; Flood, Flash Flood, and Ice Jams	2	Parks and Recreation	DPW, DEP, DCED, Mill Creek Association, and Property Owners	Medium	Medium	PA DEP	Long	Medium	SIP
ELT-11	Protect Lancaster Mennonite High School to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Long	High	SIP
ELT-12	Protect Wastewater Pump #97 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Long	High	SIP
ELT-13	Protect Wastewater Pump #98 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Long	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ELT-14	Upgrade stormwater management at Flory Park.	Existing	Flood, Flash Flood, and Ice Jams	2	Parks and Recreation	DPW	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
ELT-15	Upgrade stormwater management at Greenland near Flory Park entrance.	Existing	Flood, Flash Flood, and Ice Jams	2	Parks and Recreation	DPW	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
ELT-16	Upgrade stormwater management at North Cherry Lane.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Medium	SIP
ELT-17	Upgrade stormwater management at Susan Avenue.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
ELT-18	Upgrade stormwater management at the northeast side properties along Strasburg Pike.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ELT-19	Upgrade the stormwater management system along Greenfield Road at Amtrak.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	High	SIP
ELT-20	Upgrade the stormwater management system at Soudersburg Road at the pump station.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
<b>East Petersburg Borough</b>												
EPB-1	Protect Filtration #5 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
<b>Elizabeth Township</b>												
ElizT-1	Work with utility companies to clear vegetation around power and communications lines.	Existing	Utility Interruption	4	DPW		Medium	Low	Operating Budget	Short	Medium	LPR
<b>Ephrata Borough</b>												
EphB-1	Protect Electric Substation #31 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
EphB-2	Protect Ephrata Boro WWTP #1 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Sewer Fees	Short	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
EphB-3	Protect Ephrata EMS to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
EphB-4	Protect the Ephrata Borough Sewer Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphB-5	Protect Wastewater Pump #176 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphB-6	Protect Wastewater Pump #177 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphB-7	Protect Wastewater Pump #77 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphB-8	Protect Well #4 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Ephrata Township</b>												
EphT-1	Improve drainage system at the intersection of Frysville Road and Newswanger Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
EphT-2	Protect the Ephrata Boro WWTP #2 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphT-3	Protect Wastewater Pump #120 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphT-4	Protect Wastewater Pump #123 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
EphT-5	Protect Wastewater Pump #9 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



SECTION 6: MITIGATION STRATEGY

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Lancaster City</b>												
LancC-1	Improve drainage on New Holland Avenue under the railroad overpass.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Railroad	Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
LancC-2	Improve drainage on North Plum Street under the railroad overpass.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Railroad	Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
LancC-3	Improve drainage on Wabank Road 70 feet west of Hershey Avenue.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
LancC-4	Protect Potable Pump #79 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
LancC-5	Protect Potable Pump #98 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
LancC-6	Protect Tank #7 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
LancC-7	Protect the Lancaster City Conestoga Filter Plant to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancC-8	Flood proofing Stevens Avenue Sewage Pumping Station – Provide additional flood proofing to sewage pumping station.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancC-9	Flood proofing of Conestoga Gardens Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancC-10	Flood proofing Susquehanna Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Lancaster Township (not currently eligible for FEMA funding – community did not participate in the planning process)</b>												
LancT-1	Protect the Lancaster City Advanced WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancT-2	Protect Wastewater Pump #136 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancT-3	Protect Wastewater Pump #148 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancT-4	Protect Wastewater Pump #168 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LancT-5	Protect Wastewater Pump #169 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Leacock Township</b>												
LeaT-1	Protect Wastewater Pump #27 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Lititz Borough</b>												
LitB-1	Protect the Warwick EMS facility to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
LitB-2	Protect Wastewater Pump #72 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
LitB-3	Protect Well #74 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
LitB-4	Protect Well #75 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP







Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Manheim Borough</b>												
ManhB-1	Protect Electric Substation #42 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
ManhB-2	Protect Potable Pump #101 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
ManhB-3	Protect the Manheim FD station to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
ManhB-4	Protect Wastewater Pump #200 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManhB-5	Protect Well #57 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
ManhB-6	Protect Well #58 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>Manheim Township</b>												
ManhT-1	Protect District Justice Office 13 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
ManhT-2	Protect Wastewater Pump #143 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManhT-3	Protect Wastewater Pump #166 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManhT-4	Protect Wastewater Pump #167 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManhT-5	West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP



SECTION 6: MITIGATION STRATEGY

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ManhT-6	Work with PENNDOT to redesign the interchange at US-30 and US-222.	Existing	Transportation Accident	2	DPW	PENNDOT	Medium	High	Operating Budget	Short	Medium	SIP
<b>Manor Township (not currently eligible for FEMA funding – community did not participate in the planning process)</b>												
ManT-1	Protect Electric Substation #6 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
ManT-2	Protect the Millersville Borough WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManT-3	Protect the Millersville WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManT-4	Protect Wastewater Pump #140 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManT-5	Protect Wastewater Pump #141 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



SECTION 6: MITIGATION STRATEGY

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ManT-6	Protect Wastewater Pump #150 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManT-7	Protect Wastewater Pump #162 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ManT-8	Protect Wastewater Pump #165 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Marietta Borough</b>												
MarB-1	Protect the Marietta Borough Building to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
MarB-2	Protect the Marietta Donegal Sewage Treatment Plant to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
MarB-3	Protect the Marietta Fire Department station to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Short	High	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
MarB-4	Protect the Marietta-East Donegal Joint Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
MarB-5	Protect the Susquehanna Valley EMS facility to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM; Operating Budget	Short	High	SIP
MarB-6	Protect Wastewater Pump #53 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Millersville Borough</b>												
MillB-1	Improve drainage along Oak Ridge Drive.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
MillB-2	Improve drainage at Barbara Street and East Cottage Avenue.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
MillB-3	Protect Wastewater Pump #179 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Mount Joy Borough</b>												
MJB-1	Conduct a detailed flood study of the Little Chiques Creek.	N/A	Flood, Flash Flood, and Ice Jams	1	Municipal FPA	Municipal EMCs	Low	Medium	FEMA RiskMap; Private Developers	Short	Medium	LPR
MJB-2	Improve stormwater management capacity of Staufer Court and the outfall into the Little Chiques Creek.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
MJB-3	Improve stormwater management capacity under PA-230.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
MJB-4	Modifications to the Borough Stormwater Detention Basin - increasing the volume of the basin by increasing the height of the berms and/or increasing the footprint of the basin and replacing a 45' long drainage swale with a pipe to prohibit stormwater from flowing over the swale berm.	Existing	Flood, Flash Flood, and Ice Jam	2	Borough Engineer	DPW	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
<b>Mount Joy Township</b>												
MJT-1	Protect Wastewater Pump #84 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
MJT-2	Raise Koser Road at the approach to the bridge over Conewago Creek.	Existing	Flood, Flash Flood, and Ice Jams	2	Township Public Works	N/A	High	\$10,000	General Fund/ Liquid Fuels	Short	Low	SIP
MJT-3	Raise Prospect Road at the approach to the bridge over Conewago Creek.	Existing	Flood, Flash Flood, and Ice Jams	2	Township Public Works	N/A	High	\$10,000	General Fund/ Liquid Fuels	Short	Low	SIP
<b>Paradise Township</b>												
ParT-1	Protect the Paradise Township Sewer Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
ParT-2	Protect Wastewater Pump #89 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
ParT-3	Protect Wastewater Pump #91 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Penn Township</b>												
PennT-1	Clear obstructions from the stormwater management system near the intersection of Fruitville Pike/New Charlotte Street and Main Street (PA-72).	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	PENNDOT	Medium	Medium	Operating Budget	Short	Medium	SIP
PennT-2	Protect the Manheim Borough Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
PennT-3	Protect Wastewater Pump #199 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
PennT-4	Protect Well #39 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
PennT-5	Update stormwater management regulations to make them more restrictive for new development.	New	Flood, Flash Flood, and Ice Jams	1	Board of Supervisors	FPA	Medium	Low	Operating Budget	Short	Medium	LPR
PennT-6	Upgrade stormwater management infrastructure along White Oak Road south of Hamaker Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
PennT-7	Upgrade stormwater management infrastructure at the intersection of Stiegel Valley Road and White Oak Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
<b>Providence Township</b>												
ProvT-1	Protect the Quarryville Boro WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Rapho Township</b>												
RapT-1	Protect Wastewater Pump #55 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



SECTION 6: MITIGATION STRATEGY

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
RapT-2	Regularly clear obstructions from waterways.	N/A	Flood, Flash Flood, and Ice Jams	1	DPW		High	Low	Operating Budget	Short	Low	NSP
<b>Reamstown Borough</b>												
ReamB-1	Replace the Stony Run culvert under Bunker Hill Road with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
ReamB-2	Replace the Stony Run culvert under West Church Street with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
<b>Sadsbury Township</b>												
SadT-1	Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	New	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMCs	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
<b>Strasburg Borough</b>												
StrasB-1	Improve stormwater infrastructure in the Borough's Historic District.	Existing	Flood, Flash Flood, and Ice Jams	2	Borough Manager	USACE	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
StrasT-1	Protect Wastewater Pump #13 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>Upper Leacock Township</b>												
ULT-1	Install drainage ditches along Creek Hill Road at Hartman Station Road to reduce soil runoff onto the roadway.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
<b>Warwick Township</b>												
WarT-1	Protect Wastewater Pump #67 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
WarT-2	Protect Well #35 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
WarT-3	Replace the Lititz Run culvert under Lititz Run Road with one with a larger opening.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP



SECTION 6: MITIGATION STRATEGY

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
<b>West Cocalico Township</b>												
WCT-1	Expand intersection of Sandy Hill Road and Hillside Road.	Existing	Environmental Hazards; Transportation Accidents	2	DPW		Low	High	Capital Improvement Budget	Short	Low	SIP
WCT-2	Improve drainage at the culvert at Sportsman Road east of Hickory Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
WCT-3	Increase length of Hackman Road bridge to provide more water to flow underneath it.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
WCT-4	Increase length of Hickory Road bridge to provide more water to flow underneath it.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
WCT-5	Increase length of Indiantown Road bridge to provide more water to flow underneath it.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
WCT-6	Install backup power generators at two potable water wells.	Existing	Utility Interruption	2	DPW		High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Water Fees; RACP	Short	High	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
WCT-7	Install stormwater management infrastructure along Blue Lake Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
WCT-8	Install stormwater management infrastructure along Girl Scout Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
WCT-9	Install stormwater management infrastructure along Mountain Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
WCT-10	Install stormwater management infrastructure along Netzley Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
WCT-11	Install stormwater management infrastructure along Sandy Hill Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
WCT-12	Install stormwater management infrastructure along Strickler Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
WCT-13	Install stormwater management infrastructure along White Hall Road to prevent downhill flooding.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Medium	SIP
WCT-14	Relocate the Wastewater Treatment Plant to a location outside the floodplain.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	Medium	SIP
WCT-15	Renovate the stormwater management system in Reinholds.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	Municipal EMC	Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
WCT-16	Upgrade and clear obstructions in the drainage system at the Cocalico Creek at Hickory Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	Operating Budget	Short	Low	SIP
WCT-17	Upgrade the bridge on Sportsman Road over the Cocalico Creek to allow more water to flow underneath it.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP



**SECTION 6: MITIGATION STRATEGY**

Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
WCT-18	Upgrade the drainage system at the Cocalico Creek at Pineview Drive, and elevate the bridge approach.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		High	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	SIP
<b>West Donegal Township</b>												
WDT-1	Protect the Elizabethtown Regional Sewer Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
WDT-2	Protect Wastewater Pump #197 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>West Earl Township</b>												
WET-1	Protect the West Earl Township Sewer Authority WWTP to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
WET-2	Protect the West Earl Township Water Authority facility to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	High	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP





Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
WET-3	Protect Wastewater Pump #184 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>West Hempfield Township</b>												
WHT-1	Protect Wastewater Pump #134 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
WHT-2	Protect Wastewater Pump #149 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP
<b>West Lampeter Township</b>												
WLT-1	Improve drainage along Eckman Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
WLT-2	Improve stormwater management along Gypsy Hill Road, including installing a culvert to discharge water away from homes.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	\$30,000	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
WLT-3	Improve stormwater management along Hollinger Road.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	Short	Low	SIP
WLT-4	McFalls Property Stormwater Management - reclaim the area as a stream.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	\$500K	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Long	Low	SIP
WLT-5	Protect Potable Pump #100 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
WLT-6	Protect Potable Pump #61 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	Short	High	SIP
WLT-7	Protect Wastewater Pump #21 to the 0.2% annual chance flood level.	Existing	Flood, Flash Flood, and Ice Jams	2	DPW	FPA, Municipal EMC	High	Medium	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	Short	High	SIP



Initiative*	Mitigation Initiative	Applies to New and/or Existing Structures**	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
WLT-8	Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	New	Flood, Flash Flood, and Ice Jams	2	DPW		Medium	High	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	Short	Low	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

FPA = Floodplain Administrator

PA DEP = Pennsylvania Department of Environmental Protection

PDM = Pre-Disaster Mitigation Program

PEMA = Pennsylvania Emergency Management Agency

WWTP = Wastewater Treatment Plant

**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

HMPG = 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 2013). 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 Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
LC-1	Acquire properties in hazard areas, notably those in the 1 percent annual chance floodplain, to convert them to open space.	N	+	+	+	N	N	+	+	N	+	6 (+) 4 (N) 0 (-)
LC-2	Educate residents in flood-prone areas about the benefits of purchasing flood insurance.	N	N	+	+	+	N	N	N	N	+	4 (+) 6 (N) 0 (-)
LC-3	Elevate structures at risk of flooding.	+	+	+	+	+	N	N	N	N	N	5 (+) 5 (N) 0 (-)
LC-4	Acquire repetitive loss properties to convert them to open space.	N	+	+	+	N	N	N	+	N	+	5 (+) 5 (N) 0 (-)
LC-5	Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
LC-6	Work with hazardous materials facilities in the floodplain to floodproof structures up to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
LC-7	Work with the Lancaster Conservancy to provide information at the Welsh Mountain Nature Preserve regarding the potential for wildfires and how visitors can prevent them.	N	N	+	+	+	N	+	+	N	+	6 (+) 4 (N) 0 (-)
LC-8	Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
LC-9	Work with the railroad and property owners to provide a wider buffer between the tracks and vegetation.	N	N	+	+	N	N	N	+	N	+	4 (+) 6 (N) 0 (-)
LC-10	Protect the structures in Chickie's Park to the 0.2% annual chance flood level.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
LC-11	Work with PPL to protect the Conestoga KV Substation to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
LC-12	Work with the Safe Harbor Water Power Corporation to protect their facilities to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
LC-13	Work with PPL to protect the Holtwood facility to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
LC-14	Develop a hazard information page on the County website, and link from each municipality's website.	N	N	+	+	+	N	N	N	N	+	4 (+) 6 (N) 0 (-)
LC-15	Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas.	+	N	+	+	+	N	N	N	N	+	5 (+) 5 (N) 0 (-)
LC-16	Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes.	+	N	+	+	+	N	N	+	N	N	5 (+) 5 (N) 0 (-)
LC-17	Provide information to the public about the dangers of radon exposure.	+	N	+	+	+	N	N	+	N	N	5 (+) 5 (N) 0 (-)
LC-18	Work with the Amish community to protect their critical facilities (e.g., schools) in the floodplain.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
LC-19	Enforce building codes, floodplain management ordinances, and other local regulations to protect new structures constructed in hazard-prone areas.	+	+	+	+	+	+	+	N	+	+	9 (+) 1 (N) 0 (-)
AKB-1*	Protect Wastewater Pump #126 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
AKB-2*	Upgrade sewer infrastructure in the Heritage Development to prevent stormwater infiltration.	+	+	+	+	+	N	+	N	N	N	6 (+) 4 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
BrkT-1*	Protect the Northern Lancaster County Authority facility to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
BrkT-2*	Protect the Northern Lancaster County Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
BrkT-3*	Protect Well #7 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
CaeT-1	Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
CaeT-2	Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ColB-1	Improve stormwater drainage at 10 <sup>th</sup> Street and Ridge Avenue.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ColB-2	Protect the Columbia Municipal Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ColB-3	Provide information at the overlook regarding the potential for wildfires on the hill below, and how visitors can prevent them.	N	N	+	+	+	N	+	+	N	+	6 (+) 4 (N) 0 (-)
ColB-4	Install a backup generator that can power the entire Municipal Building.	N	+	+	+	+	N	+	N	N	+	6 (+) 4 (N) 0 (-)
Cones T-1	Improve drainage at the low spot in the road at Kendig Road and Elm Street.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ConT-1	Protect the Bainbridge Water Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	N	N	N	6 (+) 4 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
DenB-1	Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood-prone area and to another location on Main Street in Denver Borough.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
DenB-2	Protect Filtration #3 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EarlT-1	Relocate businesses along US-322 west of Martindale Road.	N	+	+	+	N	N	+	+	N	N	5 (+) 5 (N) 0 (-)
ECT-1	Protect the District Justice Office 1 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ECT-2	Protect the Reamstown EMS facility to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ECT-3	Protect Well #8 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ECT-4	Replace the Dogwood Drive bridge over Fry's Run with one with a larger opening.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ECT-5	Replace the Miller Road bridge over the Little Cocalico Creek with one with a larger opening.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ECT-6	Replace the Reinholds Road bridge over Fry's Run with one with a larger opening.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ECT-7	Replace the Smokestown Road bridge over Fry's Run with one with a larger opening.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ECT-8	Replace the Stony Run culvert under Hill Road with one with a larger opening.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
ECT-9	Replace the White Oak Road bridge over Fry's Run with one with a larger opening.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
EDT-1	Protect the Mount Joy Borough Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EDT-2	Protect Wastewater Pump #50 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EDT-3	Protect Well #33 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EDT-4	Protect Well #79 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EET-1	Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
EET-2	Work with PENNDOT to realign and install a traffic light at the intersection of US-322 and PA-897.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
EET-3	Work with PENNDOT to realign the intersection of Routes 23 and 897.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
EHT-1	Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church Street, Snapper Dam Road, and Nolt Road. The three roads are subject to frequent flooding.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
EHT-2	Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
EHT-3	Protect Potable Pump #37 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)





Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
EHT-4	Protect Potable Pump #38 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EHT-5	Protect Well #22 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EHT-6	Replace old and undersized culverts along the Swarr Run located at Church Street.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
EHT-7	Replace old and undersized culverts along the Swarr Run located at Nolt Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
EHT-8	Replace old and undersized culverts along the Swarr Run located at Snapper Dam Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ELT-1	Backup generator – Purchase 10 more generators for use along Route 30 and Route 340 to make them functional emergency routes.	+	+	+	+	+	N	+	N	N	+	7 (+) 3 (N) 0 (-)
ELT-2	Backup generator – Install backup generators in two fire stations that are not yet equipped with backup power.	+	+	+	+	+	N	+	N	N	+	7 (+) 3 (N) 0 (-)
ELT-3	Identify mitigation or structural projects to reduce vulnerability to stormwater flooding incidents along Millcross Road.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ELT-4	Improve the design of the intersections at Oakview, Rte. 462, and Millstream along Rte. 30.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ELT-5	Install stormwater management infrastructure at Gibson’s Park at Nolt Mill.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ELT-6	Investigate retrofitting or other flood hazard mitigation measure for Oaks 1 Pump Station.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
ELT-7	Investigate retrofitting or other flood hazard mitigation measure for properties along Hale Drive.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ELT-8	Investigate retrofitting or other flood hazard mitigation measure for properties along the south side of Millstream Road between Gridley and Strasburg Pike.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ELT-9	Investigate the removal of dam structures at Flory Park.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
ELT-10	Investigate the removal of dam structures at Gibson's Park at Nolt Mill.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
ELT-11	Protect Lancaster Mennonite High School to the 0.2% annual chance flood level.	N	+	+	+	+	N	+	+	N	+	7 (+) 3 (N) 0 (-)
ELT-12	Protect Wastewater Pump #97 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ELT-13	Protect Wastewater Pump #98 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ELT-14	Upgrade stormwater management at Flory Park.	N	+	+	+	+	N	+	N	N	+	6 (+) 4 (N) 0 (-)
ELT-15	Upgrade stormwater management at Greenland near Flory Park entrance.	N	+	+	+	+	N	+	N	N	+	6 (+) 4 (N) 0 (-)
ELT-16	Upgrade stormwater management at North Cherry Lane.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ELT-17	Upgrade stormwater management at Susan Avenue.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
ELT-18	Upgrade stormwater management at the northeast side properties along Strasburg Pike.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ELT-19	Upgrade the stormwater management system along Greenfield Road at Amtrak.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ELT-20	Upgrade the stormwater management system at Soudersburg Road at the pump station.	+	+	+	+	+	N	+	N	N	N	6 (+) 4 (N) 0 (-)
EPB-1	Protect Filtration #5 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ElizT-1	Work with utility companies to clear vegetation around power and communications lines.	N	+	+	+	+	N	N	N	N	+	5 (+) 5 (N) 0 (-)
EphB-1	Protect Electric Substation #31 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphB-2	Protect Ephrata Boro WWTP #1 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphB-3	Protect Ephrata EMS to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphB-4	Protect the Ephrata Borough Sewer Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphB-5	Protect Wastewater Pump #176 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphB-6	Protect Wastewater Pump #177 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
EphB-7	Protect Wastewater Pump #77 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphB-8	Protect Well #4 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphT-1	Improve drainage system at the intersection of Frysville Road and Newswanger Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
EphT-2	Protect the Ephrata Boro WWTP #2 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphT-3	Protect Wastewater Pump #120 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphT-4	Protect Wastewater Pump #123 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
EphT-5	Protect Wastewater Pump #9 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancC-1	Improve drainage on New Holland Avenue under the railroad overpass.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
LancC-2	Improve drainage on North Plum Street under the railroad overpass.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
LancC-3	Improve drainage on Wabank Road 70 feet west of Hershey Avenue.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
LancC-4	Protect Potable Pump #79 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
LancC-5	Protect Potable Pump #98 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancC-6	Protect Tank #7 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancC-7	Protect the Lancaster City Conestoga Filter Plant to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancC-8	Flood proofing Stevens Avenue Sewage Pumping Station – Provide additional flood proofing to sewage pumping station.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancC-9	Flood proofing of Conestoga Gardens Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancC-10	Flood proofing Susquehanna Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancT-1*	Protect the Lancaster City Advanced WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancT-2*	Protect Wastewater Pump #136 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancT-3*	Protect Wastewater Pump #148 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancT-4*	Protect Wastewater Pump #168 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LancT-5*	Protect Wastewater Pump #169 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)





Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
LeaT-1	Protect Wastewater Pump #27 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LitB-1	Protect the Warwick EMS facility to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LitB-2	Protect Wastewater Pump #72 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LitB-3	Protect Well #74 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
LitB-4	Protect Well #75 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
Manh B-1	Protect Electric Substation #42 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
Manh B-2	Protect Potable Pump #101 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
Manh B-3	Protect the Manheim FD station to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
Manh B-4	Protect Wastewater Pump #200 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
Manh B-5	Protect Well #57 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
Manh B-6	Protect Well #58 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
ManhT-1	Protect District Justice Office 13 to the 0.2% annual chance flood level.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
ManhT-2	Protect Wastewater Pump #143 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManhT-3	Protect Wastewater Pump #166 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManhT-4	Protect Wastewater Pump #167 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManhT-5	West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	N	+	+	+	+	N	+	N	N	+	6 (+) 4 (N) 0 (-)
ManhT-6	Work with PENNDOT to redesign the interchange at US-30 and US-222.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
ManT-1*	Protect Electric Substation #6 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManT-2*	Protect the Millersville Borough WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManT-3*	Protect the Millersville WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManT-4*	Protect Wastewater Pump #140 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManT-5*	Protect Wastewater Pump #141 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
ManT-6*	Protect Wastewater Pump #150 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManT-7*	Protect Wastewater Pump #162 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ManT-8*	Protect Wastewater Pump #165 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MarB-1	Protect the Marietta Borough Building to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	+	8 (+) 2 (N) 0 (-)
MarB-2	Protect the Marietta Donegal Sewage Treatment Plant to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MarB-3	Protect the Marietta Fire Department station to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MarB-4	Protect the Marietta-East Donegal Joint Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MarB-5	Protect the Susquehanna Valley EMS facility to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MarB-6	Protect Wastewater Pump #53 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MillB-1	Improve drainage along Oak Ridge Drive.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
MillB-2	Improve drainage at Barbara Street and East Cottage Avenue.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
MillB-3	Protect Wastewater Pump #179 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MJB-1	Conduct a detailed flood study of the Little Chiques Creek.	N	N	+	+	+	N	+	+	N	N	5 (+) 5 (N) 0 (-)
MJB-2	Improve stormwater management capacity of Staufer Court and the outfall into the Little Chiques Creek.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
MJB-3	Improve stormwater management capacity under PA-230.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
MJB-4	Modifications to the Borough Stormwater Detention Basin	N	+	+	N	+	N	N	+	+	N	5 (+) 5 (N) 0 (-)
MJT-1	Protect Wastewater Pump #84 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
MJT-2	Raise Koser Road at the approach to the bridge over Conewago Creek.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
MJT-3	Raise Prospect Road at the approach to the bridge over Conewago Creek.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ParT-1	Protect the Paradise Township Sewer Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ParT-2	Protect Wastewater Pump #89 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ParT-3	Protect Wastewater Pump #91 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
PennT-1	Clear obstructions from the stormwater management system near the intersection of Fruitville Pike/New Charlotte Street and Main Street (PA-72).	N	+	+	+	+	+	+	N	N	+	7 (+) 3 (N) 0 (-)
PennT-2	Protect the Manheim Borough Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
PennT-3	Protect Wastewater Pump #199 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
PennT-4	Protect Well #39 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
PennT-5	Update stormwater management regulations to make them more restrictive for new development.	N	N	+	+	N	+	N	+	+	+	6 (+) 4 (N) 0 (-)
PennT-6	Upgrade stormwater management infrastructure along White Oak Road south of Hamaker Road.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
PennT-7	Upgrade stormwater management infrastructure at the intersection of Stiegel Valley Road and White Oak Road.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
ProvT-1	Protect the Quarryville Boro WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
RapT-1	Protect Wastewater Pump #55 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
RapT-2	Regularly clear obstructions from waterways.	N	N	+	+	+	+	N	N	N	+	5 (+) 5 (N) 0 (-)
Ream B-1	Replace the Stony Run culvert under Bunker Hill Road with one with a larger opening.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)





Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Ream B-2	Replace the Stony Run culvert under West Church Street with one with a larger opening.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
SadT-1	Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	N	+	+	+	+	N	N	+	N	+	6 (+) 4 (N) 0 (-)
StrasB-1	Improve stormwater infrastructure in the Borough's Historic District.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
StrasT-1	Protect Wastewater Pump #13 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
ULT-1	Install drainage ditches along Creek Hill Road at Hartman Station Road to reduce soil runoff onto the roadway.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WarT-1	Protect Wastewater Pump #67 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WarT-2	Protect Well #35 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WarT-3	Replace the Lititz Run culvert under Lititz Run Road with one with a larger opening.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WCT-1	Expand intersection of Sandy Hill Road and Hillside Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WCT-2	Improve drainage at the culvert at Sportsman Road east of Hickory Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WCT-3	Increase length of Hackman Road bridge to provide more water to flow underneath it.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
WCT-4	Increase length of Hickory Road bridge to provide more water to flow underneath it.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
WCT-5	Increase length of Indiantown Road bridge to provide more water to flow underneath it.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
WCT-6	Install backup power generators at two potable water wells.	+	+	+	+	+	N	N	+	N	+	7 (+) 3 (N) 0 (-)
WCT-7	Install stormwater management infrastructure along Blue Lake Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-8	Install stormwater management infrastructure along Girl Scout Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-9	Install stormwater management infrastructure along Mountain Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-10	Install stormwater management infrastructure along Netzley Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-11	Install stormwater management infrastructure along Sandy Hill Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-12	Install stormwater management infrastructure along Strickler Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-13	Install stormwater management infrastructure along White Hall Road to prevent downhill flooding.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WCT-14	Relocate the Wastewater Treatment Plant to a location outside the floodplain.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
WCT-15	Renovate the stormwater management system in Reinholds.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WCT-16	Upgrade and clear obstructions in the drainage system at the Cocalico Creek at Hickory Road.	N	+	+	+	+	+	+	N	N	N	6 (+) 4 (N) 0 (-)
WCT-17	Upgrade the bridge on Sportsman Road over the Cocalico Creek to allow more water to flow underneath it.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
WCT-18	Upgrade the drainage system at the Cocalico Creek at Pineview Drive, and elevate the bridge approach.	N	+	+	+	+	N	+	N	N	N	5 (+) 5 (N) 0 (-)
WDT-1	Protect the Elizabethtown Regional Sewer Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WDT-2	Protect Wastewater Pump #197 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WET-1	Protect the West Earl Township Sewer Authority WWTP to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WET-2	Protect the West Earl Township Water Authority facility to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WET-3	Protect Wastewater Pump #184 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WHT-1	Protect Wastewater Pump #134 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WHT-2	Protect Wastewater Pump #149 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)



Initiative	Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
WLT-1	Improve drainage along Eckman Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WLT-2	Improve stormwater management along Gypsy Hill Road, including installing a culvert to discharge water away from homes.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WLT-3	Improve stormwater management along Hollinger Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)
WLT-4	McFalls Property Stormwater Management - reclaim the area as a stream.	N	+	+	+	+	+	+	N	+	+	8 (+) 2 (N) 0 (-)
WLT-5	Protect Potable Pump #100 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WLT-6	Protect Potable Pump #61 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WLT-7	Protect Wastewater Pump #21 to the 0.2% annual chance flood level.	+	+	+	+	+	N	+	+	N	N	7 (+) 3 (N) 0 (-)
WLT-8	Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	N	+	+	+	+	N	+	+	N	N	6 (+) 4 (N) 0 (-)

\* Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.



### 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 2013):

- 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 2013):

- 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 Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
LC-1	Acquire properties in hazard areas, notably those in the 1 percent annual chance floodplain, to convert them to open space.	2	3	1	3	0	2.0
LC-2	Educate residents in flood-prone areas about the benefits of purchasing flood insurance.	1	3	1	3	0	1.8
LC-3	Elevate structures at risk of flooding.	2	3	1	3	0	2.0
LC-4	Acquire repetitive loss properties to convert them to open space.	2	3	1	3	0	2.0
LC-5	Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community.	2	1	1	1	1	1.2
LC-6	Work with hazardous materials facilities in the floodplain to floodproof structures up to the 0.2% annual chance flood level.	3	3	1	3	1	2.3
LC-7	Work with the Lancaster Conservancy to provide information at the Welsh Mountain Nature Preserve regarding the potential for wildfires and how visitors can prevent them.	2	2	1	2	0	1.5
LC-8	Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land.	3	2	1	3	0	1.9
LC-9	Work with the railroad and property owners to provide a wider buffer between the tracks and vegetation.	1	1	1	2	3	1.5
LC-10	Protect the structures in Chickie's Park to the 0.2% annual chance flood level.	3	2	1	3	3	2.3
LC-11	Work with PPL to protect the Conestoga KV Substation to the 0.2% annual chance flood level.	3	2	1	3	3	2.3
LC-12	Work with the Safe Harbor Water Power Corporation to protect their facilities to the 0.2% annual chance flood level.	3	2	1	3	3	2.3
LC-13	Work with PPL to protect the Holtwood facility to the 0.2% annual chance flood level.	3	2	1	3	3	2.3
LC-14	Develop a hazard information page on the County website, and link from each municipality's website.	1	2	3	3	2	2.2
LC-15	Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas.	2	2	3	3	0	2.1
LC-16	Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes.	2	3	1	2	0	1.8
LC-17	Provide information to the public about the dangers of radon exposure.	2	3	1	2	0	1.8
LC-18	Work with the Amish community to protect their critical facilities (e.g., schools) in the floodplain.	3	2	1	3	0	1.9
LC-19	Enforce building codes, floodplain management ordinances, and other local regulations to protect new structures constructed in hazard-prone areas.	3	3	3	3	3	3.0
AkB-1*	Protect Wastewater Pump #126 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
AkB-2*	Upgrade sewer infrastructure in the Heritage Development to prevent stormwater infiltration.	2	2	2	3	1	2.0
BrkT-1*	Protect the Northern Lancaster County Authority facility to the 0.2% annual chance flood level.	3	3	1	3	3	2.6



Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
BrkT-2*	Protect the Northern Lancaster County Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
BrkT-3*	Protect Well #7 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
CaeT-1	Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	2	2	1	3	1	1.8
CaeT-2	Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	2	2	1	3	1	1.8
ColB-1	Improve stormwater drainage at 10 <sup>th</sup> Street and Ridge Avenue.	2	2	1	3	1	1.8
ColB-2	Protect the Columbia Municipal Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ColB-3	Provide information at the overlook regarding the potential for wildfires on the hill below, and how visitors can prevent them.	2	2	1	2	0	1.5
ColB -4	Install a backup generator that can power the entire Municipal Building.	2	2	1	3	3	2.1
ConesT-1	Improve drainage at the low spot in the road at Kendig Road and Elm Street.	2	2	1	3	1	1.8
ConT-1	Protect the Bainbridge Water Authority WWTP to the 0.2% annual chance flood level.	2	3	1	3	3	2.4
DenB-1	Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood-prone area and to another location on Main Street in Denver Borough.	3	1	1	3	1	1.7
DenB-2	Protect Filtration #3 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EarIT-1	Relocate businesses along US-322 west of Martindale Road.	2	1	1	3	0	1.4
ECT-1	Protect the District Justice Office 1 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ECT-2	Protect the Reamstown EMS facility to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ECT-3	Protect Well #8 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ECT-4	Replace the Dogwood Drive bridge over Fry's Run with one with a larger opening.	2	2	1	3	1	1.8
ECT-5	Replace the Miller Road bridge over the Little Cocalico Creek with one with a larger opening.	2	2	1	3	1	1.8
ECT-6	Replace the Reinholds Road bridge over Fry's Run with one with a larger opening.	2	2	1	3	1	1.8
ECT-7	Replace the Smokestown Road bridge over Fry's Run with one with a larger opening.	2	2	1	3	1	1.8
ECT-8	Replace the Stony Run culvert under Hill Road with one with a larger opening.	2	2	1	3	1	1.8
ECT-9	Replace the White Oak Road bridge over Fry's Run with one with a larger opening.	2	2	1	3	1	1.8
EDT-1	Protect the Mount Joy Borough Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EDT-2	Protect Wastewater Pump #50 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EDT-3	Protect Well #33 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EDT-4	Protect Well #79 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EET-1	Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	2	1	1	3	0	1.4



Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
EET-2	Work with PENNDOT to realign and install a traffic light at the intersection of US-322 and PA-897.	3	3	1	2	3	2.5
EET-3	Work with PENNDOT to realign the intersection of Routes 23 and 897.	3	3	1	2	3	2.5
EHT-1	Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church Street, Snapper Dam Road, and Nolt Road. The three roads are subject to frequent flooding.	2	2	1	3	3	2.1
EHT-2	Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run.	3	1	1	3	1	1.7
EHT-3	Protect Potable Pump #37 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EHT-4	Protect Potable Pump #38 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EHT-5	Protect Well #22 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EHT-6	Replace old and undersized culverts along the Swarr Run located at Church Street.	2	2	1	3	1	1.8
EHT-7	Replace old and undersized culverts along the Swarr Run located at Nolt Road.	2	2	1	3	1	1.8
EHT-8	Replace old and undersized culverts along the Swarr Run located at Snapper Dam Road.	2	2	1	3	1	1.8
ELT-1	Backup generator – Purchase 10 more generators for use along Route 30 and Route 340 to make them functional emergency routes.	2	2	2	3	3	2.1
ELT-2	Backup generator – Install backup generators in two fire stations that are not yet equipped with backup power.	2	2	1	3	3	2.1
ELT-3	Identify mitigation or structural projects to reduce vulnerability to stormwater flooding incidents along Millcross Road.	2	2	1	3	1	1.8
ELT-4	Improve the design of the intersections at Oakview, Rte. 462, and Millstream along Rte. 30.	2	2	1	2	1	1.7
ELT-5	Install stormwater management infrastructure at Gibson’s Park at Nolt Mill.	2	3	1	3	1	2.1
ELT-6	Investigate retrofitting or other flood hazard mitigation measure for Oaks 1 Pump Station.	3	3	1	3	2	2.5
ELT-7	Investigate retrofitting or other flood hazard mitigation measure for properties along Hale Drive.	3	2	1	3	0	1.9
ELT-8	Investigate retrofitting or other flood hazard mitigation measure for properties along the south side of Millstream Road between Gridley and Strasburg Pike.	3	2	1	3	0	1.9
ELT-9	Investigate the removal of dam structures at Flory Park.	3	1	2	3	2	2.1
ELT-10	Investigate the removal of dam structures at Gibson’s Park at Nolt Mill.	3	1	2	3	2	2.1
ELT-11	Protect Lancaster Mennonite High School to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ELT-12	Protect Wastewater Pump #97 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ELT-13	Protect Wastewater Pump #98 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ELT-14	Upgrade stormwater management at Flory Park.	2	1	1	3	1	1.5
ELT-15	Upgrade stormwater management at Greenland near Flory Park entrance.	2	1	1	3	1	1.5



Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
ELT-16	Upgrade stormwater management at North Cherry Lane.	2	2	1	3	1	1.8
ELT-17	Upgrade stormwater management at Susan Avenue.	2	2	1	3	1	1.8
ELT-18	Upgrade stormwater management at the northeast side properties along Strasburg Pike.	2	2	1	3	1	1.8
ELT-19	Upgrade the stormwater management system along Greenfield Road at Amtrak.	2	2	1	3	1	1.8
ELT-20	Upgrade the stormwater management system at Soudersburg Road at the pump station.	2	2	1	3	1	1.8
EPB-1	Protect Filtration #5 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ElizT-1	Work with utility companies to clear vegetation around power and communications lines.	2	3	1	3	3	2.4
EphB-1	Protect Electric Substation #31 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-2	Protect Ephrata Boro WWTP #1 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-3	Protect Ephrata EMS to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-4	Protect the Ephrata Borough Sewer Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-5	Protect Wastewater Pump #176 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-6	Protect Wastewater Pump #177 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-7	Protect Wastewater Pump #77 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphB-8	Protect Well #4 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphT-1	Improve drainage system at the intersection of Frysville Road and Newswanger Road.	2	2	1	3	1	1.8
EphT-2	Protect the Ephrata Boro WWTP #2 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphT-3	Protect Wastewater Pump #120 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphT-4	Protect Wastewater Pump #123 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
EphT-5	Protect Wastewater Pump #9 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancC-1	Improve drainage on New Holland Avenue under the railroad overpass.	2	2	1	3	1	1.8
LancC-2	Improve drainage on North Plum Street under the railroad overpass.	2	2	1	3	1	1.8
LancC-3	Improve drainage on Wabank Road 70 feet west of Hershey Avenue.	2	2	1	3	1	1.8
LancC-4	Protect Potable Pump #79 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancC-5	Protect Potable Pump #98 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancC-6	Protect Tank #7 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancC-7	Protect the Lancaster City Conestoga Filter Plant to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancC-8	Flood proofing Stevens Avenue Sewage Pumping Station – Provide additional flood proofing to sewage pumping station.	3	3	1	3	3	2.6
LancC-9	Flood proofing of Conestoga Gardens Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	3	3	1	3	3	2.6



Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
LancC-10	Flood proofing Susquehanna Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	3	3	1	3	3	2.6
LancT-1*	Protect the Lancaster City Advanced WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancT-2*	Protect Wastewater Pump #136 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancT-3*	Protect Wastewater Pump #148 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancT-4*	Protect Wastewater Pump #168 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LancT-5*	Protect Wastewater Pump #169 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LeaT-1	Protect Wastewater Pump #27 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LitB-1	Protect the Warwick EMS facility to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LitB-2	Protect Wastewater Pump #72 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LitB-3	Protect Well #74 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
LitB-4	Protect Well #75 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhB-1	Protect Electric Substation #42 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhB-2	Protect Potable Pump #101 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhB-3	Protect the Manheim FD station to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhB-4	Protect Wastewater Pump #200 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhB-5	Protect Well #57 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhB-6	Protect Well #58 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhT-1	Protect District Justice Office 13 to the 0.2% annual chance flood level.	2	2	1	3	3	2.1
ManhT-2	Protect Wastewater Pump #143 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhT-3	Protect Wastewater Pump #166 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhT-4	Protect Wastewater Pump #167 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManhT-5	West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	2	2	1	3	1	1.8
ManhT-6	Work with PENNDOT to redesign the interchange at US-30 and US-222.	3	3	1	2	3	2.5
ManT-1*	Protect Electric Substation #6 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManT-2*	Protect the Millersville Borough WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManT-3*	Protect the Millersville WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManT-4*	Protect Wastewater Pump #140 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManT-5*	Protect Wastewater Pump #141 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManT-6*	Protect Wastewater Pump #150 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ManT-7*	Protect Wastewater Pump #162 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6





Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
ManT-8*	Protect Wastewater Pump #165 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MarB-1	Protect the Marietta Borough Building to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MarB-2	Protect the Marietta Donegal Sewage Treatment Plant to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MarB-3	Protect the Marietta Fire Department station to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MarB-4	Protect the Marietta-East Donegal Joint Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MarB-5	Protect the Susquehanna Valley EMS facility to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MarB-6	Protect Wastewater Pump #53 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MillB-1	Improve drainage along Oak Ridge Drive.	2	2	1	3	1	1.8
MillB-2	Improve drainage at Barbara Street and East Cottage Avenue.	2	2	1	3	1	1.8
MillB-3	Protect Wastewater Pump #179 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MJB-1	Conduct a detailed flood study of the Little Chiques Creek.	2	3	1	3	0	2.0
MJB-2	Improve stormwater management capacity of Staufer Court and the outfall into the Little Chiques Creek.	2	2	1	3	1	1.8
MJB-3	Improve stormwater management capacity under PA-230.	2	2	1	3	1	1.8
MJB-4	Modifications to the Borough Stormwater Detention Basin	1	1	1	3	2	1.5
MJT-1	Protect Wastewater Pump #84 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
MJT-2	Raise Koser Road at the approach to the bridge over Conewago Creek.	2	2	1	3	1	1.8
MJT-3	Raise Prospect Road at the approach to the bridge over Conewago Creek.	2	2	1	3	1	1.8
ParT-1	Protect the Paradise Township Sewer Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ParT-2	Protect Wastewater Pump #89 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ParT-3	Protect Wastewater Pump #91 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
PennT-1	Clear obstructions from the stormwater management system near the intersection of Fruitville Pike/New Charlotte Street and Main Street (PA-72).	3	2	1	3	2	2.2
PennT-2	Protect the Manheim Borough Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
PennT-3	Protect Wastewater Pump #199 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
PennT-4	Protect Well #39 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
PennT-5	Update stormwater management regulations to make them more restrictive for new development.	2	3	1	3	0	2.0
PennT-6	Upgrade stormwater management infrastructure along White Oak Road south of Hamaker Road.	2	2	1	3	1	1.8
PennT-7	Upgrade stormwater management infrastructure at the intersection of Stiegel Valley Road and White Oak Road.	2	2	1	3	1	1.8
ProvT-1	Protect the Quarryville Boro WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
RapT-1	Protect Wastewater Pump #55 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
RapT-2	Regularly clear obstructions from waterways.	2	2	1	3	0	1.7
ReamB-1	Replace the Stony Run culvert under Bunker Hill Road with one with a larger opening.	2	2	1	3	1	1.8



Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
ReamB-2	Replace the Stony Run culvert under West Church Street with one with a larger opening.	2	2	1	3	1	1.8
SadT-1	Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	2	2	1	3	1	1.8
StrasB-1	Improve stormwater infrastructure in the Borough's Historic District.	2	2	1	3	1	1.8
StrasT-1	Protect Wastewater Pump #13 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
ULT-1	Install drainage ditches along Creek Hill Road at Hartman Station Road to reduce soil runoff onto the roadway.	2	2	1	3	1	1.8
WarT-1	Protect Wastewater Pump #67 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WarT-2	Protect Well #35 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WarT-3	Replace the Lititz Run culvert under Lititz Run Road with one with a larger opening.	2	2	1	3	1	1.8
WCT-1	Expand intersection of Sandy Hill Road and Hillside Road.	2	2	2	3	0	1.9
WCT-2	Improve drainage at the culvert at Sportsman Road east of Hickory Road.	2	2	1	3	1	1.8
WCT-3	Increase length of Hackman Road bridge to provide more water to flow underneath it.	2	2	1	3	1	1.8
WCT-4	Increase length of Hickory Road bridge to provide more water to flow underneath it.	2	2	1	3	1	1.8
WCT-5	Increase length of Indiantown Road bridge to provide more water to flow underneath it.	2	2	1	3	1	1.8
WCT-6	Install backup power generators at two potable water wells.	3	3	1	3	3	2.6
WCT-7	Install stormwater management infrastructure along Blue Lake Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-8	Install stormwater management infrastructure along Girl Scout Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-9	Install stormwater management infrastructure along Mountain Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-10	Install stormwater management infrastructure along Netzley Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-11	Install stormwater management infrastructure along Sandy Hill Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-12	Install stormwater management infrastructure along Strickler Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-13	Install stormwater management infrastructure along White Hall Road to prevent downhill flooding.	3	3	1	3	1	2.3
WCT-14	Relocate the Wastewater Treatment Plant to a location outside the floodplain.	3	2	1	3	3	2.3
WCT-15	Renovate the stormwater management system in Reinholds.	2	2	1	3	0	1.7
WCT-16	Upgrade and clear obstructions in the drainage system at the Cocalico Creek at Hickory Road.	2	2	1	3	1	1.8
WCT-17	Upgrade the bridge on Sportsman Road over the Cocalico Creek to allow more water to flow underneath it.	2	2	1	3	1	1.8
WCT-18	Upgrade the drainage system at the Cocalico Creek at Pineview Drive, and elevate the bridge approach.	2	2	1	3	1	1.8
WDT-1	Protect the Elizabethtown Regional Sewer Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WDT-2	Protect Wastewater Pump #197 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WET-1	Protect the West Earl Township Sewer Authority WWTP to the 0.2% annual chance flood level.	3	3	1	3	3	2.6



Initiative	Mitigation Action	Effectiveness	Efficiency	Multi-Hazard Mitigation	Addresses High-Risk Hazard	Addresses Critical Communications/ Critical Infrastructure	Priority
WET-2	Protect the West Earl Township Water Authority facility to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WET-3	Protect Wastewater Pump #184 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WHT-1	Protect Wastewater Pump #134 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WHT-2	Protect Wastewater Pump #149 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WLT-1	Improve drainage along Eckman Road.	2	2	1	3	1	1.8
WLT-2	Improve stormwater management along Gypsy Hill Road, including installing a culvert to discharge water away from homes.	2	2	1	3	1	1.8
WLT-3	Improve stormwater management along Hollinger Road.	2	2	1	3	1	1.8
WLT-4	McFalls Property Stormwater Management - reclaim the area as a stream.	3	2	1	3	0	1.9
WLT-5	Protect Potable Pump #100 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WLT-6	Protect Potable Pump #61 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WLT-7	Protect Wastewater Pump #21 to the 0.2% annual chance flood level.	3	3	1	3	3	2.6
WLT-8	Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	2	1	1	3	0	1.4

\* Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.



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
<b>High Priority</b>		
LC-19	Enforce building codes, floodplain management ordinances, and other local regulations to protect new structures constructed in hazard-prone areas.	3.0
AkB-1*	Protect Wastewater Pump #126 to the 0.2% annual chance flood level.	2.6
BrkT-1*	Protect the Northern Lancaster County Authority facility to the 0.2% annual chance flood level.	2.6
BrkT-2*	Protect the Northern Lancaster County Authority WWTP to the 0.2% annual chance flood level.	2.6
BrkT-3*	Protect Well #7 to the 0.2% annual chance flood level.	2.6
CoLB-2	Protect the Columbia Municipal Authority WWTP to the 0.2% annual chance flood level.	2.6
DenB-2	Protect Filtration #3 to the 0.2% annual chance flood level.	2.6
ECT-1	Protect the District Justice Office 1 to the 0.2% annual chance flood level.	2.6
ECT-2	Protect the Reamstown EMS facility to the 0.2% annual chance flood level.	2.6
ECT-3	Protect Well #8 to the 0.2% annual chance flood level.	2.6
EDT-1	Protect the Mount Joy Borough Authority WWTP to the 0.2% annual chance flood level.	2.6
EDT-2	Protect Wastewater Pump #50 to the 0.2% annual chance flood level.	2.6
EDT-3	Protect Well #33 to the 0.2% annual chance flood level.	2.6
EDT-4	Protect Well #79 to the 0.2% annual chance flood level.	2.6
EHT-3	Protect Potable Pump #37 to the 0.2% annual chance flood level.	2.6
EHT-4	Protect Potable Pump #38 to the 0.2% annual chance flood level.	2.6
EHT-5	Protect Well #22 to the 0.2% annual chance flood level.	2.6
ELT-11	Protect Lancaster Mennonite High School to the 0.2% annual chance flood level.	2.6
ELT-12	Protect Wastewater Pump #97 to the 0.2% annual chance flood level.	2.6
ELT-13	Protect Wastewater Pump #98 to the 0.2% annual chance flood level.	2.6
EPB-1	Protect Filtration #5 to the 0.2% annual chance flood level.	2.6
EphB-1	Protect Electric Substation #31 to the 0.2% annual chance flood level.	2.6
EphB-2	Protect Ephrata Boro WWTP #1 to the 0.2% annual chance flood level.	2.6
EphB-3	Protect Ephrata EMS to the 0.2% annual chance flood level.	2.6
EphB-4	Protect the Ephrata Borough Sewer Authority WWTP to the 0.2% annual chance flood level.	2.6
EphB-5	Protect Wastewater Pump #176 to the 0.2% annual chance flood level.	2.6
EphB-6	Protect Wastewater Pump #177 to the 0.2% annual chance flood level.	2.6
EphB-7	Protect Wastewater Pump #77 to the 0.2% annual chance flood level.	2.6
EphB-8	Protect Well #4 to the 0.2% annual chance flood level.	2.6
EphT-2	Protect the Ephrata Boro WWTP #2 to the 0.2% annual chance flood level.	2.6
EphT-3	Protect Wastewater Pump #120 to the 0.2% annual chance flood level.	2.6
EphT-4	Protect Wastewater Pump #123 to the 0.2% annual chance flood level.	2.6



Mitigation Action		Score
EphT-5	Protect Wastewater Pump #9 to the 0.2% annual chance flood level.	2.6
LancC-4	Protect Potable Pump #79 to the 0.2% annual chance flood level.	2.6
LancC-5	Protect Potable Pump #98 to the 0.2% annual chance flood level.	2.6
LancC-6	Protect Tank #7 to the 0.2% annual chance flood level.	2.6
LancC-7	Protect the Lancaster City Conestoga Filter Plant to the 0.2% annual chance flood level.	2.6
LancC-8	Flood proofing Stevens Avenue Sewage Pumping Station – Provide additional flood proofing to sewage pumping station.	2.6
LancC-9	Flood proofing of Conestoga Gardens Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	2.6
LancC-10	Flood proofing Susquehanna Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	2.6
LancT-1*	Protect the Lancaster City Advanced WWTP to the 0.2% annual chance flood level.	2.6
LancT-2*	Protect Wastewater Pump #136 to the 0.2% annual chance flood level.	2.6
LancT-3*	Protect Wastewater Pump #148 to the 0.2% annual chance flood level.	2.6
LancT-4*	Protect Wastewater Pump #168 to the 0.2% annual chance flood level.	2.6
LancT-5*	Protect Wastewater Pump #169 to the 0.2% annual chance flood level.	2.6
LeaT-1	Protect Wastewater Pump #27 to the 0.2% annual chance flood level.	2.6
LitB-1	Protect the Warwick EMS facility to the 0.2% annual chance flood level.	2.6
LitB-2	Protect Wastewater Pump #72 to the 0.2% annual chance flood level.	2.6
LitB-3	Protect Well #74 to the 0.2% annual chance flood level.	2.6
LitB-4	Protect Well #75 to the 0.2% annual chance flood level.	2.6
ManhB-1	Protect Electric Substation #42 to the 0.2% annual chance flood level.	2.6
ManhB-2	Protect Potable Pump #101 to the 0.2% annual chance flood level.	2.6
ManhB-3	Protect the Manheim FD station to the 0.2% annual chance flood level.	2.6
ManhB-4	Protect Wastewater Pump #200 to the 0.2% annual chance flood level.	2.6
ManhB-5	Protect Well #57 to the 0.2% annual chance flood level.	2.6
ManhB-6	Protect Well #58 to the 0.2% annual chance flood level.	2.6
ManhT-2	Protect Wastewater Pump #143 to the 0.2% annual chance flood level.	2.6
ManhT-3	Protect Wastewater Pump #166 to the 0.2% annual chance flood level.	2.6
ManhT-4	Protect Wastewater Pump #167 to the 0.2% annual chance flood level.	2.6
ManT-1*	Protect Electric Substation #6 to the 0.2% annual chance flood level.	2.6
ManT-2*	Protect the Millersville Borough WWTP to the 0.2% annual chance flood level.	2.6
ManT-3*	Protect the Millersville WWTP to the 0.2% annual chance flood level.	2.6
ManT-4*	Protect Wastewater Pump #140 to the 0.2% annual chance flood level.	2.6
ManT-5*	Protect Wastewater Pump #141 to the 0.2% annual chance flood level.	2.6
ManT-6*	Protect Wastewater Pump #150 to the 0.2% annual chance flood level.	2.6
ManT-7*	Protect Wastewater Pump #162 to the 0.2% annual chance flood level.	2.6
ManT-8*	Protect Wastewater Pump #165 to the 0.2% annual chance flood level.	2.6
MarB-1	Protect the Marietta Borough Building to the 0.2% annual chance flood level.	2.6
MarB-2	Protect the Marietta Donegal Sewage Treatment Plant to the 0.2% annual chance flood level.	2.6
MarB-3	Protect the Marietta Fire Department station to the 0.2% annual chance flood level.	2.6
MarB-4	Protect the Marietta-East Donegal Joint Authority WWTP to the 0.2% annual chance flood level.	2.6





Mitigation Action		Score
MarB-5	Protect the Susquehanna Valley EMS facility to the 0.2% annual chance flood level.	2.6
MarB-6	Protect Wastewater Pump #53 to the 0.2% annual chance flood level.	2.6
MillB-3	Protect Wastewater Pump #179 to the 0.2% annual chance flood level.	2.6
MJT-1	Protect Wastewater Pump #84 to the 0.2% annual chance flood level.	2.6
ParT-1	Protect the Paradise Township Sewer Authority WWTP to the 0.2% annual chance flood level.	2.6
ParT-2	Protect Wastewater Pump #89 to the 0.2% annual chance flood level.	2.6
ParT-3	Protect Wastewater Pump #91 to the 0.2% annual chance flood level.	2.6
PennT-2	Protect the Manheim Borough Authority WWTP to the 0.2% annual chance flood level.	2.6
PennT-3	Protect Wastewater Pump #199 to the 0.2% annual chance flood level.	2.6
PennT-4	Protect Well #39 to the 0.2% annual chance flood level.	2.6
ProvT-1	Protect the Quarryville Boro WWTP to the 0.2% annual chance flood level.	2.6
RapT-1	Protect Wastewater Pump #55 to the 0.2% annual chance flood level.	2.6
StrasT-1	Protect Wastewater Pump #13 to the 0.2% annual chance flood level.	2.6
WarT-1	Protect Wastewater Pump #67 to the 0.2% annual chance flood level.	2.6
WarT-2	Protect Well #35 to the 0.2% annual chance flood level.	2.6
WCT-6	Install backup power generators at two potable water wells.	2.6
WDT-1	Protect the Elizabethtown Regional Sewer Authority WWTP to the 0.2% annual chance flood level.	2.6
WDT-2	Protect Wastewater Pump #197 to the 0.2% annual chance flood level.	2.6
WET-1	Protect the West Earl Township Sewer Authority WWTP to the 0.2% annual chance flood level.	2.6
WET-2	Protect the West Earl Township Water Authority facility to the 0.2% annual chance flood level.	2.6
WET-3	Protect Wastewater Pump #184 to the 0.2% annual chance flood level.	2.6
WHT-1	Protect Wastewater Pump #134 to the 0.2% annual chance flood level.	2.6
WHT-2	Protect Wastewater Pump #149 to the 0.2% annual chance flood level.	2.6
WLT-5	Protect Potable Pump #100 to the 0.2% annual chance flood level.	2.6
WLT-6	Protect Potable Pump #61 to the 0.2% annual chance flood level.	2.6
WLT-7	Protect Wastewater Pump #21 to the 0.2% annual chance flood level.	2.6
ELT-4	Improve the design of the intersections at Oakview, Rte. 462, and Millstream along Rte. 30.	1.7+
ELT-19	Upgrade the stormwater management system along Greenfield Road at Amtrak.	1.8+
<b>Medium Priority</b>		
EET-2	Work with PENNDOT to realign and install a traffic light at the intersection of US-322 and PA-897.	2.5
EET-3	Work with PENNDOT to realign the intersection of Routes 23 and 897.	2.5
ManhT-6	Work with PENNDOT to redesign the interchange at US-30 and US-222.	2.5
ELT-6	Investigate retrofitting or other flood hazard mitigation measure for Oaks 1 Pump Station.	2.5
ConT-1	Protect the Bainbridge Water Authority WWTP to the 0.2% annual chance flood level.	2.4
ElizT-1	Work with utility companies to clear vegetation around power and communications lines.	2.4
LC-10	Protect the structures in Chickie's Park to the 0.2% annual chance flood level.	2.3
LC-11	Work with PPL to protect the Conestoga KV Substation to the 0.2% annual chance flood level.	2.3
LC-12	Work with the Safe Harbor Water Power Corporation to protect their facilities to the 0.2% annual chance flood level.	2.3
LC-13	Work with PPL to protect the Holtwood facility to the 0.2% annual chance flood level.	2.3



Mitigation Action		Score
LC-6	Work with hazardous materials facilities in the floodplain to floodproof structures up to the 0.2% annual chance flood level.	2.3
WCT-10	Install stormwater management infrastructure along Netzley Road to prevent downhill flooding.	2.3
WCT-11	Install stormwater management infrastructure along Sandy Hill Road to prevent downhill flooding.	2.3
WCT-12	Install stormwater management infrastructure along Strickler Road to prevent downhill flooding.	2.3
WCT-13	Install stormwater management infrastructure along White Hall Road to prevent downhill flooding.	2.3
WCT-14	Relocate the Wastewater Treatment Plant to a location outside the floodplain.	2.3
WCT-7	Install stormwater management infrastructure along Blue Lake Road to prevent downhill flooding.	2.3
WCT-8	Install stormwater management infrastructure along Girl Scout Road to prevent downhill flooding.	2.3
WCT-9	Install stormwater management infrastructure along Mountain Road to prevent downhill flooding.	2.3
LC-14	Develop a hazard information page on the County website, and link from each municipality's website.	2.2
PennT-1	Clear obstructions from the stormwater management system near the intersection of Fruitville Pike/New Charlotte Street and Main Street (PA-72).	2.2
ColB-4	Install a backup generator that can power the entire Municipal Building.	2.1
EHT-1	Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church Street, Snapper Dam Road, and Nolt Road. The three roads are subject to frequent flooding.	2.1
ELT-1	Backup generator – Purchase 10 more generators for use along Route 30 and Route 340 to make them functional emergency routes.	2.1
ELT-2	Backup generator – Install backup generators in two fire stations that are not yet equipped with backup power.	2.1
ELT-5	Install stormwater management infrastructure at Gibson’s Park at Nolt Mill.	2.1
ManhT-1	Protect District Justice Office 13 to the 0.2% annual chance flood level.	2.1
ELT-9	Investigate the removal of dam structures at Flory Park.	2.1
ELT-10	Investigate the removal of dam structures at Gibson’s Park at Nolt Mill.	2.1
LC-15	Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas.	2.1
AkB-2*	Upgrade sewer infrastructure in the Heritage Development to prevent stormwater infiltration.	2.0
LC-1	Acquire properties in hazard areas, notably those in the 1 percent annual chance floodplain, to convert them to open space.	2.0
LC-3	Elevate structures at risk of flooding.	2.0
LC-4	Acquire repetitive loss properties to convert them to open space.	2.0
MJB-1	Conduct a detailed flood study of the Little Chiques Creek.	2.0
PennT-5	Update stormwater management regulations to make them more restrictive for new development.	2.0
ELT-16	Upgrade stormwater management at North Cherry Lane.	1.8+
<b>Low Priority</b>		
ELT-7	Investigate retrofitting or other flood hazard mitigation measure for properties along Hale Drive.	1.9
ELT-8	Investigate retrofitting or other flood hazard mitigation measure for properties along the south side of Millstream Road between Gridley and Strasburg Pike.	1.9
LC-18	Work with the Amish community to protect their critical facilities (e.g., schools) in the floodplain.	1.9



Mitigation Action		Score
LC-8	Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property, so it would not require acquisition of land.	1.9
WLT-4	McFalls Property Stormwater Management - reclaim the area as a stream.	1.9
WCT-1	Expand intersection of Sandy Hill Road and Hillside Road.	1.9
CaeT-1	Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	1.8
CaeT-2	Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	1.8
ColB-1	Improve stormwater drainage at 10 <sup>th</sup> Street and Ridge Avenue.	1.8
ConesT-1	Improve drainage at the low spot in the road at Kendig Road and Elm Street.	1.8
ECT-4	Replace the Dogwood Drive bridge over Fry's Run with one with a larger opening.	1.8
ECT-5	Replace the Miller Road bridge over the Little Cocalico Creek with one with a larger opening.	1.8
ECT-6	Replace the Reinholds Road bridge over Fry's Run with one with a larger opening.	1.8
ECT-7	Replace the Smokestown Road bridge over Fry's Run with one with a larger opening.	1.8
ECT-8	Replace the Stony Run culvert under Hill Road with one with a larger opening.	1.8
ECT-9	Replace the White Oak Road bridge over Fry's Run with one with a larger opening.	1.8
EHT-6	Replace old and undersized culverts along the Swarr Run located at Church Street.	1.8
EHT-7	Replace old and undersized culverts along the Swarr Run located at Nolt Road.	1.8
EHT-8	Replace old and undersized culverts along the Swarr Run located at Snapper Dam Road.	1.8
ELT-17	Upgrade stormwater management at Susan Avenue.	1.8
ELT-18	Upgrade stormwater management at the northeast side properties along Strasburg Pike.	1.8
ELT-20	Upgrade the stormwater management system at Soudersburg Road at the pump station.	1.8
ELT-3	Identify mitigation or structural projects to reduce vulnerability to stormwater flooding incidents along Millcross Road.	1.8
EphT-1	Improve drainage system at the intersection of Frysville Road and Newswanger Road.	1.8
LancC-1	Improve drainage on New Holland Avenue under the railroad overpass.	1.8
LancC-2	Improve drainage on North Plum Street under the railroad overpass.	1.8
LancC-3	Improve drainage on Wabank Road 70 feet west of Hershey Avenue.	1.8
LC-16	Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes.	1.8
LC-17	Provide information to the public about the dangers of radon exposure.	1.8
ManhT-5	West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	1.8
MillB-1	Improve drainage along Oak Ridge Drive.	1.8
MillB-2	Improve drainage at Barbara Street and East Cottage Avenue.	1.8
MJB-2	Improve stormwater management capacity of Staufer Court and the outfall into the Little Chiques Creek.	1.8
MJB-3	Improve stormwater management capacity under PA-230.	1.8
MJT-2	Raise Koser Road at the approach to the bridge over Conewago Creek.	1.8
MJT-3	Raise Prospect Road at the approach to the bridge over Conewago Creek.	1.8
PennT-6	Upgrade stormwater management infrastructure along White Oak Road south of Hamaker Road.	1.8
PennT-7	Upgrade stormwater management infrastructure at the intersection of Stiegel Valley Road and White Oak Road.	1.8



Mitigation Action		Score
ReamB-1	Replace the Stony Run culvert under Bunker Hill Road with one with a larger opening.	1.8
ReamB-2	Replace the Stony Run culvert under West Church Street with one with a larger opening.	1.8
SadT-1	Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend 1/3 mile to relieve runoff into the Christiana Borough watershed.	1.8
StrasB-1	Improve stormwater infrastructure in the Borough's Historic District.	1.8
ULT-1	Install drainage ditches along Creek Hill Road at Hartman Station Road to reduce soil runoff onto the roadway.	1.8
WarT-3	Replace the Lititz Run culvert under Lititz Run Road with one with a larger opening.	1.8
WCT-16	Upgrade and clear obstructions in the drainage system at the Cocalico Creek at Hickory Road.	1.8
WCT-17	Upgrade the bridge on Sportsman Road over the Cocalico Creek to allow more water to flow underneath it.	1.8
WCT-18	Upgrade the drainage system at the Cocalico Creek at Pineview Drive, and elevate the bridge approach.	1.8
WCT-2	Improve drainage at the culvert at Sportsman Road east of Hickory Road.	1.8
WCT-3	Increase length of Hackman Road bridge to provide more water to flow underneath it.	1.8
WCT-4	Increase length of Hickory Road bridge to provide more water to flow underneath it.	1.8
WCT-5	Increase length of Indiantown Road bridge to provide more water to flow underneath it.	1.8
WLT-1	Improve drainage along Eckman Road.	1.8
WLT-2	Improve stormwater management along Gypsy Hill Road, including installing a culvert to discharge water away from homes.	1.8
WLT-3	Improve stormwater management along Hollinger Road.	1.8
LC-2	Educate residents in flood-prone areas about the benefits of purchasing flood insurance.	1.8
DenB-1	Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood-prone area and to another location on Main Street in Denver Borough.	1.7
EHT-2	Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run.	1.7
RapT-2	Regularly clear obstructions from waterways.	1.7
WCT-15	Renovate the stormwater management system in Reinholds.	1.7
CoIB-3	Provide information at the overlook regarding the potential for wildfires on the hill below, and how visitors can prevent them.	1.5
LC-7	Work with the Lancaster Conservancy to provide information at the Welsh Mountain Nature Preserve regarding the potential for wildfires and how visitors can prevent them.	1.5
ELT-14	Upgrade stormwater management at Flory Park.	1.5
ELT-15	Upgrade stormwater management at Greenland near Flory Park entrance.	1.5
LC-9	Work with the railroad and property owners to provide a wider buffer between the tracks and vegetation.	1.5
MJB-4	Modifications to the Borough Stormwater Detention Basin	1.5
EarlT-1	Relocate businesses along US-322 west of Martindale Road.	1.4
EET-1	Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	1.4
WLT-8	Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	1.4
LC-5	Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community.	1.2

Notes: \* Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.  
 + Though the formulaic evaluation of this action does not match the listed priority, municipal officials updated the priority based on their mitigation needs.





## SECTION 7 PLAN MAINTENANCE PROCEDURES

This section describes how the plan was updated since 2014 (Section 7.1); the system that Lancaster County and all participating jurisdictions have established to monitor, evaluate, and update the HMP (Section 7.2); and the strategy to continue public involvement for plan maintenance (Section 7.3).

### 7.1 UPDATE PROCESS SUMMARY

Monitoring, evaluating, and updating the HMP is critical to maintaining its value and supporting the success of Lancaster 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 2014 plan maintenance procedures and carried them forward to the current HMP update, as described in the sections below. Going forward, the plan will continue to be available on the Lancaster County Emergency Management Agency (LEMA) HMP website. The 2019 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 Lancaster County HMP Planning Team intends to remain intact as the organization responsible for monitoring, evaluating, and updating this plan. The LEMA Radiological Trainer/Planner shall serve as HMP Coordinator for the Planning Team. Each participating jurisdiction is expected to retain a municipal hazard mitigation representative to support the jurisdiction's input to the monitoring, evaluating, and updating responsibilities identified in this section. Members of the Planning Team are listed in Section 3.

Understanding that individual commitments change over time, each jurisdiction and its representatives are responsible for informing the Lancaster County HMP Coordinator of any changes in representation by formal letter. The HMP Coordinator will strive to keep the Planning Team makeup as a representation of planning partners and stakeholders within the County. The HMP Coordinator shall maintain the current membership of the Planning Team on the Lancaster County HMP website (<http://hmp.lancema.us/>) or in publicly-accessible County records.

Several of Lancaster County's municipalities did not participate in the 2017-2019 HMP update process and are therefore not currently eligible for federal mitigation funding to implement their projects. Each of these municipalities can elect to join the 2019 HMP by working with the Lancaster 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 2014 version of the HMP
4. Identify mitigation actions to include in the current HMP
5. Adopt the current HMP by resolution (see Section 8)

Information in steps 1-3 above can be accomplished by completing the information gathering worksheets that were used during the planning process. Municipalities that have adopted the 2019 HMP will not have to re-adopt the 2019 HMP if another municipality's information is gathered and added to the HMP.

The following sections describe the monitoring, evaluating, and updating processes and protocols for the Lancaster County HMP.





### 7.2.1 Monitoring

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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 shall be provided to the Planning Team. The Lancaster 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. FEMA's National Flood Hazard Layer tools can be used as an interactive tool to facilitate this process. Further, the representatives shall obtain from their municipal supervisor, mayor, or councilperson any public comments made on the plan, 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, so that more detail of what each municipality considers vital 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 Federal Emergency Management Agency [FEMA] 386-4 guidance document) to facilitate collection of progress data and information on specific mitigation actions.

### 7.2.2 Evaluating

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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.

The status of the HMP will be discussed and documented at a plan review meeting of the Hazard Mitigation Planning Team. At least 1 month before the progress plan review meeting, the Lancaster County HMP Coordinator will advise Planning Team members of the meeting date, agenda, and expectations of the members. The Lancaster County HMP Coordinator may also distribute additional flood mitigation survey and mitigation project opportunity forms for jurisdictions that may have new information or did not participate in the update process.



The Lancaster 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 County or municipal 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
- Under or over spending regarding proposed mitigation action budgets
- Achievement of the goals and objectives
- Resource allocation to note whether resources are required to implement mitigation activities
- Timeframe comments on whether proposed schedules are sufficient to address actions
- Budget notes (in other words, 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 regarding whether resources are available to implement actions
- Feasibility comments regarding 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 shall identify policies, programs, practices, and procedures that could be modified to accommodate hazard mitigation actions (described further in Section 5.2.6). 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 Lancaster County HMP Coordinator shall be responsible for preparing an HMP progress report based on the local progress reports provided by each jurisdiction, information presented at the Planning Team meeting, and other information as appropriate and relevant. These 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 be able to assess which projects are completed, are no longer feasible, or may require additional funding.

This progress report shall apply to all planning partners who have provided input, and as such, shall 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 shall establish a schedule for the draft development, review, comment, amendment, and submission of the HMP progress report to the State Hazard Mitigation Officer.

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 see if any changes are necessary based on the pattern of disaster damages or if data listed in the Section 4.3 (Hazard Profiles) of this plan 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 hazard mitigation plans 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 Lancaster County Hazard Mitigation Planning Team updates this plan on a 5-year cycle from the date of plan adoption.

To facilitate the update process, the Lancaster 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 Lancaster 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 shall, 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 shall determine the resources needed to complete the update. The Lancaster County HMP Coordinator shall be responsible for ensuring that needed resources are secured.

The Lancaster County HMP Coordinator is 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. The purpose of these meetings would be to provide an opportunity for the public to express concerns, opinions, and ideas about the HMP.



### 7.3 CONTINUED PUBLIC INVOLVEMENT

Lancaster 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 LEMA HMP website (<http://hmp.lancema.us/>), and copies of the plan will be made available for review during normal business hours at LEMA's main office. Lancaster County will make electronic copies of the plan available for local municipalities to provide public access.

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, special-purpose district participants, and the Pennsylvania State Hazard Mitigation Officer.

The Lancaster County HMP Coordinator will be responsible for receiving, tracking, and filing public comments regarding this 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. Lancaster County will maintain an active link on the LEMA HMP website to collect public comments.

The Planning Team representatives are 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 LEMA HMP website, and provisions for public comment submitted in writing will also be made. All public comments shall be addressed to:  
Benjamin P. Herskowitz, Radiological Trainer/Planner  
Lancaster County Emergency Management Agency  
P.O. Box 219  
Manheim, PA 17545
- Copies of the latest approved version of the plan are available for review at the municipal buildings along with instructions to facilitate public input and comment on the plan.
- Appropriate links to the Lancaster County HMP website (<http://hmp.lancema.us/>) 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 County HMP will be maintained on the LEMA website (<https://www.lancema.us/>).
- Public notices will be made, as appropriate, to inform the public of the availability of the plan, particularly during plan update cycles.

The Lancaster County HMP Coordinator shall ensure the following:

- Public comment and input on the HMP (and hazard mitigation in general) will be recorded and addressed, as appropriate.
- The LEMA HMP website 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 LEMA, along with instructions to facilitate public input and comment on the plan.
- Public notices, including media releases, will be made (as appropriate) to inform the public of the availability of the plan, particularly during plan update cycles.



## **SECTION 8 PLAN ADOPTION**

By adopting the Lancaster 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 Lancaster County and each participating jurisdiction legitimizes the HMP and authorizes responsible agencies to execute their responsibilities.

Each participating jurisdiction in Lancaster 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 with the exception of 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 Lancaster County Hazard Mitigation Coordinator. Lancaster County will forward the executed resolutions to the Pennsylvania Emergency Management Agency (PEMA), who will subsequently forward the resolutions to FEMA. Each participating jurisdiction understands that FEMA will transmit acknowledgement 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 the County and participating jurisdictions are included in Appendix F of this HMP. A sample resolution to be used by the County and its jurisdictions is provided on the following pages in Section 8.





**Lancaster County Hazard Mitigation Plan  
County Adoption Resolution**

Resolution No. \_\_\_\_\_  
Lancaster County, Pennsylvania

**WHEREAS**, the municipalities of Lancaster 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**, 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**, Lancaster 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 Lancaster County Hazard Mitigation Plan has been developed by Lancaster County Emergency Management Agency in cooperation with other County departments, local municipal officials, and the citizens of Lancaster County, and

**WHEREAS**, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Lancaster County Hazard Mitigation Plan, and

**WHEREAS**, the Lancaster County Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments,

**NOW THEREFORE BE IT RESOLVED** by the governing body for the County of Lancaster that:

- The 2019 Lancaster County Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the County, and
- The respective officials and agencies of Lancaster County identified in the implementation strategy of the 2019 Lancaster County Hazard Mitigation Plan are hereby directed to execute the recommended activities assigned to them.

**ADOPTED**, this \_\_\_\_\_ day of \_\_\_\_\_, 2019

**ATTEST:**

\_\_\_\_\_

**LANCASTER COUNTY COMMISSIONERS**

By \_\_\_\_\_

By \_\_\_\_\_

By \_\_\_\_\_



## Lancaster County Hazard Mitigation Plan Municipal Adoption Resolution

Resolution No. \_\_\_\_\_

< Municipality Name >, Lancaster County, Pennsylvania

**WHEREAS**, the <Municipality Name>, Lancaster 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**, 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 <Municipality 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 Lancaster County Hazard Mitigation Plan has been developed by Lancaster County Emergency Management Agency in cooperation with other County departments, and officials and citizens of <Municipality Name>, and

**WHEREAS**, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Lancaster County Hazard Mitigation Plan, and

**WHEREAS**, the Lancaster County Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments,

**NOW THEREFORE BE IT RESOLVED** by the governing body for the <Municipality Name>:

- The 2019 Lancaster County Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the <Municipality Name>, and
- The respective officials and agencies identified in the implementation strategy of the 2019 Lancaster County Hazard Mitigation Plan are hereby directed to execute the recommended activities assigned to them.

**ADOPTED**, this \_\_\_\_\_ day of \_\_\_\_\_, 2019

**ATTEST:**

< MUNICIPALITY NAME > REPRESENTATIVES

\_\_\_\_\_

By \_\_\_\_\_

By \_\_\_\_\_

By \_\_\_\_\_



## ACRONYMS AND ABBREVIATIONS

This resource identifies acronyms and abbreviations used in or supporting the Lancaster County Hazard Mitigation Plan (HMP). The acronyms and abbreviations listed below are based on documents included in the reference section, with modifications as appropriate to address the Lancaster County-specific identifications and requirements.

<b>%</b>	Percent
<b>%g</b>	Percent acceleration force of gravity
<b>°F</b>	Degrees Fahrenheit
<b>65 PA C.S.A</b>	Pennsylvania Sunshine Act
<b>AASHTO</b>	American Association of State Highway and Transportation Officials
<b>ADA</b>	Americans with Disabilities Act
<b>APA</b>	Approval Pending Adoption
<b>APPA</b>	American Public Power Association
<b>ARC</b>	American Red Cross
<b>BFE</b>	Base flood elevation
<b>BOCA</b>	Building Officials Code Administration
<b>BRFPW</b>	Pennsylvania Bureau of Rail Freight, Ports, and Waterways
<b>B-Scale</b>	Beaufort Wind Scales
<b>CDBG</b>	Community Development Block Grant
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CERT</b>	Community Emergency Response Team
<b>cfs</b>	Cubic feet per second
<b>CFR</b>	<i>Code of Federal Regulations</i>
<b>COG</b>	Continuity of government
<b>COOP</b>	Continuity of operations
<b>CPC</b>	Climate Prediction Center
<b>CPR</b>	Cardiopulmonary Resuscitation
<b>CRREL</b>	Cold Regions Research and Engineering Laboratory
<b>CRS</b>	Community Rating System
<b>CSB</b>	Chemical Safety Board
<b>CSXT</b>	CSX Transportation
<b>DART</b>	Demand and Response Transit
<b>DCED</b>	Pennsylvania Department of Community and Economic Development
<b>DCNR</b>	Pennsylvania Department of Conservation and Natural Resources
<b>DEM</b>	Digital Elevation Model



<b>DFIRM</b>	Digital Flood Insurance Rate Map
<b>DHHS</b>	U.S. Department of Health and Human Services
<b>DHS</b>	U.S. Department of Homeland Security
<b>DI</b>	Damage Indicators
<b>DMA 2000</b>	Disaster Mitigation Act of 2000
<b>DOD</b>	Degrees of Damage
<b>DOE</b>	U.S. Department of Energy
<b>DOF</b>	Dependent on funding
<b>DOT</b>	U.S. Department of Transportation
<b>DR</b>	Disaster Declarations
<b>EAL</b>	Emergency Action Levels
<b>EAP</b>	Education and Awareness Program
<b>EAP</b>	Emergency action plan
<b>EDA</b>	U.S. Economic Development Administration
<b>EF Scale</b>	Enhanced Fujita Scale
<b>EM</b>	Emergency management
<b>EMA</b>	Emergency Management Agency
<b>EMC</b>	Emergency Management Coordinator
<b>EMS</b>	Emergency Medical Services
<b>EOC</b>	Emergency Operations Center
<b>EOP</b>	Emergency operations plan
<b>EPA</b>	U.S. Environmental Protection Agency
<b>EPCRA</b>	Emergency Planning and Community Right to Know Act
<b>EPZ</b>	Emergency planning zone
<b>ESF</b>	Emergency Support Function
<b>FAA</b>	Federal Aviation Administration
<b>FARS</b>	Fatality Analysis Reporting System
<b>FEMA</b>	Federal Emergency Management Agency
<b>FERC</b>	Federal Energy Regulatory Commission
<b>FIA</b>	Flood Insurance Administration
<b>FIRM</b>	Flood Insurance Rate Map
<b>FIS</b>	Flood Insurance Study
<b>Flu</b>	Influenza
<b>FMA</b>	Flood Mitigation Assistance
<b>F-Scale</b>	Fujita Scale
<b>g</b>	Gravity



<b>GBS</b>	General building stock
<b>GIS</b>	Geographic Information System
<b>HazMat</b>	Hazardous materials
<b>HAZUS</b>	Hazards U.S.
<b>HAZUS-MH</b>	Hazards U.S. – Multi-Hazard
<b>HMA</b>	Hazard Mitigation Assistance
<b>HMGP</b>	Hazard Mitigation Grant Program
<b>HMP</b>	Hazard Mitigation Plan
<b>HUD</b>	U.S. Department of Housing and Urban Development
<b>HVAC</b>	Heating, ventilation, and air conditioning
<b>IA</b>	Individual Assistance
<b>I-</b>	Interstate
<b>ILI</b>	Influenza-like illnesses
<b>ISO</b>	Insurance Services Office, Inc.
<b>K</b>	Thousand (\$)
<b>Km</b>	Kilometer
<b>Kts</b>	Knots
<b>LCSN</b>	Lamont-Doherty Cooperative Seismographic Network
<b>LEMA</b>	Lancaster County Emergency Management Agency
<b>LEPC</b>	Local Emergency Planning Committee
<b>LPR</b>	Local Plans and Regulations
<b>M</b>	Million (\$)
<b>MESO</b>	Multi-Community Environmental Storm Observatory
<b>mi</b>	Mile
<b>MMI</b>	Modified Mercalli Intensity
<b>MPC</b>	Municipal Planning Code
<b>mph</b>	Miles per hour
<b>MPO</b>	Metropolitan Planning Organization
<b>MRP</b>	Mean return period
<b>mw</b>	Megawatts
<b>N/A</b>	Not applicable
<b>NA</b>	Not available
<b>NASA</b>	National Aeronautics and Space Administration
<b>NCDC</b>	National Climatic Data Center
<b>NCEI</b>	National Centers for Environmental Information
<b>NDMC</b>	National Drought Mitigation Center





<b>NDSP</b>	National Dam Safety Program
<b>NEHRP</b>	National Earthquake Hazard Reduction Program
<b>NEPA</b>	National Environmental Policy Act
<b>NESEC</b>	Northeast States Emergency Consortium
<b>NFIA</b>	National Flood Insurance Act
<b>NFIP</b>	National Flood Insurance Program
<b>NFPA</b>	National Fire Protection Association
<b>NGO</b>	Nongovernmental organization
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>NID</b>	National Inventory of Dams
<b>NIH</b>	National Institute of Health
<b>NIMS</b>	National Incident Management System
<b>NLCD</b>	National Land Cover Data
<b>NLD</b>	National Levee Database
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>NRC</b>	Nuclear Regulatory Commission
<b>NRF</b>	National Response Framework
<b>NRCC</b>	Northeast Regional Climate Center
<b>NRCS</b>	Natural Resource Conservation Service
<b>NS</b>	Norfolk-Southern Corporation
<b>NSP</b>	Natural Systems Protection
<b>NSSL</b>	National Severe Storms Library
<b>NTAS</b>	National Terrorism Advisory System
<b>NTSB</b>	National Transit Safety Board
<b>NWI</b>	National Wind Institute
<b>NWS</b>	National Weather Service
<b>PA</b>	Pennsylvania
<b>PA DCED</b>	Pennsylvania Department of Community and Economic Development
<b>PA DCNR</b>	Pennsylvania Department of Conservation and Natural Resources
<b>PA HMP</b>	Commonwealth of Pennsylvania 2013 All-Hazard Mitigation Plan
<b>PA-</b>	Pennsylvania State Route ##
<b>PADEP</b>	Pennsylvania Department of Environmental Protection
<b>PAG</b>	Protective Action Guide
<b>PaGWIS</b>	Pennsylvania Groundwater Information System
<b>PaSTAR</b>	Pennsylvania Statewide Telecommunication Alerting and Reporting [Network]



<b>pCi/L</b>	picoCuries per liter
<b>PDM</b>	Pre-disaster Mitigation Grant Program
<b>PDSI</b>	Palmer Drought Severity Index
<b>PEMA</b>	Pennsylvania Emergency Management Agency
<b>PennDOT</b>	Pennsylvania Department of Transportation
<b>PGA</b>	Peak ground acceleration
<b>PHMSA</b>	Pipeline and Hazardous Materials Safety Administration
<b>PIO</b>	Public Information Officer
<b>ppm</b>	Parts per million
<b>PRA</b>	Probabilistic risk assessment
<b>PSAP</b>	Public Safety Answering Point
<b>PSP</b>	Pennsylvania State Police
<b>PSU</b>	Pennsylvania State University/Penn State University
<b>PUC</b>	Public Utilities Commission
<b>Ra-226</b>	Radium-226
<b>RACES</b>	Radio Amateur Civil Emergency Services
<b>RCV</b>	Replacement cost value
<b>RF</b>	Risk factor
<b>RFC</b>	Repetitive flood claims
<b>RLP</b>	Repetitive loss property
<b>Rn-222</b>	Radon-222
<b>RSI</b>	Regional Snowfall Index
<b>S-waves</b>	Shear waves
<b>SA</b>	Spectral Association
<b>SARA</b>	Superfund Amendments and Reauthorization Act
<b>SBA</b>	Small Business Administration
<b>SCTF</b>	South Central Task Force
<b>SEVAN</b>	Satellite Emergency Voice Alerting Network
<b>SF</b>	Summary file
<b>SFHA</b>	Special Flood Hazard Area
<b>SHSP</b>	State Homeland Security Program
<b>SIP</b>	Structure and Infrastructure Project
<b>SOG</b>	Pennsylvania All-Hazard Mitigation Planning Standard Operating Guide
<b>SPC</b>	Storm Prediction Center
<b>SPI</b>	Standardized Precipitation Index
<b>Sq. Mi.</b>	Square mile



<b>SRL</b>	Severe repetitive loss
<b>TBD</b>	To be determined
<b>TDD</b>	Telecommunications device for the deaf
<b>Tetra Tech</b>	Tetra Tech, Inc.
<b>TOD</b>	Transit-oriented development
<b>TRI</b>	Toxic Release Inventory
<b>US-</b>	U.S. Route ##
<b>USACE</b>	U.S. Army Corps of Engineers
<b>USAR</b>	Urban Search and Rescue
<b>USC</b>	<i>U.S. Code</i>
<b>USD</b>	U.S. dollar
<b>USDA</b>	U.S. Department of Agriculture
<b>USDOT</b>	U.S. Department of Transportation
<b>USGS</b>	U.S. Geological Survey
<b>VIP</b>	Very important person
<b>WHO</b>	World Health Organization
<b>WMD</b>	Weapons of mass destruction
<b>WUI</b>	Wildland urban interface



## AUTHORITIES AND REFERENCES

This section lists references used to prepare the Lancaster County HMP. Existing plans and studies were reviewed and integrated into the HMP. Each reference is cited where its information or data was used in developing the HMP. Technical data and information, such as the locations of critical facilities and geographic information systems (GIS) data on hazard areas, was incorporated into the vulnerability assessment in each of the hazard profiles in Section 4.3. Section 4.4 details how GIS analysis, including HAZUS-MH, was performed and incorporated.

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## LOCAL MITIGATION PLAN REVIEW TOOL

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

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

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

<b>Jurisdiction:</b> Lancaster County	<b>Title of Plan:</b> Lancaster County HMP	<b>Date of Plan:</b>
<b>Local Point of Contact:</b>		<b>Address:</b>
<b>Title:</b>		
<b>Agency:</b>		
<b>Phone Number:</b>		
		<b>E-Mail:</b>

<b>State Reviewer:</b> Ernie Szabo	<b>Title:</b> State Hazard Mitigation Planner	<b>Date:</b>
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<b>FEMA Reviewer:</b> Matt McCullough	<b>Title:</b> Community Planner	<b>Date:</b>
<b>Date Received in FEMA Region</b> <i>(insert #)</i>		
<b>Plan Not Approved</b>		
<b>Plan Approvable Pending Adoption</b>		
<b>Plan Approved</b>		

**SECTION 1:  
REGULATION CHECKLIST**

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

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan (section and/or page number)</b>	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>				
<b>ELEMENT A. PLANNING PROCESS</b>				
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Section 3.1- 3.5 Appendices: C, D, E	X		
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Section 3.1- 3.5 Appendices: C, D, E	X		
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Section 3.3 & 3.4 Appendix C	X		
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Appendix A	X		
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Section 7.3	X		
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Section 7.2	X		
<b><u>ELEMENT A: REQUIRED REVISIONS</u></b>				

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>				
<b>ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Section 4.3	X		
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Section 4.3	X		
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Section 4.3	X		
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Pg 4.3.3-39- 4.3.3-45	X		
<b><u>ELEMENT B: REQUIRED REVISIONS</u></b>				
<b>ELEMENT C. MITIGATION STRATEGY</b>				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Section 5.2.1 to 5.2.6	X		
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Pg. 5-10 & 5-11			X
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Pg. 6-13 to 6-15	X		
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Pg. 6-18 to 6-54			X
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Section 6.4.1 & Section 6.4.2	X		
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Section 5.2.6	X		

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b> (section and/or page number)	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>				
<b><u>ELEMENT C: REQUIRED REVISIONS</u></b>				
<b>C1.) Kudos:</b> Well written description of the varied capabilities throughout the County.				
<b><u>ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION</u></b> (applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Pg. 2-15 to 2-17 Pg. 4.4-11 to 4.4-17	X		
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Pg. 6-3 to 6-13	X		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Pg. 6-3, 6-4, 6-15 & 6-16	X		
<b><u>ELEMENT D: REQUIRED REVISIONS</u></b>				
<b>D1.) Kudos-</b> Pg. 2-15- Excellent write-up and mapping on potential risk.				
<b>Recommended Revision:</b> Provide a write-up on how Pg. 4.4-14-4.4-17's mapping could inform a more detailed analysis on future risks to hazards; specifically how the floodplain interacts with the established "Urban Growth Areas". It is also noted on pg. 2-15 that "land use regulations have not been consistent with the County's Comprehensive Plan's Growth Management Element". Better flood risk information, found in the National Flood Hazard Layer, could assist with this discussion at the County and jurisdictional level.				
<b>Response: This will be added to the next HMP update, as discussed on 12/26/18.</b>				
<b><u>ELEMENT E. PLAN ADOPTION</u></b>				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))				
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))				
<b><u>ELEMENT E: REQUIRED REVISIONS</u></b>				
<b><u>ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)</u></b>				
F1.				
F2.				
<b><u>ELEMENT F: REQUIRED REVISIONS</u></b>				



## SECTION 2: PLAN ASSESSMENT

**INSTRUCTIONS:** The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

***Plan Strengths and Opportunities for Improvement*** is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

***Resources for Implementing Your Approved Plan*** provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

## **A. Plan Strengths and Opportunities for Improvement**

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

### **Element A: Planning Process**

*How does the Plan go above and beyond minimum requirements to document the planning process with respect to:*

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

### **Element B: Hazard Identification and Risk Assessment**

*In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:*

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

*How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:*

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

### **Element C: Mitigation Strategy**

*How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:*

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

### **Element D: Plan Update, Evaluation, and Implementation (Plan Updates Only)**

*How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:*

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

## **B. Resources for Implementing Your Approved Plan**

*Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:*

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

**SECTION 3:**  
**MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)**

**INSTRUCTIONS:** For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were ‘Met’ or ‘Not Met,’ and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/township/village/etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1	Lancaster County	County	Ben Herskowitz	PO Box 219 Manheim, PA, 17545	bherskowitz@lancema.us	717-664-1200	Y	Y	Y	Y	Y	Y
2	Adamstown Borough	Borough	Sam Toffy	PO Box 546, 3000 North Reading Rd, Adamstown, PA 19501-0546	office@adamstownborough.org	717-484-2280	Y	Y	Y	Y	Y	Y
3	Akron Borough	Borough	Gregory Leisey	PO Box 130, 117 S 7th St, Akron, PA 17501- 0130	Gleisey12@gmail.com	717-989-5474	Y	Y	Y	Y	Y	Y
4	Bart Township	Township	Cathy Snyder	46 Quarry Rd, Quarryville, PA, PA 17566-9454	barttwp@comcast.net	717-786-2877	Y	Y	Y	Y	Y	Y
5	Brecknock Township	Township	Carol L. Martin	1026 Dry Tavern Rd, Denver, PA, PA 17517- 9741	brecktwp@brecknocktownship.us	717-445-5933	N	N	N	N	N	N
6	Caernarvon Township	Township	Kathryn Norris	2147 Main St, Narvon, PA, PA 17555-9518	knorris@caernarvonlan-caster.org	717-445-4244	Y	Y	Y	Y	Y	Y
7	Christiana Borough	Borough	Carol Pringle	PO Box 135, 10 W Slokum Ave, Christiana, PA 17509- 0135	christianaboro@comcast.net	610-593-5199	Y	Y	Y	Y	Y	Y
8	Clay Township	Township	Bruce Leisey	870 Durlach Rd, Stevens, PA, PA 17578-9761	bruce@claytwp.com	717-733-9675	Y	Y	Y	Y	Y	Y
9	Colerain Township	Township	Carmen B. Wiker	1803 Kirkwood Pike, Kirkwood, PA, PA 17536-9611	colerain@epix.net	717-529-2570	Y	Y	Y	Y	Y	Y
10	Columbia Borough	Borough	Jeff Helm	308 Locust St, Columbia, PA, PA 17512-1121	jhelm@columbiapa.net	717-684-2467	Y	Y	Y	Y	Y	Y



**MULTI-JURISDICTION SUMMARY SHEET**

#	Jurisdiction Name	Jurisdiction Type (city/ borough/ township/ village/ etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
11	Conestoga Township	Township	Tim Byers	PO Box 98, 3959 Main ST, Conestoga, PA 17516-0098	<a href="mailto:byerstwp@gmail.com">byerstwp@gmail.com</a>	717-598-4018	Y	Y	Y	Y	Y	Y
12	Conoy Township	Township	Stephen L. Mohr	211 Falmouth Rd, Bainbridge, PA, PA 17502-9428	smohr@conoytownship.org	717-278-8542	N	N	N	N	N	N
13	Denver Borough	Borough	Michael Hession	501 Main St, Denver, PA, PA 17517-1427	mhession@denverboro.net	717-336-2831	Y	Y	Y	Y	Y	Y
14	Drumore Township	Township	Brian C. Bannon	PO Box 38, 1675 Furniss RD, Drumore, PA 17518-0038	DrumoreEMC@gmail.com	610-299-4703	Y	Y	Y	Y	Y	Y
15	Earl Township	Township	Brenda S Becker	517 N Railroad Ave, New Holland, PA 17557-9758	bbecker@earltpw.com	717-354-0773	Y	Y	Y	Y	Y	Y
16	East Cocalico Township	Township	Scott Russell	100 Hill Rd, Denver, PA 17517-9148	Manager@EastCocalicoTownship.com	717-336-1720	Y	Y	Y	Y	Y	Y
17	East Donegal Township	Township	Jeffrey Butler	190 Rock Point Rd, Marietta, PA 17547-9786	jeff@eastdonegaltwp.com	717-426-3167	Y	Y	Y	Y	Y	Y
18	East Drumore Township	Township	Jim Landis	1246 Robert Fulton Hwy, Quarryville, PA 17566-9628	<a href="mailto:roadmaster@edrumore-twp.com">roadmaster@edrumore-twp.com</a>	717-786-3627	Y	Y	Y	Y	Y	Y
19	East Earl Township	Township	William Shirk	4610 Division Hwy, East Earl, PA 17519-9200	wjshirk@hotmail.com	717-314-5496	Y	Y	Y	Y	Y	Y
20	East Hempfield Township	Township	Diane Garber	1700 Nissley Rd, Landisville, PA 17538-1360	EHEMA@easthempfield.org	717-898-3100	Y	Y	Y	Y	Y	Y
21	East Lampeter Township	Township	Tara Hitchens	2250 Old Philadelphia Pike, Lancaster, PA 17602-3417	thitchens@eastlampertownship.org	717-393-1567 x3505	Y	Y	Y	Y	Y	Y
22	East Petersburg Borough	Borough	Robin Hemperly	6040 Main Street, East Petersburg, PA 17520-0176	rhemperly@eastpetersburgborough.org	717-569-9282	Y	Y	Y	Y	Y	Y
23	Eden Township	Township	Szylvia Troutman	489 Stony Hill Rd, Quarryville, PA 17566-9444	edentwp@comcast.net	717-786-7915	Y	Y	Y	Y	Y	Y
24	Elizabeth Township	Township	Glenn Martin	423 Southview Dr, Lititz, PA 17543-9789	glenn.martin@elizabethtownship.net	717-626-4302	Y	Y	Y	Y	Y	Y
25	Elizabethtown Borough	Borough	Warren Mueller	600 S Hanover St, Elizabethtown, PA 17022-2522	w_muellerjr@msn.com	717-367-1700	Y	Y	Y	Y	Y	Y
26	Ephrata Borough	Borough	William L. Harvey	124 S State St, Ephrata, PA 17522-2411	harveyw@police.co.lancaster.pa.us	717-738-9200 x200	Y	Y	Y	Y	Y	Y

**MULTI-JURISDICTION SUMMARY SHEET**

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							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
27	Ephrata Township	Township	Steven A. Sawyer	265 Akron Rd, Ephrata, PA 17522-2611	ssawyer@ptd.net	717-733-1044	Y	Y	Y	Y	Y	Y
28	Fulton Township	Township	Scott N. Osborne	777 Nottingham Rd, Peach Bottom, PA 17563-9791	fultontwp@comcast.net	717-548-3514	Y	Y	Y	Y	Y	Y
29	Lancaster City	City	Douglas Smith	PO Box 1599, 120 N Duke St, Lancaster, PA 17608-1599	dsmith@cityoflancasterpa.com	717-291-4755	Y	Y	Y	Y	Y	Y
30	Lancaster Township	Township	William M. Laudien	1240 Maple Ave, Lancaster, PA 17603-4856	wlaudien@twp.lancaster.pa.us	717-291-1213, x302	N	N	N	N	N	N
31	Leacock Township	Township	Frank Howe	PO Box 558, 3545 W Newport Rd, Intercourse, PA 17534-0558	fehowe@leacocktwp.com	717-768-8585	Y	Y	Y	Y	Y	Y
32	Lititz Borough	Borough	Duane Ober	7 S Broad St, Lititz, PA 17543-1448	dober@warwicktownship.org	717-626-8900	Y	Y	Y	Y	Y	Y
33	Little Britain Township	Township	Margaret DeCarolis	323 Green Lane, Quarryville, PA 17566-9652	lbt@littlebritain.org	717-529-2373, x1	N	N	N	N	N	N
34	Manheim Borough	Borough	James R Fisher	15 E High St, Manheim, PA 17545-1505	JimFisher@ManheimBoro.org	717-665-2461	Y	Y	Y	Y	Y	Y
35	Manheim Township	Township	Rick Kane	950 W Fairway Dr, Lancaster, PA 17603-5902	rkane@manheimtownship.org	717-397-5881	Y	Y	Y	Y	Y	Y
36	Manor Township	Township	Ryan Strohecker	950 W Fairway Dr, Lancaster, PA 17603-5902	manager@manortwp.org	717-397-4769	N	N	N	N	N	N
37	Marietta Borough	Borough	Sharon L. Bradnick	111 E Market St, Marietta, PA 17547-1516	sharon@boroughofmarietta.com	717-426-4143	Y	Y	Y	Y	Y	Y
38	Martic Township	Township	Karen Sellers	370 Steinman Farm Rd, Pequea, PA 17565-9718	martic@comcast.net	717-284-2167	Y	Y	Y	Y	Y	Y
39	Millersville Borough	Borough	Michael Tuscan	100 Municipal Dr, Millersville, PA 17551-1424	mtuscan@millersvilleborough.org	717-872-4645	Y	Y	Y	Y	Y	Y
40	Mount Joy Borough	Borough	Rick Hamm	21 E Main St, Mount Joy, PA 17552-1415	rshamm@embarqmail.com	717-653-2121	Y	Y	Y	Y	Y	Y
41	Mount Joy Township	Township	Justin Evans	159 Merts Dr, Elizabethtown, PA 17022-8803	justin@mtjoytwp.org	717-367-8917	Y	Y	Y	Y	Y	Y

**MULTI-JURISDICTION SUMMARY SHEET**

#	Jurisdiction Name	Jurisdiction Type (city/ borough/ township/ village/ etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
42	Mountville Borough	Borough	Pamela J. Mitchell	PO Box 447, 21 E Main St, Mountville, PA 17554-0447	info@mountvilleborough.com	717-285-5547	Y	Y	Y	Y	Y	Y
43	New Holland Borough	Borough	Richard Fulcher	436 E Main St, New Holland, PA 17557-1404	jrf@newhollandborough.org	717-354-4567	Y	Y	Y	Y	Y	Y
44	Paradise Township	Township	Dennis R. Groff	PO Box 40, 196 Black Horse Rd, Paradise, PA 17562-0040	dgroffparadise@comcast.net	717-768-8222	Y	Y	Y	Y	Y	Y
45	Penn Township	Township	Mark Hiester	97 N Penryn Rd, Manheim, PA 17545-9326	manager@penntwplan.co.org	717-665-4508	Y	Y	Y	Y	Y	Y
46	Pequea Township	Township	Connie Kauffman	1028 Millwood Rd, Willow Street, PA 17584-9375	secretary@pequeatwp.org	717-464-2322	N	N	N	N	N	N
47	Providence Township	Township	Vicki Eldridge	200 Mount Airy Rd, New Providence, PA 17560-9781	vicki@providencetownship.com	717-786-7596	Y	Y	Y	Y	Y	Y
48	Quarryville Borough	Borough	Kenneth C Work	300 Saint Catherine St, Quarryville, PA 17566-1236	office@quarryvilleborough.com	717-786-2404	N	N	N	N	N	N
49	Rapho Township	Township	Sara Gibson	971 N Colebrook Rd, Manheim, PA 17545-9680	manager@raphotownship.com	717-665-3827	Y	Y	Y	Y	Y	Y
50	Sadsbury Township	Township	Michele M Neckerman	7182 White Oak Road, Christiana, PA 17509	info@sadsburytownshipplancaster.org	610- 593-6796	Y	Y	Y	Y	Y	Y
51	Salisbury Township	Township	Kirsten Peachey	5581 Old Philadelphia Pike, Gap, PA 17527-9791	twp@comcast.net	717-768-8059	Y	Y	Y	Y	Y	Y
52	Strasburg Borough	Borough	Lisa M. Boyd	145 Precision Ave, Strasburg, PA 17579-9608	lboyd@strasburgboro.org	717-687-7732	Y	Y	Y	Y	Y	Y
53	Strasburg Township	Township	Judy Willig	400 Bunker Hill Rd, Strasburg, PA 17579-9501	secretary@strasburgtownship.com	717-687-6233	Y	Y	Y	Y	Y	Y
54	Terre Hill Borough	Borough	William Shirk	PO Box 250, 300 Broad St, Terre Hill, PA 17581-0250	wjshirk@hotmail.com	717-331-5496	Y	Y	Y	Y	Y	Y
55	Upper Leacock Township	Township	William J. Howard	PO Box 325, Leola, PA 17540-0325	bhoward@ultwp.com	717-587-9204	Y	Y	Y	Y	Y	Y
56	Warwick Township	Township	Duane Ober	PO Box 308, 315 Clay Rd, Lititz, PA 17543-0308	dober@warwicktownship.org	717-626-8900	Y	Y	Y	Y	Y	Y

**MULTI-JURISDICTION SUMMARY SHEET**

#	Jurisdiction Name	Jurisdiction Type (city/borough/township/village/etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
57	West Cocalico Township	Township	Carolyn Hildebrand	PO Box 244, 156B W Main St, Reinholds, PA 17569-0244	wcocalico@gmail.com	717-336-8720	Y	Y	Y	Y	Y	Y
58	West Donegal Township	Township	John O. Yoder, III	1 Municipal Dr, Elizabethtown, PA 17022-9332	jjoder@wdtwp.com	717-367-7178	Y	Y	Y	Y	Y	Y
59	West Earl Township	Township	William J. Howard	PO Box 787, 157 W Metzler Rd, Brownstown, PA 17508-0787	bhoward@westearltwp.org	717-859-3201 Ext 110	Y	Y	Y	Y	Y	Y
60	West Hempfield Township	Township	Andrew B. Stern	3401 Marietta Ave, Lancaster, PA 17601-1125	manager@westhempfield.org	717-285-5554	Y	Y	Y	Y	Y	Y
61	West Lampeter Township	Township	Dee Dee McGuire	PO Box 237, 852 Village Rd, Lampeter, PA 17537-0237	deedee@westlampeter.com	717-464-3731	Y	Y	Y	Y	Y	Y



# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan Kickoff Meeting		
<b>Date</b>	June 30, 2017	<b>Time</b>	10:30 – 11:55 a.m.
<b>Location</b>	Lancaster County Emergency Management Agency (LEMA)		
<b>Attendees</b>	Randy Gockley, LEMA		
	Philip Colvin, LEMA		
	Ben Herskowitz, LEMA		
	Dave Boucher, LEMA		
	Brenda Pittman, LEMA		
	Tony Subbio, Tetra Tech, Inc. (Tetra Tech)		

## Purpose

The purpose of the kickoff meeting was to initiate the project to update Lancaster County’s (the County) Hazard Mitigation Plan (HMP). The meeting was conducted to provide an opportunity for Lancaster County’s primary points of contact to discuss and learn about the project from Tetra Tech.

## Discussion Points

This section summarizes each discussion point addressed during the kickoff meeting.

### Expectations and Areas of Focus

Mr. Gockley pointed out that Lancaster County municipalities demonstrated little buy-in during the last HMP update. He would like to see more municipalities submit mitigation projects for inclusion in the updated plan. Mr. Colvin agreed, and asked for education of municipal representatives regarding projects that can be included. He asked that information about the plan, the planning process, and mitigation actions be given to municipality representatives in writing. Mr. Gockley and Mr. Boucher discussed LEMA’s internship program. No work will be shifted from Tetra Tech to the interns, but the planning process should include learning opportunities for the interns. Ms. Pittman stated she would like to see a focus on public involvement.

### Planning Process and Timeline

Mr. Subbio stated that the HMP planning process would follow the Pennsylvania Emergency Management Agency’s (PEMA) standardized mitigation planning process, as detailed in Tetra Tech’s contract with the County. Mr. Subbio provided an overview of the planning process, along with the timeframe for completion of each step in the process. Mr. Herskowitz asked if the dates listed in the Project Schedule handout were firm. Mr. Subbio replied that they will serve as a guide, but that meeting dates will be set as the process progresses. The proposed planning process reflects completing the HMP with several months to spare before the existing HMP expires, so small delays of any given step will have a minimal impact on the project’s success.

Mr. Subbio also discussed the extra meetings that will be held during the planning process. Tetra Tech will attend and conduct two additional stakeholder meetings—such as meetings with the municipal emergency management coordinators (EMC) or the County Planning Commission—to provide information on hazard mitigation and the mitigation planning process. One of these meetings will be the municipal EMC training





# MEETING NOTES

scheduled from 7:00-9:00 p.m. on August 17, 2017. Tetra Tech will present for 1 hour at that meeting. Tetra Tech will also conduct a meeting to discuss the Community Rating System (CRS) Program with municipal representatives.

All meetings will be held at the Lancaster County Public Safety Training Center (the Training Center). LEMA will use its invitation and RSVP system to track responses to meeting invitations.

## Planning Team Organization

Mr. Subbio reviewed a list of potential stakeholders to invite to serve on the Planning Team. LEMA representatives stated that they have contact lists for many of the groups that Mr. Subbio presented. Mr. Subbio will send the list to Mr. Herskowitz so that he can compile LEMA's contact lists.

## Planning Team Kickoff Meeting

The Initial Planning Team Meeting will be held from 1:00-3:00 p.m. at the Training Center on Wednesday, August 9, 2017. Mr. Subbio will provide a draft of the invitation letter to Mr. Herskowitz. Mr. Herskowitz will put the invitation on LEMA letterhead and send it to stakeholders.

## Data Request

Mr. Herskowitz asked for more details about what incident records Tetra Tech is requesting. Mr. Subbio explained that Tetra Tech would like to see any relevant incident records from the Countywide Communications Center's Computer-Aided Dispatch (CAD) system, damage reports from incidents, and any after action reports from actual events, so that information can be incorporated into the risk assessment portion of the HMP.

Attendees reviewed the Geographic Information Systems (GIS) Wish List. Mr. Colvin stated that many stakeholder groups maintaining the requested data (e.g., municipal authorities) will likely not share the data with the County. Some facilities may be in the CAD system based on submitting Tier II reports to the County. The County's Special Needs database is not current. Ms. Pittman asked if Tetra Tech would be including information from the U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response (ASPR) in the analysis. Mr. Subbio asked Ms. Pittman to send him a link to the relevant data.

Mr. Colvin stated he would try to find the CD-ROM that contains the full version of the 2014 HMP to provide the Microsoft Word version of the plan to Tetra Tech.

## Next Steps

The following next steps were discussed at the meeting:

- Mr. Subbio will provide the draft invitation letter for the Initial Planning Team Meeting to Mr. Herskowitz.
- Mr. Subbio will provide Tetra Tech's W-9 form to Mr. Colvin.
- Mr. Herskowitz will work with other County staff to compile the information and documents requested by Tetra Tech.
- Ms. Pittman will provide Mr. Subbio a link to the ASPR data she discussed.
- The Initial Planning Team Meeting will be held on August 9, 2017.



# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan – Planning Team Kickoff Meeting		
<b>Date</b>	August 9, 2017	<b>Time</b>	1:00-2:40 p.m.
<b>Location</b>	Lancaster County Public Safety Training Center		
<b>Attendees</b>	Randy Gockley, Lancaster County Emergency Management Agency (LEMA)		
	Philip Colvin, LEMA		
	Ben Herskowitz, LEMA		
	Dave Boucher, LEMA		
	Brenda Pittman, LEMA		
	Laura Kratz, LEMA		
	James Cowhey, Lancaster County Planning Commission		
	Beverly Kirby, Lancaster County Court of Common Pleas		
	Wanda Good, Caernarvon Township		
	Terry L. Martin, Caernarvon Township		
	Kathryn Norris, Caernarvon Township		
	Carol L. Pringle, Christiana Borough		
	Jeff Helm, Columbia Borough		
	Michael Hession, Denver Borough		
	Brenda Becker, Earl Township		
	Jeffrey Butler, East Donegal Township		
	William Shirk, East Earl Township and Terre Hill Borough		
	Diane Garber, East Hempfield Township and East Petersburg Borough		
	Tara Hitchens, East Lampeter Township		
	Robin Hemperly, East Petersburg Borough		
	Scott Liggins, East Petersburg Borough		
	Jeffrey Moseman, East Petersburg Borough		
	Michael Roush, East Petersburg Borough		
	Shawn Vinson, Eden Township		
	Matt Shuey, Elizabethtown Borough		
	William L. Harvey, Ephrata Borough		
	Scott N. Osborne, Fulton Township		
	Mike Tuscan, Millersville Borough		
Francis Zimmer, Mountville Borough			
Mark Hiester, Penn Township			
Sara Gibson, Rapho Township			



# MEETING NOTES

Jeremiah R. Ely, Sr., Sadsbury Township
Linda M. Swift, Sadsbury Township
Kirsten Peachey, Salisbury Township
Steve Echternach, Strasburg Borough and Strasburg Township
Duane Ober, Warwick Township and Lititz Borough
Carolyn Hildebrand, West Cocalico Township
Andrew Stern, West Hempfield Township
Jim Kreider, West Lampeter Township
Todd M. English, Brethren Village
Mark Heckaman, Donegal School District
John Becker, Fairmount Homes
Sherri Stoltzfus, Harrison House of Christiana
Dan Forry, Hempfield School District
Rebecca Glass, Homestead Village
Walter Roth, Lancaster Regional Medical Center and Heart of Lancaster Regional Medical Center
Daniel Wu, Lancaster General Health
Adam Gardner, Landis Homes
Stan Brightman, Maple Farm
Dan Martensen, Mennonite Home
Andrew Yarosh, Millersville University Center for Disaster Research and Education (CDRE)
Kristi Dietrich, Mount Hope Nazarene Retirement Community
Laura Laucks, Pennsylvania Emergency Management Agency (PEMA)
Jim Kerstetter, PEMA
Tony Subbio, Tetra Tech, Inc. (Tetra Tech)

## Discussion Points

This section summarizes each discussion point addressed during the Planning Team Kickoff Meeting.

## Introductions

Mr. Gockley welcomed attendees to the meeting and the planning process. Due to the excellent turnout to the meeting and large number of people present, attendees only indicated whether they represented the County, a municipality, or other stakeholder group.



# MEETING NOTES

## Planning Process

Mr. Subbio discussed the planning process to be used to update the HMP. He explained that the process begins with examining the following hazards of concern for the County, as identified in the 2014 HMP:

Natural Hazards	Human-made Hazards
Drought	Dam Failure
Earthquakes	Environmental Hazards
Flood, Flash Flood, Ice Jam	Nuclear Incident
Radon Exposure	Transportation Accident
Subsidence and Sinkholes	
Tornadoes and Windstorms	
Wildfire	
Winter Storm	

Mr. Subbio described the Evaluation of Identified Hazards and Risk Worksheet that was distributed to the attendees. This worksheet captures information from each municipality regarding changes in each municipality's vulnerability to the hazards of concern, and additional hazards of concern to be considered. Mr. Subbio asked each attendee to take a few minutes to complete the worksheet before moving on.

Mr. Subbio then discussed the process for updating the hazard profiles, and the specific scenarios that will be used in assessing the County's vulnerability to certain hazards. The following scenarios will be examined using Federal Emergency Management Agency's (FEMA) Hazards U.S. (HAZUS) software:

- Earthquake: the 500-year Mean Return Period (MRP) event
- Flood: the 1-percent annual chance flood
- Wind: the 100-year and 500-year MRP events

The next step in the planning process is to update the County's and municipalities' capability assessments. A Capability Assessment Survey was distributed to the attendees to collect information regarding their planning and regulatory, administrative and technical, financial, and education and outreach capabilities. Mr. Subbio reviewed each capability category with the attendees.

Once the risk assessment and capabilities assessment are updated, they will be reviewed with the Planning Team and general public at a public meeting.

Mr. Subbio next discussed updating the mitigation strategy. Updating the mitigation strategy consists of reviewing the existing goals and objectives, determining the status of mitigation actions from the 2014 HMP, and identifying new mitigation actions to include in the updated HMP. Mr. Subbio reviewed the Mitigation Strategy 5-Year Mitigation Plan Review Worksheet with attendees. The worksheet collects stakeholders' input on the goals and objectives from the 2014 HMP, and provides an opportunity for municipalities to describe the progress made on implementing their mitigation actions since the HMP was last approved. Each municipality is asked to



# MEETING NOTES

describe the status of each action that applies to that jurisdiction. Mr. Subbio told the attendees about a mitigation strategy workshop that will be conducted during the planning process to help stakeholders identify mitigation actions to include in the HMP. Following the workshop, a Planning Team Meeting will be held to review the updated mitigation strategy. The Planning Team Meeting will be open to the public. There was a group discussion on long-term care and retirement facilities being involved in emergency preparedness efforts. Facilities subject to the Centers for Medicaid and Medicare Services (CMS) regulations need to include the State and municipalities in their planning and exercises. There was also a discussion of facilities being dependent on staff 24 hours per day, 7 days per week. Ms. Dietrich pointed out that her facility becomes inaccessible during a flood, though the facility itself does not flood. Mr. Subbio asked the facility representatives to work with their municipalities to identify problem areas and potential mitigation actions throughout the planning process, so that these actions can be included in the HMP.

Mr. Subbio then discussed the layout of the HMP. The risk assessment, capabilities assessment, and mitigation strategy would each be included as a section of the HMP. Other sections include the County Profile, documentation of the planning process, and the plan maintenance section. The County Profile will be updated to include the latest demographic, economic, land use, hydrologic, and critical facility information.

The draft HMP will be presented to the Planning Team for review and comment. Tetra Tech will incorporate any changes identified by the Planning Team. The draft HMP will then be posted for a period of 30 days, after which a public meeting will be held to collect and review feedback on the HMP. Tetra Tech will address any suggested changes, and will submit the HMP to PEMA and FEMA for formal review. Tetra Tech will make any required changes and resubmit the HMP, as necessary, until FEMA grants it "approvable pending adoption" (APA) status.

Mr. Subbio explained that the HMP cannot be formally approved by FEMA until the County and at least one participating municipality formally adopts the HMP. FEMA grants APA status to let the communities know that the HMP will be approved once it is adopted, so that the communities do not adopt the HMP only to have to re-adopt it after any changes are made.

Once the HMP secures APA status, the County and the municipalities will formally adopt the updated HMP. The existing HMP does not expire until January 2019. Mr. Subbio stated that he expects the updated HMP to be fully approved several months before that. The County and municipalities will then begin the implementation process, which will include conducting regular meetings of the Planning Team and other stakeholders, and implementing specific actions and projects.

## Review Schedule

Mr. Subbio reviewed the following project schedule with attendees:

- The risk assessment and capabilities assessment will be updated by October 2017.
- The Planning Team Meeting to review the risk assessment and capabilities assessment will be held once the assessments are complete, likely in October 2017.
- The mitigation strategy will be updated by January 2018.
- The HMP will be drafted by mid-January 2018, and submitted to PEMA for review in mid-March 2018.
- The HMP will be submitted to FEMA for review in early May 2018.
- Depending on the length of the FEMA review process, Tetra Tech estimates that the HMP will receive APA status by July 2018.





# MEETING NOTES

## Next Steps

Mr. Subbio requested that relevant documents (such as comprehensive plans, capital improvement plans, floodplain management ordinances, etc.) be sent to him. Municipalities will complete the three worksheets and provide them to Mr. Subbio or Mr. Herskowitz. Tetra Tech will complete the risk assessment and post the draft hazard profiles to the project website. Mr. Subbio then reviewed the project website with attendees. Mr. Gockley and Mr. Subbio thanked attendees for their time and participation.



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**Lancaster County  
Hazard Mitigation Plan (HMP)  
Update  
Planning Team Kickoff Meeting**

### Agenda

- Introductions
- Planning Process
- Review Schedule
- Next Steps
- Questions

### Introductions

- Name
- Organization
- Role
- Experience with Hazard Mitigation

### Planning Process

- Update the Risk Assessment
- Update the Capabilities Assessment
- Update the Mitigation Strategy
- Update Other Sections of the HMP
- Submit the HMP for Review
- Adopt the HMP
- Implement the HMP

### Update the Risk Assessment

- Hazards from the 2014 HMP

Natural Hazards	Human-made Hazards
Drought	Dam Failure
Earthquakes	Environmental Hazards
Flood, Flash Flood, Ice Jam	Nuclear Incident
Radon Exposure	Transportation Accident
Subsidence and Sinkholes	
Tornadoes and Windstorms	
Wildfire	
Winter Storm	

- *Hazard Identification and Risk Evaluation Worksheet*

### Update the Risk Assessment

- Update Hazard Profiles
  - Events since December 2012
  - Robust hazard descriptions
  - Improved vulnerability assessments
- HAZUS-MH Analysis
  - Earthquake – 500-year Mean Return Period (MRP) event
  - Flood – 1-percent annual chance floodplain
  - Wind – 100-year and 500-year MRP events



### Update the Capabilities Assessment

- Capabilities
  - Planning and Regulatory Capability
  - Administrative and Technical Capability
  - Financial Capability
  - Education and Outreach
  - Self-Assessment of Capability
- *Capability Assessment Survey*
- Planning Team Meeting (open to the public) to Review Risk and Capabilities Assessments



### Update the Mitigation Strategy

- Review Goals and Objectives
- Determine Status of Mitigation Actions
- *Mitigation Strategy 5-Year Mitigation Plan Review*
- Identify New Mitigation Actions/Projects
- Conduct Mitigation Strategy Workshop
- Conduct Planning Team Meeting (Open to the Public) to Review Updated Mitigation Strategy



### Update Other Sections of the HMP

- County Profile
  - Update data
- Planning Process
  - Documentation of the update process
- Plan Maintenance
  - Incorporation into other plans, as well as determining ways to incorporate other plans into the updated HMP



### Submit the HMP for Review

- Review Draft with Planning Team
- 30-day Public Comment Period
- Conduct Public Meeting to Review the Draft
- Submit for Pennsylvania Emergency Management Agency (PEMA) Review
  - 14 to 28 days
- Submit for Federal Emergency Management Agency (FEMA) Review
  - 45 days
- “Approvable Pending Adoption” Status



### Adopt the HMP

- County and at least One Participating Municipality
- FEMA Approval
- Adoption Deadline – January 2019



### Implement the HMP

- Planning Team Meetings
- Stakeholder Meetings
- Implement Mitigation Actions and Projects
  - Integrate actions where appropriate





## Review Schedule

- Risk Assessment
  - August – October 2017
- Capabilities Assessment
  - August – October 2017
- Mitigation Strategy
  - August 2017 – January 2018
- Draft Plan by mid-January 2018
- Submit to PEMA in mid-March 2018
- Submit to FEMA in early May 2018
- “Approvable Pending Adoption” by July 2018



## Next Steps

- Document Request
- Complete Municipal Worksheets
- Update the Risk Assessment



## Questions?

Thank you for your time!



## Contacts



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# AGENDA

## LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE Planning Team Kickoff Meeting

Wednesday, August 9, 2017 | 1:00 – 3:00 p.m.

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### 1. Introductions

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### 2. Planning Process

- a. Update the Risk Assessment
- b. Update the Capabilities Assessment
- c. Update the Mitigation Strategy
- d. Update Other Sections of the HMP
- e. Submit the HMP for Review
- f. Adopt the HMP
- g. Implement the HMP

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### 3. Review Schedule

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### 4. Next Steps

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### 5. Questions

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# Hazard Identification and Risk Evaluation Worksheet

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Jurisdiction: \_\_\_\_\_

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought		
Earthquake		
Floods, Flash Floods, and Ice Jams		
Radon		
Subsidence, Sinkhole		
Tornado, Windstorm		
Wildfire		
Winter Storm		
<b>Human-made Hazards</b>		
Dam Failure		
Environmental Hazards		
Nuclear Incident		
Transportation Accident		

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

## Capability Assessment Survey

Jurisdiction: \_\_\_\_\_

Point of Contact Name and Title: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

- 1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan					
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan					
Zoning Regulations					



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations					
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)					
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance					
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code					
Fire Code					
Other					

**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
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 (includes building inspectors)				
Emergency Manager				
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program				
Grant writers or fiscal staff to handle large/complex grants				
Staff with expertise or training in Benefit-Cost Analysis				
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State or Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
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				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			
Administrative and Technical Capability			
Financial Capability			
Education and Outreach			

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.

**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas						<i>Has this activity been integrated into the municipality's normal operations?</i>
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						
1.2.2 Ensure safety buffer between industrial facilities and population						
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance						<i>Has this activity been integrated into the municipality's normal operations?</i>
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts						<i>Has this activity been Integrated into the municipality's normal operations?</i>
2.2.2 Require special use permits for hazard-prone areas						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						<i>Has this activity been Integrated into the municipality's normal operations?</i>
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use						<i>Has this activity been Integrated into the municipality's normal operations?</i>



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						
3.3.1 Implement the new Lancaster County radio system						
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues						
5.1.1 Develop and implement source water protection plans						
5.1.2 Reduce the number of miles of impaired streams in the County						
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains						<i>Has this activity been integrated into the municipality's normal operations?</i>





Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation						<i>Has this activity been integrated into the municipality's normal operations?</i>
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						<i>Has this activity been integrated into the municipality's normal operations?</i>

<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures						
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.						
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





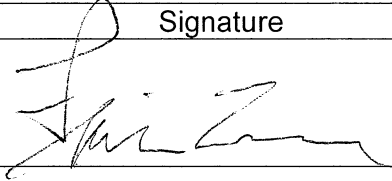
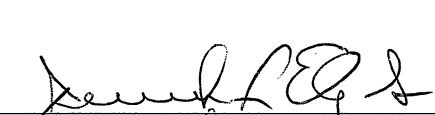
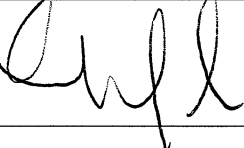
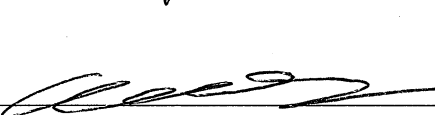
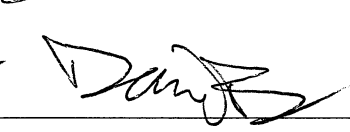
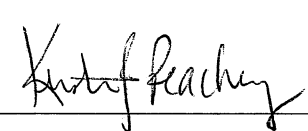
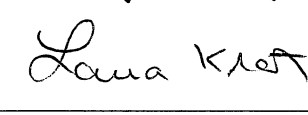
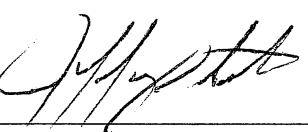
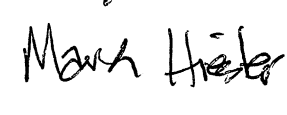
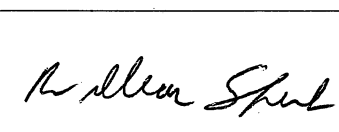
<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.						
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.						



# Lancaster County Emergency Management Agency Training Attendance Record

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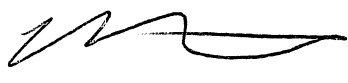
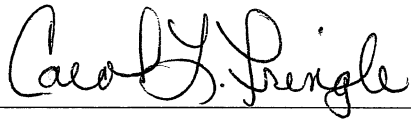
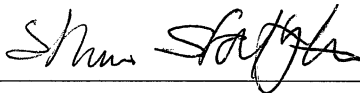
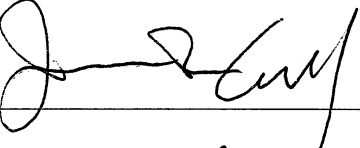

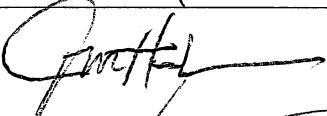
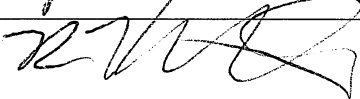


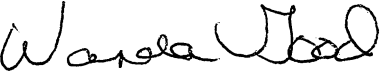
County ID No. \_\_\_\_\_ (If Applicable)

Course Title: Hazard Mitigation Plan Update Kickoff Meeting			Instructor: Ben Herskowitz / Tony Subbio			
Location: Lancaster County Public Safety Training Center			Date: 8/9/17			
	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	FRANCIS ZIMMER		Mountville Borough	47 E MAIL Mountville PA	717-285-2871	Fzimmer@mountvilleboroughpa.gov
2	Jeremiah R Ely sr		Sadsbury Twp E.M.C	115 W. Sadsbury CT Gap, PA 17527	484-645-1933	rdhjac@comcast.net
3	Michael Hessard		Denton Board	501 Walnut Street Denton PA 17517	717-326-2531	Mhessard@dentonpa.gov
4	Adam Gardner		Lanc. Co. E.M.A.		717-381-3525	Agardner@lancastercountypa.gov
5	David Boucher		Lanc. Co. E.M.A	28 S. Charlotte St Mammoth PA 17545	717-664-1205	dboucher@lancastercountypa.gov
6	Kirsten Peachey		Salisbury Twp.	5581 Old Phila. Pike Gap PA 17527	717-768-8055	twp@comcast.net
7	Laura Kratz		LEMA	849 Pleasure Rd Lancaster PA 17601	610-304-8988	lkratz@millersville.edu
8	JEFFREY BUTLER		EAST DUNWOM TWP.	190 Rock Point Rd Marietta PA 17547	717-426-3167	jeff@eastdunwomtpa.gov
9	Mark Hieser		Penn T		665-4500	Mengler@
10	WILLIAM SHIRK		GAST CARL TWP TERRE HILL BORO	1620 SILVER VALLEY GAST CARL PA 17519	717-314-5496	wshirk@tdotmail.com

# Lancaster County Emergency Management Agency Training Attendance Record

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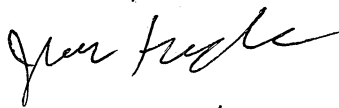
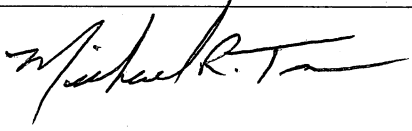

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Location: Lancaster County Public Safety Training Center				Date: 8/9/17		
	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	WALTER ROTH		LCMC HERME	250 COLLEGE AVE LANC PA	717-358 7390	
2	Carol L Pringle		Christiana Borough	10 West Slocum Ave Christiana PA	610-593- 5199	
3	Sherri Stoltz Esq		Harrison House	41 Newport Ave Christiana PA	610 593 6901	
4	James Coshey		LCPC	150 N Queen	299-8333	
5	STEVE EARTHMAN		STANBURG BOZO/TWD		607-7128	
6	JEFF HELM		COLUMBIA BOROUGH	308 LOCUST ST. COLUMBIA	449-0922	
7	Ben HERSKOWITZ		LEMW		(717) 723 8454	
8	Dan Forny		Hempfield SD	200 Church St Landisville, PA 17538		dan.forny@ hempfield.scl.org
9	Duane Ober		Warwick Twp Lititz Boro	315 clay Rd Lititz PA 17513		dober@ warwicktownship .org
10	Wanda Good		Caernarvon Twp	2139 Main ST Narron PA 17555	717- 445- 4244	wgood@ caernarvon lanaster.org

# Lancaster County Emergency Management Agency Training Attendance Record

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Location: Lancaster County Public Safety Training Center			Date: 8/9/17			
	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	Shawn Vinson		Eden Township	P.O. Box 513 Quarryville Pa 17566	717-824-5968	EdenTwpConstable@gmail.com
2	Wm L HARVEY		Ephrata Boro	124 S. State St Ephrata 17522	717-738-9240 Ext 2664	harveyw@police.co.lancaster.pa.us
3	Diane Garber		EHT/EPB			
4	MARK HECKMAN		DOVERGA SID	1051 KOSCIUSKO RT. MT. JOY 17552	717.492.1210	_____
5	John Becker		Fairmount Hors	333 Wheat Ridge Ephrata	717-354-1831	
6	Kinda M Swift		Gadsbury TWP	7182 White Oak Road Christiana PA 19009	610-593-6286	info@socksbergtownshiplanca.org
7	Matt Shuey		ELIZABETH TOWNSHIP BOROUGH	600 S HANOVER ST ELIZABETH TOWNSHIP PA	717-367-1700	
8	Jim Kreider		West hampeter Twp.	852 Village Rd hampeter Pa	717-464-3731	DeeDee@westhampeter.com
9	MIKE TUSCAN		MILLERSVILLE BOROUGH	100 MUNICIPAL DR MILLERSVILLE PA 17551	(717) 872-4645	mtuscan@millersvilleborough.org
10	Andrew Stern		West Hempfield	3401 Marietta Ave Lancaster 17601	717 285-5554	manager@westhempfield.org

# Lancaster County Emergency Management Agency

## Training Attendance Record

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Location: Lancaster County Public Safety Training Center      Date: 8/9/17

	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	Brenda Becker	<i>Brenda Becker</i>	Earl Twp	517 N Railroad Ave New Holland PA 17557	717-354-0773	bbecker@earlhtwp.com
2	SCOTT N. OSBORNE	<i>Scott N. Osborne</i>	FULTON TWP	204 WESTBROOK RD PEACH BOTTOM PA 17568	717-808-3252	SOSBORNE12345@gmail.com
3	Dan Martensen	<i>Dan Martensen</i>	Mennonite Home	1520 Harrisburg Pike Lancaster 17601	717-874-0018	Dmartensen@mennonitehome.org
4	Terry L. Martz	<i>Terry L. Martz</i>	Caernarvon Twp.	2139 Main St Warren, Pa	717-445-4244	tmartz@caernarvonlancaster.org
5	Todd M English	<i>Todd M. English</i>	Brethren Village	3001 LITITZ Rk Lancaster Pa 17606	(717) 468-7220	todde@bv.org
6	Stacy Bright	<i>Stacy Bright</i>	North Fork		859-1191	sbright@northfork.com
7	Kristi Dietrich	<i>Kristi Dietrich</i>	Mt. Hope Nazarene RC	3026 Mt Hope Hwy Rd Manheim	717-665-6365	kdietrich85@gmail.com
8	Carolyn Hildebrand	<i>Carolyn Hildebrand</i>	West Cocalico	156 BW Main St Reisholds 17569	717-336-8720	weococalico@gmail.com
9	Beverly Kirby	<i>Beverly Kirby</i>	Court of common Pleas	Courthouse	717-299-8045	Kirby@co.lancasterpa.us
10	Tara Hitchens	<i>Tara Hitchens</i>	EAST Lampeter Twp	2250 Old Philadelphia Pike, Lancaster, PA 17602	717-395-1567 X3505	thitchens@eastlampeter-township.org



# Lancaster County Emergency Management Agency


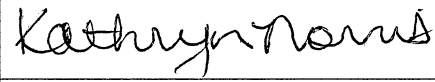

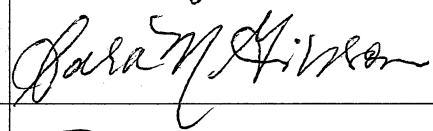
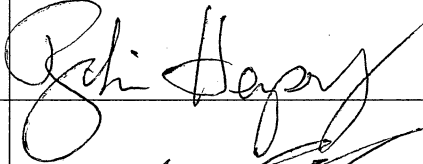

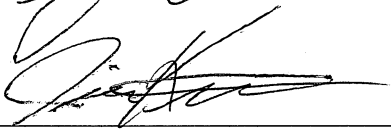
## Training Attendance Record

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Course Title: Hazard Mitigation Plan Update Kickoff Meeting      Instructor: Ben Herskowitz / Tony Subbio

Location: Lancaster County Public Safety Training Center      Date: 8/9/17

	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	Jeffrey Mosenman		East Petersburg Borough	6040 MAIN ST East Petersburg PA 17526	717-419-7958	JMOSEMAN@EASTPETERSBURGBOBOROUGH.ORG
2	Kathryn Norris		Caernarvon Township	2139 MAIN ST. Narvon, PA 17555	717-445-4244	KNORRIS@CAERNARVONLANCASTER.ORG
3	Andrew Varosh		Millersville University Center for Disaster Education (CDRE)	Luzerne Building Millers. University	717-330-3989	ajvarosh@millersville.edu
4	Sara Gibson		Rapho Twp.	971 N. Colebrook Manheim 17545	717-665-3827	managera@raphotownship.com
5	Pat Hazey		EAST Petersburg.	6040 Main St East Pete 17526	717-569-9282	
6	Laura Lauckes		PEMA	131a Elwerton Ave Harrisburg		llauckes@pa.gov
7	Jim Kerstetter		PEMA	1310 Elwerton Ave Harrisburg, PA		PA.gov Jamkerstet
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9						
10						

# Lancaster County Emergency Management Agency Training Attendance Record

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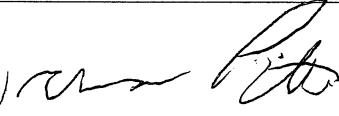
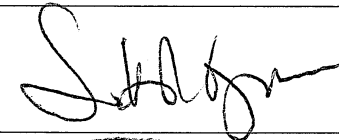


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Course Title: Hazard Mitigation Plan Update Kickoff Meeting

Instructor: Ben Herskowitz / Tony Subbio

Location: Lancaster County Public Safety Training Center

Date: 8/9/17

	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	Michael Roush		East Petersburg Borough	6040 Main St East Petersburg PA	717-569- 9282	mroush@ eastpetersburg borough.org
2	Brenda Pittman		LEOMA			
3	Scott Higgins		EAST PETER BORO			sligsmad eastpetersburg borough.org
4	Rebecca Glass		Hornethead Village	1800 Village Cr Lancaster PA 17603	717-397- 4831	rglass@ hvnillage.org
5	DANIEL WU		LANC General Health	535 N. DUKETT LANC. PA 17602	717-544- 5945	dwu2@ lghealth.org
6	Trudy Coakley					
7						
8						
9						
10						



# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan – Emergency Management Coordinator (EMC) Meeting		
<b>Date</b>	August 17, 2017	<b>Time</b>	7:00–8:30 p.m.
<b>Location</b>	Lancaster County Public Safety Training Center		
<b>Attendees</b>	Dave Boucher, Lancaster County Emergency Management Agency (LEMA)		
	Laura Kratz, LEMA		
	Nathan H. Wolf, LEMA		
	José F. Gonzalez, Borough of Columbia		
	Jeff Helm, Borough of Columbia Emergency Management Agency (EMA)		
	Brian Remyey, Drumore Township		
	William Shirk, East Earl Township and Terre Hill Borough		
	Gene Galeschewski, Elizabethtown Regional EMA (Elizabethtown Borough, Mount Joy Township, West Donegal Township)		
	Warren Mueller, Jr., Elizabethtown Regional EMA (Elizabethtown Borough, Mount Joy Township, West Donegal Township)		
	Brad Roth, Manheim Regional EMA (Manheim Borough and Penn Township)		
	Rick Hamm, Mount Joy Borough EMA		
	Peg Hamm, Mount Joy Borough EMA		
	Lori Shenk, Rapho Township		
	Kim Stonebraker, Wellspan Ephrata		
	John Ehleiter		
Tony Subbio, Tetra Tech			

## Discussion Points

This section summarizes each discussion point addressed during the hazard mitigation portion of the EMC meeting.

## Planning Process

Mr. Subbio discussed the planning process that would be used to update the Hazard Mitigation Plan (HMP). He gave a brief overview of the risk assessment, capabilities assessment, and mitigation strategy update processes. He identified sections of the HMP and how they would be developed. He discussed the plan adoption process and implementing the HMP. Mr. Subbio also pointed out that the federal mitigation grant programs are currently accepting applications, so municipalities should consider applying for a grant to implement project in the 2014 version of the HMP.



# MEETING NOTES

## History and Problem Areas

Mr. Subbio then led the discussion about hazards that have impacted Lancaster County (County) in the last five years and what problem areas exist in each of the municipalities.

## Riverine Flooding

Attendees discussed the following problem areas:

- East Earl Township: Conestoga Bridge Road, Iron Bridge Road, and Quarry Road – all three from the Conestoga River
- Lancaster City: North Holland Pike to Plum Street
- Manheim Borough: the area around the Chiques Creek and Little Chiques Creek
- Manheim Township: Butter Road and River Road, both from the Conestoga River

## Flash Flooding

Attendees discussed the following specific problem area:

- Columbia Borough: 10<sup>th</sup> Street and Ridge Avenue has a drainage problem.

## Subsidence and Sinkholes

Attendees discussed the following problem areas:

- Columbia Borough: The entire borough is on limestone, so sinkholes may develop throughout the borough.
- Ephrata Borough: There was a sinkhole near Pine Street this past spring.
- Lancaster City: There were issues near a French drain along the Harrisburg Pike at North Berry Street and Pine Street.

## Tornado, Windstorms

Mr. Subbio pointed out that in the last five years, tornadoes and windstorms accounted for \$17 million of the \$17.231 million in property damages reported to the National Climatic Data Center. There were tornadoes in September 2015 and February 2016, which caused \$4 million and \$8 million in property damages, respectively. There was also a microburst in the northern part of the county in February 2017, causing \$5 million in damages. This storm also caused significant hail damage.

## Wildfire

Attendees reported that the last few summers have been very dry. Sparks from trains' brake shoes have been igniting brush fires along the railroad tracks. The area along Chiques Creek is very dry and could be a problem area. The Welsh Mountain Nature Preserve is also a concern. In Columbia Borough, the area along the hill leading down to the river from the overlook could be a problem.

## Hazardous Materials

Attendees reported that all transportation routes throughout the county were potential problem areas. Mr. Hamm reported that he is concerned about the hazardous materials that may be transported in the middle of the night



# MEETING NOTES

through Mount Joy Borough. There are several pipelines traversing the County. Mr. Subbio will work with LEMA staff to identify vulnerable areas.

## Transportation Accidents

The following intersections and road corridors are problematic:

- US-30 at PA-441, particularly in the afternoon rush hour
- Espenshade Road and PA-230
- PA-23 at PA-897 South
- US-322 at PA-897
- PA-72 near the Turnpike – tractor-trailers and car carriers have trouble going up the hill
- US-30 at US-222

## Other Hazards

The following other hazards were also discussed as potential issues for the county and municipalities:

- Avian flu would have a significant economic impact.
- Invasive weeds have a negative impact on farmers' yields.
- There is little public awareness of the dangers of radon exposure.
- In January 2014, parts of the county were without power for three days due to a winter storm.
- There was an Alert event at the Three Mile Island Nuclear Generating Station approximately two years ago due to a fire.

## Updating the Risk Assessment

Mr. Subbio then discussed the hazards of concern from the 2014 version of the HMP:

Natural Hazards	Human-made Hazards
Drought	Dam Failure
Earthquakes	Environmental Hazards
Flood, Flash Flood, Ice Jam	Nuclear Incident
Radon Exposure	Transportation Accident
Subsidence and Sinkholes	
Tornadoes and Windstorms	
Wildfire	
Winter Storm	

Mr. Subbio described the Evaluation of Identified Hazards and Risk Worksheet that was distributed to the attendees. This worksheet captures information from each municipality regarding changes in each municipality's





# MEETING NOTES

vulnerability to the hazards of concern, and additional hazards of concern to be considered. Mr. Subbio asked each attendee to take a few minutes to complete the worksheet before the end of the meeting. He then discussed how the hazard profiles would be updated.

## Schedule

Mr. Subbio reviewed the following project schedule with attendees:

- The risk assessment and capabilities assessment will be updated by October 2017.
- The Planning Team Meeting to review the risk assessment and capabilities assessment will be held once the assessments are complete, likely in October 2017.
- The mitigation strategy will be updated by January 2018.
- The HMP will be drafted by mid-January 2018, and submitted to the Pennsylvania Emergency Management Agency (PEMA) for review in mid-March 2018.
- The HMP will be submitted to the Federal Emergency Management Agency (FEMA) for review in early May 2018.
- Depending on the length of the FEMA review process, Tetra Tech estimates that the HMP will receive "Approvable Pending Adoption" (APA) status by July 2018.

## Next Steps

Mr. Subbio requested that relevant documents (such as comprehensive plans, capital improvement plans, floodplain management ordinances, etc.) be sent to him. Municipalities will complete three worksheets (including the one reviewed at the meeting), which were provided at the Planning Team Kickoff Meeting and will be sent by LEMA staff to each municipality in electronic and/or hard copy formats. Mr. Subbio encouraged attendees to work with other officials in their municipalities to complete the capabilities assessment and mitigation strategy review worksheets.

Mr. Boucher and Mr. Subbio thanked attendees for their time and participation.




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**Lancaster County  
Hazard Mitigation Plan (HMP)  
Update  
EMC Meeting**




### Agenda

- Planning Process
- History and Problem Areas
- Updating the Risk Assessment
- Schedule
- Next Steps
- Questions




### Planning Process

- Update the Risk Assessment
- Update the Capabilities Assessment
- Update the Mitigation Strategy
- Update Other Sections of the HMP
- Submit the HMP for Review
- Adopt the HMP
- Implement the HMP




### History and Problem Areas

- Riverine Flooding




### History and Problem Areas

- Flash Flooding
  - “Northwest part of the County”
  - Rapho Township – PA-72 at Fruitville Pike
  - Road flooding?
  - Drainage problems?



### History and Problem Areas

- Subsidence and Sinkholes





### History and Problem Areas

- Tornado, Windstorms
  - September 2015 – East Hempfield Township – EF-1 - \$4M in property damage
  - February 2016 – Salisbury Township – EF-2 - \$8M in property damage
  - February 2017 – Northern Lancaster County – Microburst - \$5M in property damage
- \$17M out of the \$17.231M from December 2012 to May 2017



### History and Problem Areas

- Wildfire



### History and Problem Areas

- Hazardous Materials



### History and Problem Areas

- Transportation Accidents



### History and Problem Areas

- Other Hazards
  - Drought
  - Earthquakes
  - Radon Exposure
  - Winter Storm
  - Dam Failure
  - Nuclear Incident (TMI and Peach Bottom)



### Updating the Risk Assessment

- Hazards from the 2014 HMP

Natural Hazards	Human-made Hazards
Drought	Dam Failure
Earthquakes	Environmental Hazards
Flood, Flash Flood, Ice Jam	Nuclear Incident
Radon Exposure	Transportation Accident
Subsidence and Sinkholes	
Tornadoes and Windstorms	
Wildfire	
Winter Storm	

- Hazard Identification and Risk Evaluation Worksheet





## Updating the Risk Assessment

- Update Hazard Profiles
  - Events since December 2012
  - Robust hazard descriptions
  - Improved vulnerability assessments



## Schedule

- Risk Assessment
  - August – October 2017
- Capabilities Assessment
  - August – October 2017
- Mitigation Strategy
  - August 2017 – January 2018
- Draft Plan by mid-January 2018
- Submit to PEMA in mid-March 2018
- Submit to FEMA in early May 2018
- “Approvable Pending Adoption” by July 2018



## Next Steps

- Document Request
- Complete Municipal Worksheets
  - Capability Assessment Survey
  - Mitigation Strategy 5-Year Mitigation Plan Review
- *Work with other municipal officials!*



## Questions?

Thank you for your time!



## Contacts



Ben Herskowitz  
[bherskowitz@lancema.us](mailto:bherskowitz@lancema.us)  
(717) 664-1200



Tony Subbio  
[tony.subbio@tetrattech.com](mailto:tony.subbio@tetrattech.com)  
(717) 545-3580



# Hazard Identification and Risk Evaluation Worksheet

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Jurisdiction: \_\_\_\_\_

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought		
Earthquake		
Floods, Flash Floods, and Ice Jams		
Radon		
Subsidence, Sinkhole		
Tornado, Windstorm		
Wildfire		
Winter Storm		
<b>Human-made Hazards</b>		
Dam Failure		
Environmental Hazards		
Nuclear Incident		
Transportation Accident		

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

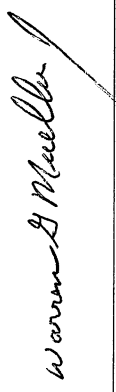





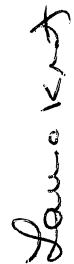

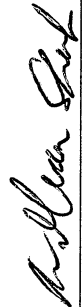

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**



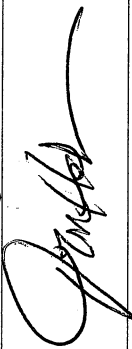
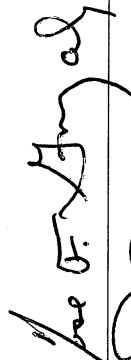




# Lancaster County Emergency Management Agency Training Attendance Record

Page      of      County ID No.      (If Applicable)

Course Title: LEMA Quarterly Training- Hazard Mitigation Plan Update		Instructors: David Boucher / Tony Subbio			
Location: Lancaster County Public Safety Training Center		Date: 8/17/17			
Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1 Warren Mueller Jr		E-town Reg. EMA	405 Sunrise Blvd Elizabethtown, PA	717-572-3102	w-muellerjr@msn.com
2 Gene Galschewski		E-town Reg. EMA	813 Knoll Dr Mt Joy, PA 17552	717-587-0589	geneg71@aol.com
3 Brad Roth		Manheim Regional EMA	106 Frederick St Manheim Pa 17040	717 413-9194	broth@ptd.net
4 Rick Hamm		MJY EMA	755 Terrace Ave Mount Joy, PA	717-653-2121	
5 Peg Hamm		MJY EMA	755 Terrace Ave Mount Joy, PA	717-653-2121	
6 Lori Shenk		Rapho		717 331 8282	lshenk@sejazzid.en
7 Laura Kretz		LEMA	849 Pleasure Rd C21 Lancaster, PA 17601	610-304-8988	lnkretz@millersville.edu
8 John Elweiter			11 11	717 471 8763	jehleiter@fondum.edu
9 William SHARK		EAST EMAL TRUP TERRACE HILL Bldg	1620 SILVER VALLEY EAST STAR	717 314 5496	WJSHARK@HOMERUNGA
10 Nathan H Wolf		LEMA	13 N State St, Apt 308 Ephrata	717-314-6451	natehw@live.com

# Lancaster County Emergency Management Agency Training Attendance Record

Page      of      County ID No.      (If Applicable)

Course Title: LEMA Quarterly Training- Hazard Mitigation Plan Update		Instructors: David Boucher / Tony Subbio				
Location: Lancaster County Public Safety Training Center		Date: 8/17/17				
Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email	
1	JEFF HELM		Borough of Columbia EMSA	308 Locust St Columbia	717-449-0922	jhelm@ Columbiaems.net
2	Jose f. Gonzalez		Borough of Columbia	535 Dellinger Rd York	717 653 0067	JGonzalez @ColumbiaPA .NET
3	Bruce Renner		Dowdow Township	1323 ENGLISH DR MECHANICSBURG, PA 17055	717 215 5843	bkr@ttrgml.com
4	David Boucher		LEMA	28 S. Charlotte St. Manheim PA 17545	717-664-1205	dboucher@ lancema.us
5	Kim Stonebraker		WellSpan Ephrata		717 615 0263	KStonebraker@ WellSpan.org
6	Tony Subbio		Tetra Tech	2405 Park Dr, St 1 Hug, PA 17110	717-545- 3580	tony.subbio@ tetratech.com
7						
8						
9						
10						



# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan – Risk Assessment/Capability Assessment Review Meeting		
<b>Date</b>	February 6, 2018	<b>Time</b>	1:00-3:00 p.m.
<b>Location</b>	Lancaster County Public Safety Training Center		
<b>Attendees</b>	Randy Gockley, Lancaster County Emergency Management Agency (LEMA)		
	Philip Colvin, LEMA		
	Ben Herskowitz, LEMA		
	Eric Bachman, LEMA		
	Dave Boucher, LEMA		
	Wanda Good, Caernarvon Township		
	Jeff Helm, Columbia Borough		
	Tim Byers, Conestoga Township		
	Michael Hession, Denver Borough		
	W. Scott Russell, East Cocalico Township		
	William Shirk, East Earl Township and Terre Hill Borough		
	Tara Hitchens, East Lampeter Township		
	William Howard, Leacock Township, Upper Leacock Township, and West Earl Township		
	Frank Howe, Leacock Township		
	Steve Bailey, Marietta Borough		
	Bradley Gotshall, Millersville Borough		
	Mike Tuscan, Millersville Borough		
	Justin Evans, Mount Joy Township		
	Dennis R. Groff, Paradise Township		
	Mark Hiester, Penn Township		
	Jeremiah R. (Rick) Ely, Sr., Sadsbury Township		
	Steve Echternach, Strasburg Borough and Strasburg Township		
	Carolyn Hildebrand, West Cocalico Township		
Mark Pugliese, West Hempfield Township			
George Brace, West Hempfield Township			
Jim Kreider, West Lampeter Township			
Tony Subbio, Tetra Tech			

## Discussion Points

This section summarizes each discussion point addressed during the meeting.



# MEETING NOTES

## Welcome

Mr. Gockley welcomed attendees to the meeting. Mr. Subbio also welcomed attendees and described the purpose of the meeting.

## Worksheet Completion Status

Mr. Subbio reviewed the submittals of the municipal worksheets provided to Planning Team representatives and identified the number of municipalities remaining. As of the date of the meeting, 36 municipalities still need to provide completed worksheets. A few attendees reported that they had submitted worksheets that were not indicated on the list. Mr. Subbio will follow up with those municipal representatives.

## Risk Assessment Results

Mr. Subbio then led a discussion of each of the 16 hazards profiled as part of the HMP update. He provided attendees with an understanding of the information researched and the process behind the final risk analysis. Specific discussions about each hazard are provided below, as applicable.

- Drought
- Earthquake
  - Federal Emergency Management Agency's (FEMA) tool Hazard-U.S. (HAZUS) results seemed excessive to the attendees.
- Flood, Flash Flood, and Ice Jam
  - The HAZUS results seemed high to the attendees. The number of households displaced and people seeking shelter seemed particularly excessive.
- Hailstorm
- Invasive Species
  - Attendees mentioned that Purple Loose Strife is also a concern. Lancaster County was recently added to the quarantine area for the spotted lanternfly.
- Pandemic Disease
- Radon Exposure
- Subsidence and Sinkholes
- Tornadoes and Windstorms
  - Damage estimates seemed reasonable to the attendees. Attendees reported that the western portion of the County has had more damages from straight-line winds over the last 10 years. Attendees noticed more wind events in recent years than in the past.
- Wildfire
- Winter Storm
- Dam Failure
- Environmental Hazards (Hazardous Materials)
  - Attendees asked if the analysis included the Atlantic Sunrise Pipeline. Mr. Subbio will check.
  - Mr. Bachman provided an overview on the chemical reporting system in Pennsylvania.
- Nuclear Incident
- Transportation Accidents
- Utility Interruptions



# MEETING NOTES

After summarizing the individual hazard profiles, Mr. Subbio shared the current draft risk analysis results. The attendees reviewed the risk analysis and had the opportunity to ask questions about specific rankings and numbers. No major concerns with the analysis results were noted during the meeting. Attendees then completed a worksheet to compare the risk from each hazard in their respective municipalities to the risk from each hazard to the County as a whole.

## Capability Assessment Results

Mr. Subbio next reviewed the Capabilities Assessment results. He described the purpose of the Capabilities Assessment in the draft HMP, and explained that the information for this section was sourced from multiple areas, including municipal worksheets, the current version of the County HMP, and local county and municipal officials. Mr. Subbio provided a brief overview of the current Capability Assessment results, organized by the following five major areas in the Capability Assessment worksheet:

- Planning and Regulatory
- Administrative and Technical
  - The draft HMP will reflect that all municipalities have an Emergency Operations Plan (EOP) and an Emergency Management Coordinator (EMC).
- Fiscal
- Education and Outreach
- Self-Assessment

## Next Steps

Mr. Subbio reviewed the following next steps in the HMP update process with attendees:

- Mitigation Actions Handout – This handout will serve as a prompt to assist municipalities in identifying mitigation actions, and will be further discussed at the upcoming Mitigation Solutions Workshop.
- Mitigation Solutions Workshop – The Mitigation Solutions Workshop will be held on March 7, 2018, at 1:00 p.m., in the same location as the Risk Assessment/Capabilities Assessment Review Meeting (Lancaster County Public Safety Training Center). During this meeting, attendees will review the process of developing mitigation actions and projects.

With no further questions, Mr. Gockley and Mr. Subbio thanked attendees for their time and participation. The meeting concluded at 3:00 p.m.




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**Lancaster County  
Hazard Mitigation Plan (HMP)  
Update  
Risk Assessment/ Capability Assessment  
Review Meeting**




### Agenda

- Welcome
- Worksheet Completion Status
- Risk Assessment Results
- Capability Assessment Results
- Next Steps
- Questions




### Welcome




### Worksheet Completion Status

- Still need worksheets from 36 municipalities
- Participation status tracker available upon request
- Worksheet completion is a participation requirement for the HMP
  - Lack of participation in this HMP planning process can prevent funding eligibility




### Risk Assessment Results

- Hazard Profile: Drought
  - History (since 1980)
    - 19 drought watch declarations
    - 7 drought warning declarations
    - 4 drought emergency declarations
    - Over \$9.5 million in lost crop insurance payments within the County since 1948
  - Exposure
    - 439,481 acres of farmland
    - \$1.47 billion per year in agricultural products
    - \$1.2 billion in livestock, poultry, and associated products



### Risk Assessment Results

- Earthquake
  - History
    - 14 with epicenters in the County
  - Exposure: Entire County
  - Annualized Losses: \$880,519
  - Losses from 500-year mean return period (MRP) event
    - \$55,147,632 in building damage
    - 43,840 tons of debris







### Risk Assessment Results

#### Flood, Flash Flood, and Ice Jam (1% annual chance)

- History
  - County was declared a federal disaster area 9 times since 1954
  - 36 major floods, flash floods, or ice jams since 1993
- Exposure
  - \$1.4 billion in exposed property value
  - Expected losses (1-percent annual chance flood)
    - \$552,309,000 in property damage (including residential, commercial, and other occupancy types)
    - 28,314 tons of debris
    - 12,328 households displaced
    - 4,783 people seeking shelter



### Risk Assessment Results

#### Hailstorm

- History
  - 90 hailstorms since 1950; hail size up to 2.75 inches in diameter
  - \$5,000 in property damage reported since 1950
  - \$369,498 in crop loss insurance payments since 1948
- Exposure
  - 439,481 acres of farmland
  - \$1.5 billion per year in agricultural products



### Risk Assessment Results

#### Invasive Species

- Insects
  - Emerald ash borer
  - Hemlock woolly adelgid
  - Asian longhorned beetle
  - Gypsy moth
  - Cankerworms
  - Spotted lanternfly
- Plants and Weeds
  - Palmer amaranth
  - Waterhemp
  - Animated oat
  - Dodder
  - Goatsrue
  - Giant hogweed
  - Hydrilla
  - Wavyleaf basketgrass
  - Broomrape
  - Kudzu



### Risk Assessment Results

#### Pandemic Disease

- Primary pandemic/infectious disease focus – Influenza
  - Differences between pandemic and seasonal influenza
- History
  - Four major pandemics in the last 100 years
- Exposure
  - Entire County is vulnerable
  - Increased vulnerability in highly/densely populated areas



### Risk Assessment Results

#### Radon Exposure

- High exposure potential
- 70% of homes in the County have measured radon levels above 4 picoCuries per liter (pCi/L)
- U.S. average is about 1.3 pCi/L



### Risk Assessment Results

#### Subsidence and Sinkholes

- History
  - Hundreds of sinkholes and surface depressions
- Exposure
  - Over 234,000 people
  - \$41.7 billion in property value





## Risk Assessment Results

- **Tornadoes and Windstorms**
  - History
    - 294 events since 1950; \$69 million in recorded damage
    - 32 tornadoes from 1950–2016
  - Exposure
    - Entire County's building stock
  - Expected Losses
    - 100-year MRP event (49–66 miles per hour [mph])
      - \$9.2 million in damage to building stock
      - 9,656 tons of debris (mostly tree debris)
    - 500-year MRP event (69–83 mph)
      - \$88.2 million in damage to building stock
      - 87,455 tons of debris (mostly tree debris)



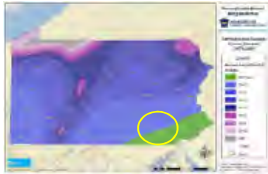
## Risk Assessment Results

- **Wildfire**
  - History
    - 3,393 wildfires, 2002–2017
  - Exposure
    - 69,369 people
    - 49,000 structures
    - \$9.7 billion in structure value



## Risk Assessment Results

- **Winter Storm**
  - History
    - 58 major winter storm events since 1993
    - 8 disaster declarations since 1954
  - Exposure
    - Entire County is vulnerable
    - Over \$54.6 billion in structural value



## Risk Assessment Results

- **Dam Failure**
  - 77 dams; 9 high-hazard
  - History
    - No history of dam failures
  - Worst Case
    - New Holland Reservoir dam failure inundation zone
      - 500 people vulnerable
      - 200 homes
      - 10 businesses
      - 1 school



## Risk Assessment Results

- **Environmental Hazards (Hazardous Materials)**
  - History
    - 404 incidents in which the County Hazmat Team was contacted for advice since 2012
  - Exposure
    - 54,867 people within ¼ mile of railroad
    - 106,956 people within ¼ mile of major roadway
    - 234,627 people within vulnerability radius of a hazmat facility
    - 36,665 people within ¼ mile of a pipeline
  - Expected damage depends on the incident



## Risk Assessment Results

- **Nuclear Incident**
  - Three Mile Island (TMI) in Dauphin County
  - Peach Bottom in York County
  - History
    - TMI 1979
    - TMI – SAE 1993; Alert 2015
    - Peach Bottom – Alert 1992
  - Exposure
    - Plume Exposure Pathway EPZ (10 miles)
      - 11 municipalities
      - About 54,000 residents
      - 185 critical facilities
    - Ingestion Exposure Pathway EPZ (50 miles) – Entire County





## Risk Assessment Results

### Transportation Accidents

- History – 2012-2016
  - 27,375 major vehicle accidents
  - 11 aircraft accidents
  - 11 railroad incidents
  - 246 fatalities
- Potential economic impacts and other damage



## Risk Assessment Results

### Utility Interruptions

- Often a secondary impact of another hazard event
- History
  - Typically between 1-4 notable utility interruptions per year
  - Mostly power outages
- Exposure
  - Entire County
  - Regional events are usually the most severe
- Impacts to vulnerable populations



## Risk Assessment Results

### Risk Factor Analysis

HAZARD RISK	HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
HIGH	Flood, Flare, Flood, and Ice Jam	4	4	2	3	3	1.1
	Tornado, Tornadoes	3	3	4	4	2	1.2
	Saravase Species	4	2	4	1	4	1.1
	Pandemic	2	4	4	3	4	1.1
	Utility Interruptions	4	3	4	4	2	1.1
	Water Short	3	2	4	2	2	1.1
	Environmental Hazards	4	2	1	4	2	1.4
	Drought	3	1	4	3	4	1.1
	Malware	3	1	4	4	1	1.1
	Transportation Accidents	4	1	2	4	1	1.4
MODERATE	Radiation Exposure	3	1	3	1	4	1.2
	Earthquake	2	1	4	4	1	1.2
	Wildfire	4	1	1	4	1	1.2
LOW	Subsidence and Sinkholes	3	1	1	4	3	1.1
	Nuclear Incidents	1	2	2	4	2	1.0
	Dam Failure	1	1	1	3	2	1.1



## Risk Assessment Results

### Municipal Risk Factor Analysis

Jurisdiction Risk - [Municipality]														
Drought	Earthquake	Flood, Flare, Flood, and Ice Jam	Hallmarks	Invasive Species	Pandemic	Radiation Exposure	Subsidence and Sinkholes	Wildfire	Water Short	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
2.5	2.2	1.4	2.5	1.1	1.1	2.3	2.1	1.2	2.2	1.3	2.0	1.9	2.4	1.1

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



## Capability Assessment Results

### Planning and Regulatory

- Existing Hazard Mitigation Plan
- Emergency Operations Plan
- Participation in the NFIP
- Subdivision and Zoning Regulations



## Capability Assessment Results

### Administrative and Technical

- Planners
- Engineers
- Emergency Managers
- NFIP Floodplain Administrators





## Capability Assessment Results

- Fiscal
  - Community Development Block Grant
  - Water/Sewer Fees
  - Capital Improvements Program

Table 6.1 Fiscal Readiness

Category	Item	Score	Weight	Weighted Score
Fiscal	Community Development Block Grant	1	10	10
	Water/Sewer Fees	1	10	10
	Capital Improvements Program	1	10	10
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...



## Capability Assessment Results

- Education and Outreach
  - StormReady Certification
  - Ongoing public education programs

Table 6.1 Education and Outreach Readiness

Category	Item	Score	Weight	Weighted Score
Education and Outreach	StormReady Certification	1	10	10
	Ongoing public education programs	1	10	10
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...



## Capability Assessment Results

- Self-Assessment
  - Planning and Regulatory - Moderate
  - Administrative/Technical - Moderate
  - Fiscal - Low
  - Education and Outreach - Low

Table 6.1 Overall Capability Assessment

Category	Item	Score	Weight	Weighted Score
Self-Assessment	Planning and Regulatory	2	10	20
	Administrative/Technical	2	10	20
	Fiscal	1	10	10
	Education and Outreach	1	10	10
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...
	...	...	...	...



## Next Steps

- Complete Municipal Worksheets
- Identify Mitigation Actions
- Conduct Mitigation Solutions Workshop
  - March 7, 2018
  - Lancaster County Public Safety Training Center



## Questions?

Thank you for your time!



## Contacts



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Tony Subbio  
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 (717) 545-3580





# AGENDA

## LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE Risk Assessment/Capability Assessment Review Meeting

Tuesday, February 6, 2018 | 1:00–3:00 p.m.

- 
1. **Welcome**

---

  2. **Worksheet Completion Status**

---

  3. **Risk Assessment Results**
    - a. Hazard Profiles
    - b. Risk Factor Analysis

---

  4. **Capability Assessment Results**

---

  5. **Next Steps**
    - a. Mitigation Actions Handout
    - b. Mitigation Solutions Workshop

---

  6. **Questions**



Lancaster County Planning Team  
Risk Assessment/Capability Assessment Review Meeting

Worksheet Completion Status

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Lancaster County	x	x	x
Adamstown Borough			
Akron Borough			
Bart Township	x	x	x
Brecknock Township			
Caernarvon Township	x		
Christiana Borough	x	x	x
Clay Township			
Colerain Township	x	x	x
Columbia Borough			
Conestoga Township			
Conoy Township			
Denver Borough	x	x	x
Drumore Township	x	x	x
Earl Township	x		
East Cocalico Township	x	x	x
East Donegal Township	x	x	x
East Drumore Township			
East Earl Township	x		
East Hempfield Township	x		
East Lampeter Township	x	x	x
East Petersburg Borough	x		
Eden Township	x	x	x
Elizabeth Township	x	x	x
Elizabethtown Borough	x		
Ephrata Borough	x		
Ephrata Township	x	x	x
Fulton Township	x	x	x
Lancaster City			
Lancaster Township			



Lancaster County Planning Team  
Risk Assessment/Capability Assessment Review Meeting

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Leacock Township	x	x	x
Lititz Borough	x	x	x
Little Britain Township			
Manheim Borough	x	x	x
Manheim Township			
Manor Township			
Marietta Borough	x	x	
Martic Township	x	x	x
Millersville Borough	x		
Mount Joy Borough	x		
Mount Joy Township	x	x	
Mountville Borough	x		
New Holland Borough		x	x
Paradise Township			
Penn Township	x	x	x
Pequea Township			
Providence Township	x	x	x
Quarryville Borough			
Rapho Township	x	x	x
Sadsbury Township	x		
Salisbury Township	x	x	x
Strasburg Borough			
Strasburg Township			
Terre Hill Borough	x		
Upper Leacock Township	x	x	x
Warwick Township	x	x	x
West Cocalico Township	x	x	x
West Donegal Township	x		
West Earl Township	x	x	x
West Hempfield Township	x		
West Lampeter Township			

Lancaster County Planning Team  
Risk Assessment/Capability Assessment Review Meeting

Summary of Risk Factor (RF) Approach				
Risk Assessment Category	Degree of Risk			Weight Value
	Level	Criteria	Index	
<b>PROBABILITY</b> <i>What is the likelihood of a hazard event occurring in a given year?</i>	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 PROBABILITY	4	
<b>IMPACT</b> <i>In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?</i>	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	
<b>SPATIAL EXTENT</b> <i>How large of an area could be impacted by a hazard event? Are impacts localized or regional?</i>	NEGLECTIBLE	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	
<b>WARNING TIME</b> <i>Is there usually some lead time associated with the hazard event? Have warning measures been implemented?</i>	MORE THAN 24 HRS	SELF-DEFINED	1	10%
	12 TO 24 HRS	SELF-DEFINED	2	
	6 TO 12 HRS	SELF-DEFINED	3	
	LESS THAN 6 HRS	SELF-DEFINED	4	
<b>DURATION</b> <i>How long does the hazard event usually last?</i>	LESS THAN 6 HRS	SELF-DEFINED	1	10%
	LESS THAN 24 HRS	SELF-DEFINED	2	
	LESS THAN 1 WEEK	SELF-DEFINED	3	
	MORE THAN 1 WEEK	SELF-DEFINED	4	

**Example Equation**

$$\text{RF Value} = [(\text{Probability} \times .30) + (\text{Impact} \times .30) + (\text{Spatial Extent} \times .20) + (\text{Warning Time} \times .10) + (\text{Duration} \times .10)]$$

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Risk Ranking for Lancaster County

HAZARD RISK	HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
<b>HIGH</b>	Flood, Flash Flood, and Ice Jam	4	4	2	3	3	3.4
	Tornado, Windstorm	3	3	4	4	2	3.2
	Invasive Species	4	2	4	1	4	3.1
	Pandemic	2	4	4	1	4	3.1
	Utility Interruptions	4	3	4	4	2	3.1
	Winter Storm	3	2	4	2	2	2.7
	Environmental Hazards	4	2	1	4	2	2.6
	Drought	3	1	4	1	4	2.5
	Hailstorms	3	1	4	4	1	2.5
<b>MODERATE</b>	Transportation Accidents	4	1	2	4	1	2.4
	Radon Exposure	3	1	3	1	4	2.3
	Earthquake	2	1	4	4	1	2.2
	Wildfire	4	1	1	4	1	2.2
	Subsidence and Sinkholes	3	1	1	4	3	2.1
<b>LOW</b>	Nuclear Incidents	1	2	2	4	2	1.9
	Dam Failure	1	1	1	3	2	1.3

Jurisdiction Risk - \_\_\_\_\_ (Municipality)

	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1

- > Your municipality’s risk from this hazard is greater than the County’s risk as a whole
- < Your municipality’s risk from this hazard is less than the County’s risk as a whole
- = Your municipality’s risk from this hazard is about the same as the County’s risk as a whole

## Capability Assessment Tables

The criteria for the assessments for each Lancaster County municipality are listed in the tables on the following pages:

- Table 5-1 lists criteria for the planning and regulatory capability.
- Table 5-2 lists criteria for administrative and technical capability.
- Table 5-3 lists fiscal capability.
- Table 5-4 lists education and outreach capability.
- Table 5-5 presents a capability self-assessment matrix.

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**Table Error! No text of specified style in document.-1. Planning and Regulatory Capability**

Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	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
Lancaster County	X	X	-	-	X	X	-	-	-	-	-	-	-	X	-	-	-	-	X	-	-	-
Adamstown Borough	X	X				X	-															
Akron Borough	X	X				X	-															
Bart Township	X	X	-	-	X	X	-	-	X	X	X	X	-	X	-	-	-	-	X	X	-	-
Brecknock Township	X	X	-	-	-	X	-	X	X	X	X	X	-	X	-	-	-		X	X	-	-
Caernarvon Township	X	X				X	-															
Christiana Borough	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	X	-	-	-	X	X	-
Clay Township	X	X				X	-															
Colerain Township	X	X	-	-	-	X	-	X	-	X	X	X	-	X	-	-	-	-	-	X	-	-
Columbia Borough	X	X				X	-															
Conestoga Township	X	X				X	-															
Conoy Township	X	X				X	-															
Denver Borough	X	X	-	-	X	X	-	-	X	X	X	X	X	X	-	X	-	-	-	X	-	-
Drumore Township	X	X	-	X	-	X	-	-	-	X	X	X	X	X	-	-	-	-	-	X	X	-
Earl Township	X	X				X	-															
East Cocalico Township	X	-	-	-	-	X	-	-	X	X	X	X	X	X	-	+	-	-	-	X	-	-
East Donegal Township	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	-	X	-	-
East Drumore Township	X	X				X	-															
East Earl Township	X	X				X	-															
East Hempfield Township	X	X				X	-															



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Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	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
East Lampeter Township	X	X	-	-	-	X	-	X	-	X	X	X	+	X	-	-	-	-	-	X	X	X
East Petersburg Borough	X	X				X	-															
Eden Township	X	X	-	X	-	X	-	X	X	X	X	+	-	X	-	-	-	-	-	X	-	-
Elizabeth Township	X	X	-	-	-	X	-	-	-	X	-	X	X	X	X	X	X	X	X	X	X	-
Elizabethtown Borough	X	X				X	-															
Ephrata Borough	X	X		X	X	X	-															
Ephrata Township	X	X		-	-	X	-	X	-	X	X	X	X	X	-	-	-	-	-	X	-	-
Fulton Township	X	X	X	X	-	X	-	-	X	X	X	X	X	X	-	X	-	-	X	X	X	-
Lancaster City	X	X		-	-	X	-															
Lancaster Township	X	X				X	-															
Leacock Township	X	X	-	-	-	X	-	-	X	X	X	X	-	X	-	-	-	-	-	X	-	-
Lititz Borough	X	X	-	-	+	X	-	X	+	X	X	X	X	X	-	+	X	X	-	X	X	-
Little Britain Township	X	X				X	-															
Manheim Borough	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	-	X	X	-
Manheim Township	X	X				X	-															
Manor Township	X	X				X	-															
Marietta Borough	X	X	X	X	X	X	-	-	X	X	X	X	-	X	-	-	X	-	-	-	-	-
Martic Township	X	X	-	-	-	X	-	-	X	X	X	X	-	X	-	-	-	-	X	X	-	-
Millersville Borough	X	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mount Joy Borough	X	X	-	X	X	X	-	X	-	X	X	X	X	X	-	-	-	-	-	X	X	-
Mount Joy Township	X	-	-	-	-	X	-	X	-	X	X	X	X	X	-	X	-	-	-	X	-	-

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Municipality	Hazard Mitigation Plan	EOP	Disaster Recovery Plan	Evacuation Plan	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
Mountville Borough	X	X				X	-															
New Holland Borough	X	X	-	-	-	-	-	-	X	X	X	X	+	X	-	-	-	-	-	X	-	-
Paradise Township	X	X	-	-	-	X	-	X	X	X	X	X	X	X	-	-	-	-	-	X	-	-
Penn Township	X	X	-	-	-	X	-	X	-	X	X	X	-	X	-	-	-	-	-	X	-	X
Pequea Township	X	X		X	-	X	-	X		X	X	X		X						X		
Providence Township	X	X	-	X	-	X	-	X	X	X	X	X	-	X	-	-	-	-	-	X	-	-
Quarryville Borough	X	X	-	X	X	X	-	X	-	X	-	X	-	X	-	-	-	X	-	X	-	-
Rapho Township	X	X	X	X	X	X	-	X	X	X	X	X	X	X	-	X	X	-	-	X	X	-
Sadsbury Township	X	X				X	-															
Salisbury Township	X	X	-	-	-	X	-	-	X	X	X	X	X	X	-	-	-	-	X	X	-	-
Strasburg Borough	X	X				X	-															
Strasburg Township	X	X				X	-															
Terre Hill Borough	X	X					-															
Upper Leacock Township	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	-	X	X	X	-
Warwick Township	X	X	-	-	+	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
West Cocalico Township	X	X	-	-	X	X	-	X	-	X	X	X	-	X	-	X	-	-	X	X	-	-
West Donegal Township	X	X	-	X	-	X	-	X	X	X	X	-	X	X	-	-	-	-	X	X	-	-
West Earl Township	X	X	X	X	X	X	-	X	X	X	X	+	-	X	-	X	X	-	X	X	X	-
West Hempfield Township	X	X				X	-															
West Lampeter Township	X	X	-	-	X	X	-	X	-	X	X	X	-	X	X	X	X	X	-	X	X	-

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Notes:

“X” indicates that the municipality currently has this capability in place.

“-” indicates no capability is currently in place.

Highlight indicates no response was received from the municipality for the current effort. Values shown are from the 2014 HMP.

Acronyms:

COOP Continuity of Operations

CRS Community Rating System

EOP Emergency Operations Plan

NFIP National Flood Insurance Program



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 Manager	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	Staff with expertise or training in Benefit-Cost Analysis	Other
Lancaster County	X	-	-	-	-	-	-	X	X	-	-
Adamstown Borough	-	-	-	X	X	-	-	-	-	-	-
Akron Borough				X	X						
Bart Township	X	-	-	X	X	-	-	-	-	-	-
Brecknock Township				X	X						
Caernarvon Township				X	X						
Christiana Borough	X	X	X	X	X	X	-	X	-	-	-
Clay Township				X	X						
Colerain Township	X	X	X	X	X	-	-	X	-	-	-
Columbia Borough				X	X						
Conestoga Township				X	X						
Conoy Township				X	X						
Denver Borough	-	-	-	-	X	-	-	-	X	-	-
Drumore Township	-	X	X	X	X	X	X	X	-	-	-
Earl Township				X	X						
East Cocalico Township	X	X	X	X	X	X	X	X	X	X	-
East Donegal Township	X	-	-	X	X	-	-	-	-	-	-
East Drumore Township				X	X						
East Earl Township				X	X						

Lancaster County Planning Team  
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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 Manager	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	Staff with expertise or training in Benefit-Cost Analysis	Other
East Hempfield Township				X	X						
East Lampeter Township	X	X	X	-	X	-	-	X	-	-	-
East Petersburg Borough				X	X						
Eden Township	X	-	X	X	X	-	-	X	-	-	-
Elizabeth Township	-	-	-	X	X	-	-	-	-	-	-
Elizabethtown Borough				X	X						
Ephrata Borough				X	X						
Ephrata Township	X	X	X	X	X	X	-	X	X	-	-
Fulton Township	X	X	X	X	X	-	-	-	-	-	-
Lancaster City				X	X						
Lancaster Township				X	X						
Leacock Township	-	-	-	-	X	-	-	-	-	-	-
Lititz Borough	X	X	X	X	X	-	X	X	X	-	-
Little Britain Township				X	X						
Manheim Borough	X	-	X	X	X	-	-	-	-	X	-
Manheim Township				X	X						
Manor Township				X	X						
Marietta Borough	X	X	X	X	X	-	-	-	-	-	-
Martic Township	X	-	-	-	X	-	-	-	-	-	-
Millersville Borough				X	X						
Mount Joy Borough	X	X	X	X	X	-	X	X	X		-

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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 Manager	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	Staff with expertise or training in Benefit-Cost Analysis	Other
Mount Joy Township	X	X	X	-	X	-	X	X	X	-	-
Mountville Borough	X	X	X	X	X	-	-	-	X	X	-
New Holland Borough				X	-						
Paradise Township	X	-	-	X	X	X	-	X	X		-
Penn Township	X	X	X	X	X	-	-	X	X	X	-
Pequea Township				X	X						
Providence Township	-	-	-	-	X	-	-	-	-	-	-
Quarryville Borough	X	X	X	X	X	X	X	X	X		-
Rapho Township	-	-	-	X	X	-	-	X	X	-	X
Sadsbury Township	X	-	-	-	X	-	-	-	-	-	-
Salisbury Township	X	-	-	-	X	-	-	-	-	-	-
Strasburg Borough				X	X						
Strasburg Township				X	X						
Terre Hill Borough				X	-						
Upper Leacock Township	X	X	X	X	X	X	X	-	X	X	-
Warwick Township	X	X	X	X	X	X	X	X	X	X	-
West Cocalico Township	X	X	X	X	X	-	-	X	X	-	-
West Donegal Township	X	X	X	X	X	-	-	-	-		-
West Earl Township	X	X	X	X	X	X	-	X	X	X	-
West Hempfield Township				X	X						
West Lampeter Township	X	-	X	X	X	-	-	-	-		-



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Notes:

“X” indicates that the municipality currently has this capability in place.

“-” indicates no capability is currently in place.

Highlight indicates no response was received from the municipality for the current effort. Values shown are from the 2014 HMP.

Acronyms:

FEMA Federal Emergency Management Agency

GIS Geographic Information System

HAZUS Hazards U.S. – Multi-Hazard

NFIP National Flood Insurance Program



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**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
Lancaster County	-	-	-	-	-	-	-	-	-	-
Adamstown Borough										
Akron Borough	X	-	-	-	X	-	-	-	X	-
Bart Township	-	-	-	-	-	-	-	-	-	-
Brecknock Township	-	-	-	-	X	-	-	-	-	-
Caernarvon Township										
Christiana Borough	-	-	-	-	X	-	X	-	X	-
Clay Township										
Colerain Township	-	-	-	-	-	-	-	-	-	-
Columbia Borough										
Conestoga Township										
Conoy Township										
Denver Borough	X	X	-	-	X	-	-	X	X	-
Drumore Township	-	-	-	-	-	-	-	-	-	-
Earl Township										
East Cocalico Township	X	X	X	-	X	X	X	X	X	-
East Donegal Township	-	-	-	-	-	-	-	-	-	-
East Drumore Township										
East Earl Township										
East Hempfield Township										
East Lampeter Township	-	-	-	-	X	-	-	-	-	-
East Petersburg Borough										
Eden Township	-	-	-	-	-	-	-	-	-	-
Elizabeth Township	-	-	-	-	-	-	X	-	-	-
Elizabethtown Borough										
Ephrata Borough	X	X	-	-	-	-	-	X	X	-
Ephrata Township	-	-	-	-	X	-	-	-	-	-
Fulton Township	-	-	-	-	-	-	-	-	-	-
Lancaster City	-	X	-	-	-	-	-	-	-	-
Lancaster Township										
Leacock Township	-	X	-	-	X	-	-	X	X	-
Lititz Borough	X	X	-	-	X	-	-	X	-	-
Little Britain Township										
Manheim Borough	X	X	X	-	-	-	-	X	X	-

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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
Manheim Township										
Manor Township										
Marietta Borough	-	-	-	-	-	-	-	-	-	-
Martic Township	X	-	-	-	-	-	-	-	-	-
Millersville Borough	X	X	!	!	X	!	!	!	!	!
Mount Joy Borough	X	!	!	!	!	!	!	X	!	!
Mount Joy Township	X	X	X	-	-	-	X	X	X	-
Mountville Borough										
New Holland Borough	X	-	-	-	X	-	-	-	X	-
Paradise Township	!	X	X	!	X	!	!	X	X	!
Penn Township	-	-	-	-	X	-	-	X	X	-
Pequea Township										
Providence Township	-	X	-	-	-	-	-	-	-	-
Quarryville Borough	!	X	X	!	X	!	X	X	X	!
Rapho Township	X	-	X	-	-	-	X	X	X	-
Sadsbury Township										
Salisbury Township	X	-	-	-	-	-	-	-	-	-
Strasburg Borough										
Strasburg Township										
Terre Hill Borough										
Upper Leacock Township	X	X	X	-	X	X	X	-	X	-
Warwick Township	X	X	-	-	X	X	X	-	-	-
West Cocalico Township	-	-	-	-	-	-	-	X	-	-
West Donegal Township	!	!	!	!	X	!	X	X	X	!
West Earl Township	-	X	X	-	X	-	-	-	X	-
West Hempfield Township										
West Lampeter Township	X	!	!	!	!	!	X	X	X	!

Notes:

“X” indicates that the municipality currently has this capability in place.

“-” indicates no capability is currently in place.

Highlight indicates no response was received from the municipality for the current effort. Values shown are from the 2014 HMP.

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**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
Lancaster County		X					
Adamstown Borough		X					
Akron Borough		X					
Bart Township	-	X	X	X	-	-	-
Brecknock Township		X					
Caernarvon Township		X					
Christiana Borough	-	X	-	-	-	-	-
Clay Township		X					
Colerain Township	-	X	-	-	-	-	-
Columbia Borough		X					
Conestoga Township		X					
Conoy Township		X					
Denver Borough	-	X	-	X	-	X	-
Drumore Township	-	X	-	-	-	-	-
Earl Township		X					
East Cocalico Township	X	X	-	-	-	X	-
East Donegal Township	-	X	-	X	-	-	-
East Drumore Township		X					
East Earl Township		X					
East Hempfield Township		X					
East Lampeter Township	-	X	-	X	-	X	-
East Petersburg Borough		X					
Eden Township	-	X	-	-	-	-	-
Elizabeth Township	-	X	-	-	-	-	-
Elizabethtown Borough		X					
Ephrata Borough		X					
Ephrata Township	-	X	X	X	-	-	-
Fulton Township	-	X	X	X	X	X	-
Lancaster (C)		X					
Lancaster Township		X					
Leacock Township	-	X	-	-	-	-	-
Lititz Borough	-	X	-	X	-	X	-

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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
Little Britain Township		X					
Manheim Borough	-	X	-	X	-	X	-
Manheim Township		X					
Manor Township		X					
Marietta Borough	-	X	-	-	-	-	-
Martic Township	-	X	-	X	-	-	-
Millersville Borough	■	X					
Mount Joy Borough	■	X					
Mount Joy Township	-	X	-	-	-	-	-
Mountville Borough		X					
New Holland Borough	-	X	X	X	-	-	-
Paradise Township	■	X					
Penn Township	-	X	-	X	-	X	X
Pequea Township		X					
Providence Township	-	X	-	-	-	X	-
Quarryville Borough	■	X					
Rapho Township	-	X	X	X	-	X	-
Sadsbury Township		X					
Salisbury Township	-	X	-	X	-	-	-
Strasburg Borough		X					
Strasburg Township		X					
Terre Hill Borough		X					
Upper Leacock Township	-	X	X	X	X	X	-
Warwick Township	-	X	-	X	-	X	-
West Cocalico Township	-	X	-	X	-	-	-
West Donegal Township	■	X					
West Earl Township	-	X	X	X	X	X	-
West Hempfield Township		X					
West Lampeter Township	■	X					

Notes:

“X” indicates the identified municipal political effort currently in place.

Highlight indicates no response was received from the municipality for the current effort. Values shown are from the 2014 HMP.

Lancaster County Planning Team  
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**Table 5-5. Capability Self-Assessment Matrix**

Municipality	Capability Category			
	Planning and Regulatory Capability	Administrative and Technical Capability	Financial Capability	Education and Outreach Capability
Lancaster County	H	L	L	L
Adamstown Borough				
Akron Borough				
Bart Township	L	L	L	M
Brecknock Township				
Caernarvon Township				
Christiana Borough	L	L	L	L
Clay Township				
Colerain Township	M	M	L	L
Columbia Borough				
Conestoga Township				
Conoy Township				
Denver Borough	M	M	L	H
Drumore Township	M	M	L	L
Earl Township				
East Cocalico Township	M	M	M	M
East Donegal Township	M	L	L	M
East Drumore Township				
East Earl Township				
East Hempfield Township				
East Lampeter Township	L	L	L	L
East Petersburg Borough				
Eden Township	L	L	L	M
Elizabeth Township	L	L	L	L
Elizabethtown Borough				
Ephrata Borough				
Ephrata Township	M	M	L	M
Fulton Township				
Lancaster City				
Lancaster Township				
Leacock Township	L	M	L	M
Lititz Borough	H	M	M	L
Little Britain Township				
Manheim Borough	M	L	L	M
Manheim Township				
Manor Township				
Marietta Borough	M	M	L	L



Lancaster County Planning Team  
Risk Assessment/Capability Assessment Review Meeting

Municipality	Capability Category			
	Planning and Regulatory Capability	Administrative and Technical Capability	Financial Capability	Education and Outreach Capability
Martic Township	M	L	M	L
Millersville Borough				
Mount Joy Borough	M	H	M	
Mount Joy Township	M	M	L	L
Mountville Borough				
New Holland Borough	M	M	H	L
Paradise Township	M	L	L	
Penn Township	M	M	M	M
Pequea Township				
Providence Township	M	M	L	M
Quarryville Borough	M	M	M	
Rapho Township	H	H	H	H
Sadsbury Township				
Salisbury Township	M	L	M	L
Strasburg Borough				
Strasburg Township				
Terre Hill Borough				
Upper Leacock Township	M	M	M	M
Warwick Township	H	H	H	H
West Cocalico Township	L	M	M	L
West Donegal Township	M	M	L	
West Earl Township	M	M	M	M
West Hempfield Township				
West Lampeter Township	M	H	H	

Notes:

Includes values identified in 2014.

Blank space indicates no response was received from the municipality for the 2014 HMP update or the current effort.

Highlight indicates no response was received from the municipality for the current effort. Values shown are from the 2014 HMP.

- L = Low
- M = Moderate
- H = High



Please provide the following information for the update of actions and initiatives for your mitigation strategy. Suggested actions have been developed based on an analysis of Lancaster County's needs and capabilities or were carried over from the previous hazard mitigation plan (HMP) update. If questions do not apply to your municipality, please indicate with N/A.

Please provide as much detail as possible so that mitigation actions can be expanded and customized for your municipality to accurately reflect your capabilities and methods of operation.

1. Which properties in your jurisdiction are most at-risk to flood events and would have the greatest need for retrofitting or other flood hazard mitigation measures? All repetitive loss and severe repetitive loss properties should be included. Specific property addresses do not need to be listed, (to ensure residential privacy) but names of streets or neighborhoods can be included.
  
2. What public outreach and education actions would you be most interested in implementing?
  - A. Provide general natural hazard risk preparedness and mitigation and related National Flood Insurance Program (NFIP) information in regular newsletters and mailings.
  - B. Provide natural hazard risk and risk reduction information through social media channels and e-mail blast systems.
  - C. Post flyers and other readily available NFIP informational materials at municipal hall or distribute at regular civic meetings.
  - D. Develop/maintain a natural hazard risk management webpage on the municipal website where information and mapping can be posted.
  - E. Encourage regular offerings of the American Red Cross Citizen's Disaster Course and other relevant classes.
  - F. Encourage private business owners and managers of infrastructure that provide critical services in post-disaster situations to develop Continuity of Operations Plans or Business Continuity Plans.
  - G. Enhance public outreach to residents in NFIP floodplain areas to inform them of annual grant opportunities, which may include distributing periodic articles and including handouts in the annual newsletter.
  - H. Other:
  
3. Which critical facilities still need or would benefit from a backup generator or redundant power supply?



4. Which roads would benefit from mitigation or structural projects to reduce vulnerability to hazardous materials (HazMat) incidents? Also, please specify the types of projects that would most help a high-risk road (for example, lower speed limits), if this information is available.
  
5. Which roads would benefit from mitigation or structural projects to reduce vulnerability to flood or stormwater incidents? Also, please specify the types of projects that would most help a high-risk road (for example, new/expanded culvert, road elevation, repaving, etc.), if this information is available.
  
6. What areas in the municipality are still in need of stormwater rehabilitation and upgrades?
  
7. What other roads in the municipality are considered high-risk and would benefit from improved design, routing, and traffic control functions? Which hazards (if any) are these roads most vulnerable to?

Hazards being profiled in the HMP are drought, earthquake, flood, hailstorm, invasive species, pandemic disease, radon exposure, subsidence and sinkholes, tornado and windstorms, wildfires, winter storms, dam failures, environmental hazards (hazmat), nuclear incident, transportation accidents, and utility interruptions.

8. What other mitigation projects are you interested in or targeting for completion during the next 5 years? Please provide as much detail as possible.



LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Risk Assessment/Capability Assessment Review Meeting

SIGN-IN

Tuesday, February 6, 2018 | 1:00-3:00 p.m.

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
FRANK HOWE	LEACOCK TWP.	FHOWE@LEACOCKTWP.COM	717-768-8585
STEVE BAILEY	MARIETTA BORO	SMB900@COMCAST.NET	717-278-7783
DENNIS R. GAFF	PARADISE TWP.	COMCAST. dgraffparadis@NET	717-278-8046
Wanda Good	Caernarvon Twp	wgood@caernarvon lancaster.org	717-445-4344
JEFF HELM	BOROUGH OF COLUMBIA	jhelm@columbiapa.net	717-449-0922
WILLIAM SHARK	EAST EARL TWP TERRACE HILL BOROUGH	WJSHARK@HTM.AIL.COM	717 514 5496
David Boucher	Lancaster Co. EMA	dboucher@lanccema.us	717-664-1200
Randy Gantley	" "	rgantley@lanccema.us	664-1200
Greg Bantz	WHTPD		717.209.0583
TARA HITCHENS	EAST LANPETER TWP	Hitchens@eastlanpetertownship.org	







LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
 Risk Assessment/Capability Assessment Review Meeting

SIGN-IN

Tuesday, February 6, 2018 | 1:00-3:00 p.m.

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Carolyn Hildebrand/ Manager	W Cecalico Twp	wcecalico@gmail.com	717-336-8720
TIM BYENS SUPERVISOR	CONESTOGA TWP.	byersstup@gmail.com	717-598-4018
Tim Kreider	West Hempster Twp.	publicworks@westhempster.com	717-278-5683
Michael Hession	Denver Borough	mhession@denverborough.net	717-336-2831
Maura Hiestar	Penn Township	Maurzper@	445, 45088
Eric Bachman	LEMA	ebachman@larremius	717-664-1260
Philip Coltrin	Lane Co EMA		
William Howard	ULTwp EMA WE TwpEMA	bhoward@ultwp.com	717-507-9204
Rick Ely	Sadsbury Twp	rdhjacr@comcast.net	484-645-1933
MARK PUGHES	W. HEMPFIELD TWP		717-285-5181





LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Risk Assessment/Capability Assessment Review Meeting

SIGN-IN

Tuesday, February 6, 2018 | 1:00-3:00 p.m.

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Justin Evans Township Manager	Mt. Joy Township	justin@mtjoytwp.org	367-8917
W. Scott Rusler Township Manager	East Cocalico Twp	Manager@EastCocalico Township.PA	336 1770
MIKE TUSCAN COOR PERFORMANCE/PLANNING	MILLERSVILLE BOROUGH	mtuscan@millersvilleborough .org	872-4645
Bradley Gotshall Manager	Board of Millersville	bradgotshall@millersvilleborough.org	..
F. STEVEN ECKHORNACH	STRASSBURG BOROUGH AND TOWNSHIP	ECKHORN@POLICE.CO. LANCASTER.PA.US	717-687-7128
Ben Herskowitz	LEMA	bherskowitz@lancema.us	717-664-1700
Tony Subbio	Tetra Tech	tony.subbio@tetra-tech.com	717-839-5654







# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan – Mitigation Solutions Workshop		
<b>Date</b>	March 20, 2018	<b>Time</b>	1:00 – 3:00 p.m.
<b>Location</b>	Lancaster County Public Safety Training Center		
<b>Attendees</b>	Randy Gockley, Lancaster County Emergency Management Agency (LEMA)		
	Philip Colvin, LEMA		
	Ben Herskowitz, LEMA		
	Eric Bachman, LEMA		
	Curtis Thompson, LEMA		
	Dean Johnson, Adamstown Borough		
	William Shirk, East Earl Township and Terre Hill Borough		
	Diane Garber, East Hempfield Township and East Petersburg Borough		
	Sara Schmidt, Exelon		
	Laura Kratz, Tetra Tech (not shown on sign-in sheet)		
Tony Subbio, Tetra Tech			

## Discussion Points

This section summarizes each discussion point addressed during the meeting. This meeting was rescheduled from March 7, 2018, due to winter weather.

## Welcome

Mr. Gockley welcomed attendees to the meeting. Mr. Subbio also welcomed attendees and described the purpose of the meeting.

## Worksheet Completion Status

Mr. Subbio reviewed the completed municipal worksheets submitted to Planning Team representatives and identified the number of municipalities remaining. As of March 2, 2018, 32 municipalities still need to provide completed worksheets, though some of those 32 municipalities had provided one or two completed worksheets.

## Municipal Risk Factor Analysis

Attendees completed a worksheet to compare the risk from each hazard in their respective municipalities to the risk from each hazard to the County as a whole.

## Review Existing Mitigation Strategy

Mr. Subbio reviewed the goals and objectives from the 2014 HMP. He explained that the goals and objectives will be updated to consider the Pennsylvania HMP goals and objectives, Lancaster County capabilities and vulnerabilities based on the risk analysis and capabilities assessment, and feedback received via worksheets and e-mails from representatives of municipalities within Lancaster County. He also noted that suggested



# MEETING NOTES

updates to the goals and objectives have already been developed and would be discussed later in the presentation.

After reviewing the existing goals and objectives, Mr. Subbio gave attendees a few minutes to review the summary of the status of the mitigation actions from the 2014 HMP. He explained that actions marked as “Completed” or “Discontinued” will be removed from the plan and that actions marked as “In Progress/Not Yet Complete,” or “No Progress/Unknown” will likely be included in the updated HMP. Actions marked as “Continuous,” and thus reflecting that these actions should be considered ongoing capabilities, will likely be removed from the list of actions in the HMP. He also reiterated that many municipalities had not yet contributed information regarding the 2014 HMP’s mitigation actions.

## **Develop the Updated Mitigation Strategy**

Mr. Subbio asked attendees to review the suggested goals and objectives on the handout provided. Mr. Subbio asked the attendees for their feedback on the goals and objectives. Attendees agreed that the suggested set was appropriate. Mr. Subbio informed them that the set would be reviewed and ultimately changed or approved by the Steering Committee.

Mr. Subbio then reviewed the categories of mitigation actions: Local Plans and Regulations; Structure and Infrastructure; Natural Systems Protection; and Education and Awareness Programs. He provided several examples of mitigation actions that fall under each category to give attendees an idea of the types of mitigation actions they could select. Mr. Subbio also went over a series of question prompts to help guide participants in generating project ideas.

Attendees discussed that the plan should include the mitigation action of residents establishing a baseline of contamination of soil and water on their properties, given that pipelines are being installed throughout the County.

Mayor Johnson from Adamstown Borough suggested including at least one action for addressing the problem caused by the spotted lanternfly.

Mr. Subbio reviewed a handout containing pages from the “Flood, Flash Flood, and Ice Jam” hazard profile that listed (1) flooding problem areas identified in the County’s Flood Insurance Study, (2) the water resources element of the Lancaster County Comprehensive Plan, or (3) conversations with municipal emergency management coordinators. After reviewing the handout, attendees discussed problem areas related to other hazards, including:

- Subsidence and Sinkholes
- Wildfires
- Environmental Hazards (Hazardous Materials)
- Transportation Accidents

Mr. Subbio discussed how mitigation actions to address each of the problem areas could be identified.

Mr. Subbio discussed the Mitigation Action Worksheet handout and informed the group that each action in the updated HMP would have a worksheet. He asked attendees to think of other actions to add to the HMP and document them by filling out a Mitigation Action Worksheet.



# MEETING NOTES

## Next Steps

Mr. Subbio reviewed the following next steps in the HMP update process with attendees:

- Identifying mitigation actions, conducting a meeting to discuss the Community Rating System (CRS) Program, gathering additional participation, and finalizing and reviewing the updated mitigation strategy will occur by early June 2018 (not necessarily in that order).
- The complete draft of the updated HMP should be complete in mid-June 2018.
- The plan will be available for public review for 30 days following completion.
- A public meeting to review the complete draft will be held after the public comment period, ideally in mid-July 2018.
- The updated HMP will be submitted to the Pennsylvania Emergency Management Agency (PEMA) for review at the end of July 2018.
- The updated HMP will be submitted to the Federal Emergency Management Agency (FEMA) for review in mid-August 2018.

With no further questions, Mr. Gockley and Mr. Subbio thanked attendees for their time and participation. The meeting concluded at 3:00 p.m.



**TETRA TECH**  
CLEAR SOLUTIONS™

**Lancaster County Hazard Mitigation Plan (HMP) Update Mitigation Solutions Workshop**

### Agenda

- Welcome
- Worksheet Completion Status
- Municipal Risk Factor Analysis
- Review Existing Mitigation Strategy
- Develop the Updated Mitigation Strategy
- Next Steps
- Questions

### Welcome

### Worksheet Completion Status

- Still need worksheets from 32 municipalities.
- Worksheet completion is a participation requirement for the HMP.
  - Lack of participation in this HMP planning process can prevent funding eligibility.

### Municipal Risk Factor Analysis

Jurisdiction Risk -		(Municipality)													
Drought	Earthquake	Flood, Flash Flood, and Ice jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Incidents	Utility Interruption
3.5	2.2	2.6	1.5	3.2	1.4	2.3	2.1	3.2	2.2	1.1	1.7	2.4	1.9	2.4	3.1

> Your municipality's risk from this hazard is greater than the County's risk as a whole  
 < Your municipality's risk from this hazard is less than the County's risk as a whole  
 = Your municipality's risk from this hazard is about the same as the County's risk as a whole

### Review Existing Mitigation Strategy

- Goals and Objectives Review

**Existing Goals and Objectives**

**Goal 1: Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)**

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct new growth away from hazard-prone areas.
- Objective 1.3 Encourage property owners in the 1 percent annual-chance floodplain to purchase flood insurance.
- Objective 1.4 Protect the health of County residents.

**Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)**

- Objective 2.1 Protect existing structures from damage that can be caused by hazards.
- Objective 2.2 Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property.
- Objective 2.3 Protect critical facilities from the impacts of natural and human-caused hazards.
- Objective 2.4 Elevate or acquire flood-prone repetitive loss structures.

**Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)**

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.



## Review Existing Mitigation Strategy

### ▪ Status of 2014 Actions

Mitigation Action Plan Review

Existing Mitigation Action	Status					Review Comments
	Not Progressed	Progressed	Continued	Completed	Discontinued	
Action 1.3.3 Review planned infrastructure to ensure that it will be developed outside of hazard prone areas			X			All new information is referenced to ensure that it is located out of hazard prone areas (EPA/644 7)
Action 1.3.2 Acquire properties in hazard areas, available in the 1 person annual disaster Register, to convert them to open space			X			
Action 1.3.2 Ensure safety buffer between industrial facilities and population			X			Has been integrated into the municipality's normal operations (Item 7, Item 1, Page 1)
Action 1.3.3 Educate residents in flood prone areas about the need/benefits of purchasing flood insurance			X			
Action 1.4.1 Create and maintain a web-based inventory of the County's assets and functional capabilities to strengthen emergency response and maintenance operations			X			
Action 1.4.2 Coordinate with PA DCR on issues related to emergency			X			To be included in newsletter (Item 7)
Action 1.4.3 Ensure EPP municipalities have access to Pennsylvania DCR			X			
Action 1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					Refer to CEMA (Item 6/7)



## Review Existing Mitigation Strategy



## Develop the Updated Mitigation Strategy

- Purpose of the Mitigation Strategy
  - Reduce likelihood of hazard impacts
  - Lessen impacts of hazards
- Suggested Goals and Objectives
  - See Worksheet for Suggested Updated Goals and Objectives
- Categories of Mitigation Actions
  - Local Plans and Regulations (LPR)
  - Structure and Infrastructure Projects (SIP)
  - Natural Systems Protection (NSP)
  - Education and Awareness Programs (EAP)



## Develop the Updated Mitigation Strategy

- Example Mitigation Actions
  - LPR: Review and revise local regulations to minimize risk from hazards
  - SIP: Acquire, elevate, relocate, or flood-proof structures
  - NSP: Promote restoration of local wetlands
  - EAP: Cross-train personnel to build technical capability
  - EAP: Develop a hazards information page on the Township/Borough website



## Develop the Updated Mitigation Strategy

- Identify Additional Mitigation Actions (pretending you have all the time and money in the world!)
  - What plans or regulations does your municipality need?
  - What information must you provide to your residents and visitors?
  - What property and products can be insured?
  - What can be done about invasive species?
  - What additional staff do you need?
  - Where are your problem areas? What can be done about them?
  - What critical facilities need backup power generators? What about traffic lights?



## Develop the Updated Mitigation Strategy

- Problems and Problem Areas
  - Flooding – see hazard profile
  - Subsidence and Sinkholes
    - Columbia Borough: The entire borough is on limestone, so sinkholes may develop throughout the Borough.
    - Ephrata Borough: A sinkhole developed near Pine Street this past spring.
    - Lancaster City: Issues developed near a French drain along the Harrisburg Pike at North Berry Street and Pine Street.





## Develop the Updated Mitigation Strategy

- Problems and Problem Areas
  - Wildfires
    - Sparks from trains along railroad tracks
    - Along Chiques Creek
    - East Earl and Salisbury Townships: Welsh Mountain Nature Preserve
    - Columbia Borough: the hill leading down to the overlook
  - Environmental Hazards (Hazardous Materials)
    - Rail transports
    - Pipelines



## Develop the Updated Mitigation Strategy

- Problems and Problem Areas
  - Transportation Accidents
    - US-30 at PA-441, particularly in the afternoon rush hour
    - Espenshade Road and PA-230
    - PA-23 at PA-897 South
    - US-322 at PA-897
    - PA-72 near the Turnpike – tractor-trailers and car carriers have trouble going up the hill
    - US-30 at US-222



## Develop the Updated Mitigation Strategy

- Mitigation Action Worksheet

Municipality(ies)	Action
Action Number:	
Location (Address, latitude)	
Mitigation Technique Category	
Hazard(s) Addressed	
Priority (High, Medium, Low)	
Estimated Cost	
Potential Funding Sources	
Timeline	
Lead Agency/Department	
Support Agency(ies)/Department(s)	
Project Point of Contact	
Name	
Title	
Agency/Department	
Phone	
E-mail	



## Next Steps

- Identify and Submit Mitigation Actions
- Community Rating System (CRS) Program Education
- Solicit Additional Participation
- Conduct Mitigation Strategy Review Meeting

We have some wiggle room



## Next Steps

- Finalize the draft HMP – by mid-June 2018
- Provide Public Comment Period– mid-June to mid-July 2018
- Conduct Draft Review Meeting – mid-July 2018
- Submit Plan Update to Pennsylvania Emergency Management Agency (PEMA) – end of July 2018
- Submit Plan Update to Federal Emergency Management Agency (FEMA) – mid-August 2018



## Questions?

Thank you for your time!







## Contacts

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**Tony Subbio**  
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# AGENDA

## LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE Mitigation Solutions Workshop

Tuesday, March 20, 2018 | 1:00–3:00 p.m.

- 
1. **Welcome**

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  2. **Worksheet Completion Status**

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  3. **Municipal Risk Factor Analysis**

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  4. **Review Existing Mitigation Strategy**
    - a. Goals and Objectives Review
    - b. Status of 2014 Mitigation Actions

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  5. **Develop the Updated Mitigation Strategy**
    - a. Purpose of the Mitigation Strategy
    - b. Suggested Goals and Objectives
    - c. Categories of Mitigation Actions
    - d. Example Mitigation Actions
    - e. Identify Additional Mitigation Actions
    - f. Problems and Problem Areas
    - g. Mitigation Action Worksheet

---

  6. **Next Steps**
    - a. Identify and Submit Mitigation Actions
    - b. Community Rating System (CRS) Program Education
    - c. Solicit Additional Participation
    - d. Conduct Mitigation Strategy Review Meeting
    - e. Finalize the Draft HMP
    - f. Provide Public Comment Period
    - g. Conduct Draft Review Meeting
    - h. Submit Plan Update to PEMA
    - i. Submit Plan Update to FEMA

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  7. **Questions**



Worksheet Completion Status

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Lancaster County	x	x	x
Adamstown Borough			
Akron Borough			
Bart Township	x	x	x
Brecknock Township			
Caernarvon Township	x	x	x
Christiana Borough	x	x	x
Clay Township			
Colerain Township	x	x	x
Columbia Borough			
Conestoga Township			
Conoy Township			
Denver Borough	x	x	x
Drumore Township	x	x	x
Earl Township	x		
East Cocalico Township	x	x	x
East Donegal Township	x	x	x
East Drumore Township			
East Earl Township	x	x	
East Hempfield Township	x		
East Lampeter Township	x	x	x
East Petersburg Borough	x		x
Eden Township	x	x	x
Elizabeth Township	x	x	x
Elizabethtown Borough	x		
Ephrata Borough	x		
Ephrata Township	x	x	x
Fulton Township	x	x	x
Lancaster City			
Lancaster Township			

Lancaster County Planning Team  
Mitigation Solutions Workshop

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Leacock Township	X	X	X
Lititz Borough	X	X	X
Little Britain Township			
Manheim Borough	X	X	X
Manheim Township			
Manor Township			
Marietta Borough	X	X	
Martic Township	X	X	X
Millersville Borough	X		
Mount Joy Borough	X		
Mount Joy Township	X	X	X
Mountville Borough	X		
New Holland Borough		X	X
Paradise Township	X	X	X
Penn Township	X	X	X
Pequea Township			
Providence Township	X	X	X
Quarryville Borough			
Rapho Township	X	X	X
Sadsbury Township	X		
Salisbury Township	X	X	X
Strasburg Borough			
Strasburg Township			
Terre Hill Borough	X	X	
Upper Leacock Township	X	X	X
Warwick Township	X	X	X
West Cocalico Township	X	X	X
West Donegal Township	X		
West Earl Township	X	X	X
West Hempfield Township	X		
West Lampeter Township		X	X

Jurisdiction Risk - \_\_\_\_\_ (Municipality)

	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

## Existing Goals and Objectives

---

### Goal 1: Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County. (Prevention)

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct new growth away from hazard-prone areas.
- Objective 1.3 Encourage property owners in the 1-percent annual chance floodplain to purchase flood insurance.
- Objective 1.4 Protect the health of County residents.

### Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards. (Property Protection)

- Objective 2.1 Protect existing structures from damage that can be caused by hazards.
- Objective 2.2 Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property.
- Objective 2.3 Protect critical facilities from the impacts of natural and human-caused hazards.
- Objective 2.4 Elevate or acquire flood-prone repetitive loss structures.

### Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards. (Emergency Services Measures)

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.

### Goal 4: Maintain and/or implement flood control measures in Lancaster County. (Structural Projects)

- Objective 4.1 Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property.
- Objective 4.2 Implement and/or maintain existing flood-control systems.

### Goal 5: Mitigate effects of disasters and preserve the natural resources in Lancaster County. (Natural Resource Protection)

- Objective 5.1 Lessen impacts on natural resources from natural and human-caused hazards.
- Objective 5.2 Direct growth in designated growth areas and maintain natural hazard buffers in the County.

### Goal 6: Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)

- Objective 6.1 Develop public education and outreach programs on hazards and hazard mitigation.
- Objective 6.2 Educate property owners in hazard-risk areas regarding their risks and the precautions they can take.



## Suggested Goals and Objectives

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These suggested goals and objectives are aligned with the Pennsylvania HMP goals and objectives.

### Goal 1: Prevent injury/death and damage from natural and human-made hazards in Lancaster County.

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct growth in designated growth areas away from hazard-prone areas, and maintain natural hazard buffers in the County.
- Objective 1.3 Encourage homeowners, renters, and businesses to insure their properties against all hazards, including flood coverage under the National Flood Insurance Program (NFIP).
- Objective 1.4 Lessen impacts on natural resources from natural and human-caused hazards.

### Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards.

- Objective 2.1 Protect existing structures, including critical facilities, from damage that can be caused by hazards.
- Objective 2.2 Acquire, relocate, elevate, and/or retrofit existing structures located in hazard areas.
- Objective 2.3 Acquire, relocate, elevate, and/or retrofit repetitive loss properties from flood-prone areas.
- Objective 2.4 Improve and maintain stormwater management systems to reduce back-up and flooding.
- Objective 2.5 Protect the health of County residents from disease.

### Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards.

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.

### Goal 4: Increase public education and awareness of existing and potential hazards in Lancaster County.

- Objective 4.1 Develop public education and outreach programs on hazards and hazard mitigation.
- Objective 4.2 Educate property owners in hazard-risk areas regarding their risks and the precautions they can take.
- Objective 4.3 Encourage residents to implement hazard mitigation and preparedness measures on their properties.
- Objective 4.4 Encourage local participation in the Community Rating System (CRS) Program.



**Table 4.3.3-1 Total Land Areas in the 1 percent and 0.2 percent Annual Chance Flood Zones (Acres)**

Municipality	NFIP-Participating Community	Total Area (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
West Hempfield Township	Yes	13,388.1	1,778.8	13.3%	1,877.50	14.0%
West Lampeter Township	Yes	10,626.4	576.8	5.4%	651.4	6.1%
<b>Lancaster County</b>	-	<b>628,801.2</b>	<b>53,808.8</b>	<b>8.6%</b>	<b>57,124.90</b>	<b>9.1%</b>

Source: FEMA 2000

Note: Areas listed include areas of inland waterways

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 that provide for improved management of stormwater impacts associated with development of land. In 2013, Lancaster County developed and implemented “Blueprints – An Integrated Water Resources Plan for Lancaster County,” which is the water resource element to the County’s Comprehensive Plan that promotes watershed-based planning and management. The plan also serves as the County’s stormwater management plan in accordance to Act 167. The main five goals of the plan are as follows:

- Provide water, sewer, and stormwater infrastructure to accommodate 85% of future growth in Urban Growth Areas
- Deliver essential infrastructure services to both urban and rural settlements in a cost effective manner.
- Reduce the number of miles of impaired streams.
- Institutionalize Integrated Water Resources management in Lancaster County.
- Increase the use of green infrastructure in water resources management.

Figure 4.3.3-1 shows PADEP-designated watersheds with critical facilities in Lancaster County.

The 2016 FEMA Flood Insurance Study (FIS) for Lancaster County also documents the major flooding problems in the County. According to the report, flooding is not a widespread problem for the County; this may be attributable to the physical features of the watersheds and stream channels. In addition, local residents have limited development in low-lying stream banks and floodplains (FEMA 2016).

The following are specific problem areas in the County that were identified through municipal surveys for “Blueprints,” or identified by municipal emergency management coordinators:

- Akron Borough – Heritage development along Cocalico Creek
  - Minor property damage, infiltration into sewer system
- Brecknock Township – Critical stream and street flooding, soil wash off, and stormwater pollution in every storm
  - Areas of major stream flooding (crops and properties under water)
  - Areas of flooded roads which require "High Water" and "Road Closed" signs in every storm
  - Areas of soil wash off and stream pollution mostly as a result of farming practices
- Columbia Borough – drainage problem at 10<sup>th</sup> Street and Ridge Avenue
- Conestoga Township – Critical street flooding; damage to private and public property in every storm
  - Orchard Hills Development (Supervisors have approved work to correct problem)
  - Kendig Road at Elm Street, low spot in the road floods



- Denver Borough
  - Basement flooding, vehicle and road surface deterioration on the 300 and 400 blocks of Locust Street occurs more than 10 times a year due to lack of underground drainage
  - Basement flooding, vehicle and road surface deterioration on the North 3<sup>rd</sup> and Main Street occurs more than once a year due to lack of underground drainage
  - Little Cocalico Creek and Ridge Road – stream flooding, soil washoff, bridge opening
  - Intersections of Smokestown, Miller, and Reinholds road at confluence of Little Cocalico Creek and Fry's Run – stream flooding, bridge opening
  - Fry's Run at Dogwood Drive – stream flooding, bridge opening
  - Fry's Run at White Oak Road – stream flooding, street flooding, bridge opening
  - Fry's Run at Smokestown Road – stream flooding, street flooding, bridge opening
  - Stony Run at Hill Road – street flooding, bridge opening
  - Cocalico Creek in vicinity of West Church Street – stream flooding
  - Stony Run at Bunker Hill Road – street flooding, bridge opening
  - Stony Run at West Church Street – street flooding, bridge opening
  - Cocalico Creek at Cocalico Creek Road – stream flooding
  - Haldemans Mobile Home Park (Justin Circle and Wabash Road) – stream flooding
- Earl Township
  - Cabin Road near Township line – flooding more than once a year due to overflowing stream banks
  - Rt. 322, West of Martindale Road – flooding more than once a year due to overflowing stream banks.
- East Earl Township – critical stream and street flooding, soil wash off and stormwater pollution in major events
  - Areas of roadway flooding
  - Conestoga Bridge Road, Iron Bridge Road, and Quarry Road, caused by flooding of the Conestoga River
  - Roadway flooding on Pa. Route 897 caused by runoff from Welsh Mountain and farm fields.
- East Lampeter Township – critical stream and street flooding, and stormwater pollution problems more than once a year – insufficient stormwater capacity
  - Millcross Road; Eastwood Village; Pitney Road; Greenfield Road at railroad underpass
- Ephrata Borough
  - Nissley Acres (Niss, Bellevue, and James Avenues) flooding occurs during major events, caused by too large an increase in uncontrolled runoff and uncontrolled runoff from upstream municipalities
  - 600 Block of W. Main Street – occurs during major events, caused by undersized drainage system and lack of maintenance of drainage ways
  - Walnut Street East – occurs during more than 10 times per year, caused by undersized drainage system (problem is being corrected)
- Ephrata Township – Moderate stream and street flooding and soil wash off problems
  - Frysville Road/Newswanger Road intersection – flooding from small stream more than once per year. Caused by drainage system that is too small and needs to be replaced



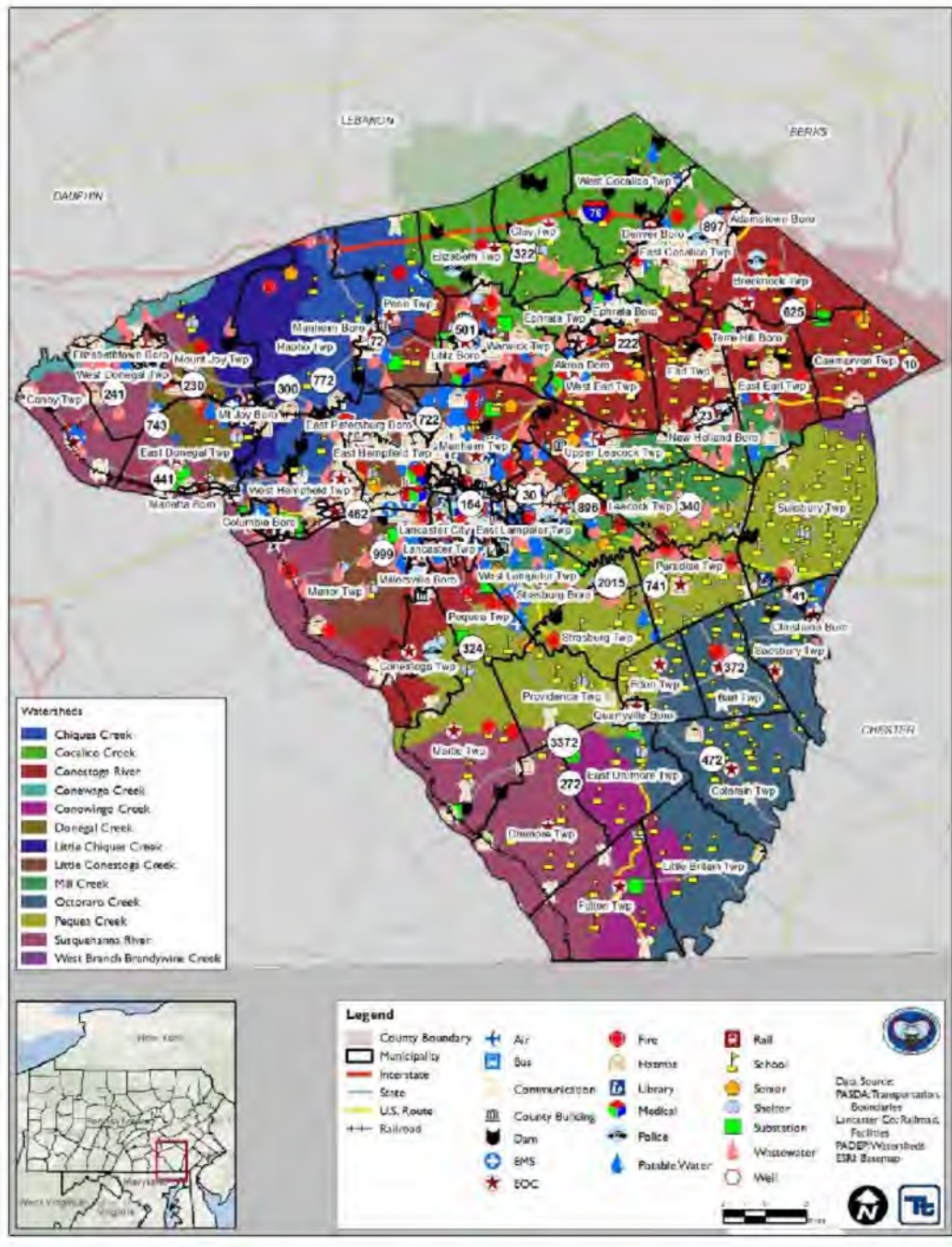
- Frysville Road/Fry's Road, flooding from two small streams and Muddy Creek in major flood events
- Lancaster City – minor street flooding and stormwater pollution
  - North Plum Street at railroad underpass; Wabank Road 70' West of Hershey Avenue; New Holland Avenue at railroad overpass (East of Ross Street); Chesapeake and Broad Streets
- Lititz Borough – problems with stream and street flooding during heavy storms more than once a year
  - Lititz Springs Parks; Lititz Run
- Manheim Borough – the area around the Chiques Creek and Little Chiques Creek
- Manheim Township – Butter Road and River Road are both vulnerable to flooding from the Conestoga River
- Millersville Borough – moderate stream and street flooding; soil wash off problems
  - Oak Ridge Drive – street flooding more than once per year
  - Barbara Street at East College Avenue – street flooding and soil washoff more than once per year
  - Creek Drive – stream flooding in major events
- Mount Joy Borough – erosion of soil and flooding of roadways:
  - Outfall pipe from Stauffer Court and erosion of the rear yard it discharges to, and the banks of the Little Chiques Creek – insufficient stormwater capacity
  - Low drainage area from Amtrak with insufficient capacity to carry flow under Route 230 – insufficient stormwater capacity
  - Release of water from underground drainage system to the surface – insufficient stormwater capacity
- Penn Township – Critical stream and street flooding in certain areas; damage to private and public property, property damage, and loss of vital services
  - Stiegel Valley Road and White Oak Road intersection, and along White Oak Road south of Hamaker Road – insufficient stormwater capacity
  - Fruitville Pike and Main Street (PA 72) intersection – obstructions in the system
- Rapho Township – stream and street flooding caused by obstructions within the waterways
- Upper Leacock Township – critical stream and street flooding, soil wash off, and stormwater pollution problems more than once a year
  - Road closures – Snake Rill Road at Conestoga River; Mondale Road at Conestoga River; Creek Hill and Hartman Station Roads (soil wash off)
- Warwick Township – stream flooding more than once a year
  - Lititz Run Road culvert – flooding across cartway
  - Millport Road Bridge – flooding across cartway
- West Cocalico Township
  - Confluence of Cocalico Creek and Hickory Road – flooding occurs more than 10 times per year, caused by undersized drainage system, obstructions in system, and lack of maintenance of drainage ways; road is too low in relation to the pipe under the road
  - Confluence of Cocalico Creek and bridge over Pineview Drive – flooding occurs during major events, caused by undersized drainage system; bridge approach is low
  - Confluence of Trout Run Creek and Hackman Road – flooding occurs during major events, caused by too large an increase in uncontrolled runoff – dangerous in major events
  - Sportsman Road and Cocalico Creek





- West Earl Township – Critical stream and street flooding, and soil wash off problems more than once a year; results in loss of life, loss of vital services, private and public property damage
  - Cabin Road; North Farmersville Road; Turtle Road (100 Block); South State Street, Talmage; South Fairmount and Saw mill Roads; South Farmersville Road; Sheaffer’s School Road
  - West side of Lampeter Road between Wiker and Plymouth Avenue – major flooding more than once a year

Figure 4.3.3-1. PADEP-Designated Watersheds with Critical Facilities



Source: PADEP



Please provide the following information for the update of actions and initiatives for your mitigation strategy. Suggested actions have been developed based on an analysis of Lancaster County's needs and capabilities or were carried over from the previous hazard mitigation plan (HMP) update. If questions do not apply to your municipality, please indicate with N/A.

Please provide as much detail as possible so that mitigation actions can be expanded and customized for your municipality to accurately reflect your capabilities and methods of operation.

1. Which properties in your jurisdiction are most at-risk to flood events and would have the greatest need for retrofitting or other flood hazard mitigation measures? All repetitive loss and severe repetitive loss properties should be included. Specific property addresses do not need to be listed, (to ensure residential privacy) but names of streets or neighborhoods can be included.
  
2. What public outreach and education actions would you be most interested in implementing?
  - A. Provide general natural hazard risk preparedness and mitigation and related National Flood Insurance Program (NFIP) information in regular newsletters and mailings.
  - B. Provide natural hazard risk and risk reduction information through social media channels and e-mail blast systems.
  - C. Post flyers and other readily available NFIP informational materials at municipal hall or distribute at regular civic meetings.
  - D. Develop/maintain a natural hazard risk management webpage on the municipal website where information and mapping can be posted.
  - E. Encourage regular offerings of the American Red Cross Citizen's Disaster Course and other relevant classes.
  - F. Encourage private business owners and managers of infrastructure that provide critical services in post-disaster situations to develop Continuity of Operations Plans or Business Continuity Plans.
  - G. Enhance public outreach to residents in NFIP floodplain areas to inform them of annual grant opportunities, which may include distributing periodic articles and including handouts in the annual newsletter.
  - H. Other:
  
3. Which critical facilities still need or would benefit from a backup generator or redundant power supply?





4. Which roads would benefit from mitigation or structural projects to reduce vulnerability to hazardous materials (HazMat) incidents? Also, please specify the types of projects that would most help a high-risk road (for example, lower speed limits), if this information is available.
  
5. Which roads would benefit from mitigation or structural projects to reduce vulnerability to flood or stormwater incidents? Also, please specify the types of projects that would most help a high-risk road (for example, new/expanded culvert, road elevation, repaving, etc.), if this information is available.
  
6. What areas in the municipality are still in need of stormwater rehabilitation and upgrades?
  
7. What other roads in the municipality are considered high-risk and would benefit from improved design, routing, and traffic control functions? Which hazards (if any) are these roads most vulnerable to?

Hazards being profiled in the HMP are drought, earthquake, flood, hailstorm, invasive species, pandemic disease, radon exposure, subsidence and sinkholes, tornado and windstorms, wildfires, winter storms, dam failures, environmental hazards (hazmat), nuclear incident, transportation accidents, and utility interruptions.

8. What other mitigation projects are you interested in or targeting for completion during the next 5 years? Please provide as much detail as possible.

## Mitigation Action Worksheet

<b>Municipality(ies):</b>	<b>Action</b>
<b>Action Number:</b>	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	
<i>Hazard(s) Addressed</i>	
<i>Priority (High, Medium, Low)</i>	
<i>Estimated Cost</i>	
<i>Potential Funding Streams</i>	
<i>Timeline</i>	
<i>Lead Agency/Department</i>	
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Mitigation Solutions Workshop

SIGN-IN

Tuesday, March 20, 2018 | 1:00-3:00 p.m.

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
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# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan – Mitigation Solutions Workshop		
<b>Date</b>	May 4, 2018	<b>Time</b>	1:00 – 2:15 p.m.
<b>Location</b>	East Drumore Township Building, 925 Robert Fulton Highway, Quarryville, PA		
<b>Attendees</b>	Ben Herskowitz, Lancaster County Emergency Management Agency (LEMA)		
	Wanda Good, Caernarvon Township		
	Kathy Norris, Caernarvon Township		
	Jim Landis, Roadmaster, East Drumore Township		
	Mark Hiester, Township Manager, Penn Township		
	Sara Gibson, Manager, Rapho Township		
	Carolyn Hildebrand, West Cocalico Township		
	Dee Dee McGuire, West Lampeter Township		
	Laura Kratz, Tetra Tech		
	Tony Subbio, Tetra Tech		

## Discussion Points

This section summarizes each discussion point addressed during the meeting. This was the second iteration of this meeting, to provide an additional opportunity for municipalities to participate in the planning process.

## Welcome

Mr. Subbio welcomed attendees and described the purpose of the meeting.

## Worksheet Completion Status

Mr. Subbio reviewed the completed municipal worksheets submitted to Planning Team representatives and identified the number of municipalities remaining. As of April 18, 2018, 31 municipalities still need to provide completed worksheets; however, some of those 31 municipalities had provided at least one completed worksheet.

## Municipal Risk Factor Analysis

Attendees completed a worksheet to compare the risk from each hazard in their respective municipalities to the risk from each hazard to the County as a whole.

## Review Existing Mitigation Strategy

Mr. Subbio reviewed the goals and objectives from the 2014 Lancaster County HMP. He explained that the goals and objectives will be updated to align with the Pennsylvania HMP goals and objectives, Lancaster County capabilities and vulnerabilities based on the risk analysis and capabilities assessment, and feedback received via worksheets and e-mails from representatives of municipalities within Lancaster County.

After reviewing the goals and objectives in the 2014 HMP, Mr. Subbio gave attendees a few minutes to review the summary of the status of the mitigation actions from the 2014 HMP. He explained that actions marked as



# MEETING NOTES

“Completed” or “Discontinued” will be removed from the plan and that actions marked as “In Progress/Not Yet Complete,” or “No Progress/Unknown” will likely be included in the updated HMP. Actions marked as “Continuous,” reflecting that these actions should be considered ongoing capabilities, will likely be removed from the list of actions in the HMP.

## Develop the Updated Mitigation Strategy

Mr. Subbio asked attendees to review the goals and objectives on the handout provided. Mr. Subbio asked the attendees for their feedback on the goals and objectives. Attendees agreed that the suggested set was appropriate.

Mr. Subbio then reviewed the categories of mitigation actions: Local Plans and Regulations; Structure and Infrastructure; Natural Systems Protection; and Education and Awareness Programs. He provided several examples of mitigation actions that fall under each category to give attendees an idea of the types of mitigation actions they could select. Mr. Subbio also went over a series of question prompts to help guide participants in generating project ideas.

Mr. Hiester suggested including a Commercial Building Inspection Program wherein the Fire Marshal inspects non-residential buildings for compliance issues. He also stated that a County Health Department may be a wise addition for the County.

Ms. Good suggested including pre-planning for non-residential properties in the County.

Mr. Subbio reviewed a handout containing pages from the “Flood, Flash Flood, and Ice Jam” hazard profile that listed (1) flooding problem areas identified in the County’s Flood Insurance Study, (2) the water resources element of the Lancaster County Comprehensive Plan, and (3) conversations with municipal emergency management coordinators.

Mr. Subbio discussed how mitigation actions to address each of the problem areas could be identified.

Mr. Subbio discussed the Mitigation Action Worksheet handout and informed the group that each action in the updated HMP would have a worksheet. He asked attendees to consider what other actions could be added to the HMP and to document them by filling out a Mitigation Action Worksheet.

## Next Steps

Mr. Subbio reviewed the following next steps in the HMP update process with attendees:

- Municipal officials and Tetra Tech staff will work together to identify additional mitigation actions to include in the HMP.
- A seminar on the Community Rating System (CRS) Program will be conducted on May 7, 2018.
- The updated mitigation strategy will be completed in mid-May, and will be reviewed at a public meeting on May 29, 2018.
- The complete draft of the updated HMP should be completed in mid-June 2018.
- The plan will be available for public review for 30 days following completion.
- A public meeting to review the complete draft will be held after the public comment period, ideally in mid-July 2018.





# MEETING NOTES

- The updated HMP will be submitted to the Pennsylvania Emergency Management Agency (PEMA) for review at the end of July 2018.
- The updated HMP will be submitted to the Federal Emergency Management Agency (FEMA) for review in mid-August 2018.

With no further questions, Mr. Subbio thanked attendees for their time and participation. The meeting concluded at 2:15 p.m.



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**Lancaster County Hazard Mitigation Plan (HMP) Update Mitigation Solutions Workshop**

### Agenda

- Welcome
- Worksheet Completion Status
- Municipal Risk Factor Analysis
- Review Existing Mitigation Strategy
- Develop the Updated Mitigation Strategy
- Next Steps
- Questions

### Welcome

### Worksheet Completion Status

- Still need worksheets from 31 municipalities.
- Worksheet completion is a participation requirement for the HMP.
  - Lack of participation in this HMP planning process can prevent funding eligibility.

### Municipal Risk Factor Analysis

Jurisdiction Risk -		(Municipality)													
Drought	Earthquake	Flood, Flash Flood, and Ice jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornadoes and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Incidents	Utility Interruption
3.5	2.2	2.6	1.5	3.2	1.4	2.3	2.1	3.2	2.2	1.1	1.7	2.4	1.9	2.4	3.1

> Your municipality's risk from this hazard is greater than the County's risk as a whole  
 < Your municipality's risk from this hazard is less than the County's risk as a whole  
 = Your municipality's risk from this hazard is about the same as the County's risk as a whole

### Review Existing Mitigation Strategy

- Goals and Objectives Review

**Existing Goals and Objectives**

**Goal 1: Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)**

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct new growth away from hazard-prone areas.
- Objective 1.3 Encourage property owners in the 1 percent annual-chance floodplain to purchase flood insurance.
- Objective 1.4 Protect the health of County residents.

**Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)**

- Objective 2.1 Protect existing structures from damage that can be caused by hazards.
- Objective 2.2 Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property.
- Objective 2.3 Protect critical facilities from the impacts of natural and human-caused hazards.
- Objective 2.4 Elevate or acquire flood-prone repetitive loss structures.

**Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)**

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.



## Review Existing Mitigation Strategy

### ▪ Status of 2014 Actions

Mitigation Action Plan Review

Existing Mitigation Action	Status					Review Comments
	Not Progressed	Progressed	Continued	Completed	Discontinued	
Action 1.3.3 Review planned infrastructure to ensure that it will be developed outside of hazard prone areas			X			All new information is referenced to ensure that it is located out of hazard prone areas (EPA/PA 7)
Action 1.3.2 Acquire properties in hazard areas, available in the 1 year annual disaster Register, to convert them to open space			X			
Action 1.3.2 Ensure safety buffer between industrial facilities and population			X			Has been integrated into the municipality's normal operations (Item 7, Item 1, Page 1)
Action 1.3.3 Educate residents in flood prone areas about the need/benefits of purchasing flood insurance			X			
Action 1.4.1 Create and maintain a web-based inventory of the County's assets and functional capabilities to strengthen emergency response and maintenance operations			X			
Action 1.4.2 Coordinate with PA DCR on issues related to emergency			X			To be included in newsletter (Item 7)
Action 1.4.3 Ensure EPP municipalities have access to Pennsylvania DCR			X			
Action 1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					Refer to CEMA (Item 6/7)



## Review Existing Mitigation Strategy



## Develop the Updated Mitigation Strategy

- Purpose of the Mitigation Strategy
  - Reduce likelihood of hazard impacts
  - Lessen impacts of hazards
- Suggested Goals and Objectives
  - See Worksheet for Suggested Updated Goals and Objectives
- Categories of Mitigation Actions
  - Local Plans and Regulations (LPR)
  - Structure and Infrastructure Projects (SIP)
  - Natural Systems Protection (NSP)
  - Education and Awareness Programs (EAP)



## Develop the Updated Mitigation Strategy

- Example Mitigation Actions
  - LPR: Review and revise local regulations to minimize risk from hazards
  - SIP: Acquire, elevate, relocate, or flood-proof structures
  - NSP: Promote restoration of local wetlands
  - EAP: Cross-train personnel to build technical capability
  - EAP: Develop a hazards information page on the Township/Borough website



## Develop the Updated Mitigation Strategy

- Identify Additional Mitigation Actions (pretending you have all the time and money in the world!)
  - What plans or regulations does your municipality need?
  - What information must you provide to your residents and visitors?
  - What property and products can be insured?
  - What can be done about invasive species?
  - What additional staff do you need?
  - Where are your problem areas? What can be done about them?
  - What critical facilities need backup power generators? What about traffic lights?



## Develop the Updated Mitigation Strategy

- Problems and Problem Areas
  - Flooding – see hazard profile
  - Subsidence and Sinkholes
    - Columbia Borough: The entire borough is on limestone, so sinkholes may develop throughout the Borough.
    - Ephrata Borough: A sinkhole developed near Pine Street this past spring.
    - Lancaster City: Issues developed near a French drain along the Harrisburg Pike at North Berry Street and Pine Street.





## Develop the Updated Mitigation Strategy

- Problems and Problem Areas
  - Wildfires
    - Sparks from trains along railroad tracks
    - Along Chiques Creek
    - East Earl and Salisbury Townships: Welsh Mountain Nature Preserve
    - Columbia Borough: the hill leading down to the overlook
  - Environmental Hazards (Hazardous Materials)
    - Rail transports
    - Pipelines



## Develop the Updated Mitigation Strategy

- Problems and Problem Areas
  - Transportation Accidents
    - US-30 at PA-441, particularly in the afternoon rush hour
    - Espenshade Road and PA-230
    - PA-23 at PA-897 South
    - US-322 at PA-897
    - PA-72 near the Turnpike – tractor-trailers and car carriers have trouble going up the hill
    - US-30 at US-222



## Develop the Updated Mitigation Strategy

- Mitigation Action Worksheet

Municipality(ies)	Action
Action Number	
Location (Address, latitude)	
Mitigation Technique Category	
Hazard(s) Addressed	
Priority (High, Medium, Low)	
Estimated Cost	
Potential Funding Sources	
Timeline	
Lead Agency/Department	
Support Agency(ies)/Department(s)	
Project Point of Contact	
Name	
Title	
Agency/Department	
Phone	
E-mail	



## Next Steps

- Identify and Submit Mitigation Actions
- Community Rating System (CRS) Program Seminar
  - May 7, 2018, 1:00-4:00 p.m.
  - Lancaster County Public Safety Training Center
- Solicit Additional Participation
- Conduct Mitigation Strategy Review Meeting
  - May 29, 2018



## Next Steps

- Finalize the draft HMP – by mid-June 2018
- Provide Public Comment Period– mid-June to mid-July 2018
- Conduct Draft Review Meeting – mid-July 2018
- Submit Plan Update to Pennsylvania Emergency Management Agency (PEMA) – end of July 2018
- Submit Plan Update to Federal Emergency Management Agency (FEMA) – mid-August 2018



## Questions?

Thank you for your time!





## Contacts

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# AGENDA

## LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE Mitigation Solutions Workshop #2

Friday, May 4, 2018 | 1:00–3:00 p.m.

- 
1. **Welcome**

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  2. **Worksheet Completion Status**

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  3. **Municipal Risk Factor Analysis**

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  4. **Review Existing Mitigation Strategy**
    - a. Goals and Objectives Review
    - b. Status of 2014 Mitigation Actions

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  5. **Develop the Updated Mitigation Strategy**
    - a. Purpose of the Mitigation Strategy
    - b. Suggested Goals and Objectives
    - c. Categories of Mitigation Actions
    - d. Example Mitigation Actions
    - e. Identify Additional Mitigation Actions
    - f. Problems and Problem Areas
    - g. Mitigation Action Worksheet

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  6. **Next Steps**
    - a. Identify and Submit Mitigation Actions
    - b. Community Rating System (CRS) Program Education
    - c. Solicit Additional Participation
    - d. Conduct Mitigation Strategy Review Meeting
    - e. Finalize the Draft HMP
    - f. Provide Public Comment Period
    - g. Conduct Draft Review Meeting
    - h. Submit Plan Update to PEMA
    - i. Submit Plan Update to FEMA

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  7. **Questions**





Worksheet Completion Status

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Lancaster County	x	x	x
Adamstown Borough			
Akron Borough			
Bart Township	x	x	x
Brecknock Township			
Caernarvon Township	x	x	x
Christiana Borough	x	x	x
Clay Township			
Colerain Township	x	x	x
Columbia Borough			
Conestoga Township			
Conoy Township			
Denver Borough	x	x	x
Drumore Township	x	x	x
Earl Township	x		
East Cocalico Township	x	x	x
East Donegal Township	x	x	x
East Drumore Township			
East Earl Township	x	x	x
East Hempfield Township	x		x
East Lampeter Township	x	x	x
East Petersburg Borough	x		x
Eden Township	x	x	x
Elizabeth Township	x	x	x
Elizabethtown Borough	x		
Ephrata Borough	x		
Ephrata Township	x	x	x
Fulton Township	x	x	x
Lancaster City			
Lancaster Township			

Lancaster County Planning Team  
Mitigation Solutions Workshop

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Leacock Township	X	X	X
Lititz Borough	X	X	X
Little Britain Township			
Manheim Borough	X	X	X
Manheim Township			
Manor Township			
Marietta Borough	X	X	
Martic Township	X	X	X
Millersville Borough	X		
Mount Joy Borough	X		
Mount Joy Township	X	X	X
Mountville Borough	X		
New Holland Borough		X	X
Paradise Township	X	X	X
Penn Township	X	X	X
Pequea Township			
Providence Township	X	X	X
Quarryville Borough			
Rapho Township	X	X	X
Sadsbury Township	X		
Salisbury Township	X	X	X
Strasburg Borough			
Strasburg Township			
Terre Hill Borough	X	X	X
Upper Leacock Township	X	X	X
Warwick Township	X	X	X
West Cocalico Township	X	X	X
West Donegal Township	X		
West Earl Township	X	X	X
West Hempfield Township	X		
West Lampeter Township		X	X

Jurisdiction Risk - \_\_\_\_\_ (Municipality)

	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

## Existing Goals and Objectives

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### Goal 1: Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County. (Prevention)

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct new growth away from hazard-prone areas.
- Objective 1.3 Encourage property owners in the 1-percent annual chance floodplain to purchase flood insurance.
- Objective 1.4 Protect the health of County residents.

### Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards. (Property Protection)

- Objective 2.1 Protect existing structures from damage that can be caused by hazards.
- Objective 2.2 Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property.
- Objective 2.3 Protect critical facilities from the impacts of natural and human-caused hazards.
- Objective 2.4 Elevate or acquire flood-prone repetitive loss structures.

### Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards. (Emergency Services Measures)

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.

### Goal 4: Maintain and/or implement flood control measures in Lancaster County. (Structural Projects)

- Objective 4.1 Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property.
- Objective 4.2 Implement and/or maintain existing flood-control systems.

### Goal 5: Mitigate effects of disasters and preserve the natural resources in Lancaster County. (Natural Resource Protection)

- Objective 5.1 Lessen impacts on natural resources from natural and human-caused hazards.
- Objective 5.2 Direct growth in designated growth areas and maintain natural hazard buffers in the County.

### Goal 6: Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)

- Objective 6.1 Develop public education and outreach programs on hazards and hazard mitigation.
- Objective 6.2 Educate property owners in hazard-risk areas regarding their risks and the precautions they can take.

## Suggested Goals and Objectives

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These suggested goals and objectives are aligned with the Pennsylvania HMP goals and objectives.

### Goal 1: Prevent injury/death and damage from natural and human-made hazards in Lancaster County.

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct growth in designated growth areas away from hazard-prone areas, and maintain natural hazard buffers in the County.
- Objective 1.3 Encourage homeowners, renters, and businesses to insure their properties against all hazards, including flood coverage under the National Flood Insurance Program (NFIP).
- Objective 1.4 Lessen impacts on natural resources from natural and human-caused hazards.

### Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards.

- Objective 2.1 Protect existing structures, including critical facilities, from damage that can be caused by hazards.
- Objective 2.2 Acquire, relocate, elevate, and/or retrofit existing structures located in hazard areas.
- Objective 2.3 Acquire, relocate, elevate, and/or retrofit repetitive loss properties from flood-prone areas.
- Objective 2.4 Improve and maintain stormwater management systems to reduce back-up and flooding.
- Objective 2.5 Protect the health of County residents from disease.

### Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards.

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.

### Goal 4: Increase public education and awareness of existing and potential hazards in Lancaster County.

- Objective 4.1 Develop public education and outreach programs on hazards and hazard mitigation.
- Objective 4.2 Educate property owners in hazard-risk areas regarding their risks and the precautions they can take.
- Objective 4.3 Encourage residents to implement hazard mitigation and preparedness measures on their properties.
- Objective 4.4 Encourage local participation in the Community Rating System (CRS) Program.

**Mitigation Action Plan Review**

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			All new information is reviewed to ensure that it is located out of hazard prone areas (Ephrata T)
Action 1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space			X			
Action 1.2.2 Ensure safety buffer between industrial facilities and population			X			Has been integrated into the municipality’s normal operations (Eden T, Penn T, Rapho T)
Action 1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			
Action 1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations			X			
Action 1.4.2 Coordinate with PA DOH on issues related to pandemics			X			To be included in newsletter (Eden T)
Action 1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)			X			
Action 1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					Defer to LC EMA (Drumore T).



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				X		<ul style="list-style-type: none"> <li>• There is a lack of support for requirement for residential sprinkler systems (Lancaster County)</li> <li>• Statewide Bldg. Code (Caernarvon T, East Cocalico T).</li> <li>• Completed for commercial (Christiana B)</li> <li>• Only required in commercial (Colerain T)</li> <li>• Statewide Building Code (Denver B)</li> <li>• Dept. of Labor &amp; Industry (East Lampeter T)</li> <li>• Enforcement of the PA State Wide Building Code (Ephrata T)</li> <li>• UCC (Leacock T)</li> <li>• Following adopted building codes (Lititz B)</li> <li>• Building code requires (Martic T)</li> <li>• State Code (New Holland B)</li> </ul>

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding			X			<ul style="list-style-type: none"> <li>• Activity has been integrated into the municipality's normal operations, but cannot afford to fix everything (Colerain T).</li> <li>• Requires elevation of repetitive loss structures (East Donegal T).</li> <li>• Very little flooding (East Petersburg B)</li> <li>• Township purchased one property in floodplain and demolished the structure (Ephrata T)</li> <li>• No plans to acquire structures (Rapho T)</li> </ul>
Action 2.2.1 Regularly inspect and maintain bridges and culverts			X			<ul style="list-style-type: none"> <li>• Activity has been integrated into the municipality's normal operations (Caernarvon T, West Lampeter T)</li> <li>• No Bridges (East Petersburg B)</li> <li>• All Bridges and Culverts are inspected (Ephrata T)</li> </ul>
Action 2.2.2 Require special use permits for hazard-prone areas			X			<ul style="list-style-type: none"> <li>• Through zoning ordinance (East Lampeter T).</li> <li>• Floodplain overlay zone identified (Rapho T)</li> </ul>

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			<ul style="list-style-type: none"> <li>• There is no formal policy in place (Colerain T).</li> <li>• County GIS (East Lampeter T).</li> <li>• 2 programs for tracking data (Rapho T).</li> <li>• Integrated into municipality's normal operations (West Lampeter T)</li> </ul>
Action 2.3.1 Create and maintain a database and map of all critical facilities in the County			X			<ul style="list-style-type: none"> <li>• Pine Grove Dam is maintained and monitored by the Chester Water Authority (Colerain T).</li> <li>• Maintained by EMC (Drumore T).</li> <li>• Based on County data (Eden T.)</li> </ul>
Action 2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			<ul style="list-style-type: none"> <li>• Pine Grove Dam is maintained and monitored by the Chester Water Authority (Colerain T).</li> </ul>
Action 3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			<ul style="list-style-type: none"> <li>• Shared GIS data between Ephrata Borough and Ephrata Township (Ephrata T).</li> <li>• Integrated into the municipality's normal operations (Rapho T, West Lampeter T.)</li> </ul>

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 3.2.1 Encourage multi-jurisdictional exercises and drills			X			<ul style="list-style-type: none"> <li>• ECT Police (East Cocalico T).</li> <li>• With Fire Co. and EMA (East Petersburg B).</li> <li>• Warwick Emergency Services Commission/LB EMA (Lititz B)</li> </ul>
Action 3.3.1 Implement the new Lancaster County radio system				X		<ul style="list-style-type: none"> <li>• Fire Dept (Caernarvon T)</li> <li>• Too expensive and isn't working properly (Colerain T)</li> <li>• System in place, upgrades being made to it (Lititz B)</li> </ul>
Action 3.3.2 Inventory all available equipment and technology used for emergency response			X			<ul style="list-style-type: none"> <li>• This could be kept in a spreadsheet (Colerain T).</li> <li>• Completed as part of the Emergency Operations Plan (Ephrata T).</li> <li>• Continuously being analyzed by local emergency services (Lititz B)</li> <li>• Continue to update inventory lists (Salisbury T)</li> </ul>
Action 4.1.1 Ensure that the County's dams are structurally sound			X			
Action 4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community		X				<ul style="list-style-type: none"> <li>• The Chester Water Authority has an Emergency Operations Plan for the Pine Grove Dam. It is in good condition (Colerain T).</li> <li>• Herr Bridge (covered) being removed on Pequea Creek (East Lampeter T).</li> </ul>

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			<ul style="list-style-type: none"> <li>Looking into a Grant to replace a Bridge that floods often (Colerain T).</li> <li>Part of MS4 Program – PRP (East Cocalico T).</li> <li>Through enforcement of the Floodplain regulations contained in the Zoning ordinance (Ephrata T0.</li> </ul>
Action 5.1.1 Develop and implement source water protection plans			X	X		<ul style="list-style-type: none"> <li>Complete (Christiana B, East Earl T, Terre Hill B)</li> <li>Part of MS4 Program – PRP (East Cocalico T).</li> <li>Through the Ephrata Area Joint Water Authority Plan (Ephrata T)</li> </ul>
Action 5.1.2 Reduce the number of miles of impaired streams in the County			X			<ul style="list-style-type: none"> <li>Part of MS4 Program – PRP (East Cocalico T).</li> <li>Through the MS4 program and the Ephrata Township Pollution Reduction Plan (Ephrata T).</li> <li>Working with farmers to clean up streams (Salisbury T)</li> <li>WLT portions only (West Lampeter T)</li> </ul>

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			<ul style="list-style-type: none"> <li>• No improvements allowed in Floodplain (Colerain T).</li> <li>• Township has Riparian Buffer Ordinance that takes into account 100-year floodplain (East Cocalico T)</li> <li>• Through zoning ordinance (East Lampeter T)</li> <li>• Integrated into the municipality’s normal operations (Eden T, Salisbury T)</li> <li>• Enforce Floodplain Regulations that prohibit new development in floodplains (Ephrata T).</li> </ul>
Action 6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			<ul style="list-style-type: none"> <li>• Items put on website at times (Colerain T.)</li> <li>• Through MS4 Program (East Lampeter T).</li> <li>• Newsletter by year (Rapho T).</li> </ul>



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk			X			<ul style="list-style-type: none"> <li>• Have a Township website, and do put on information occasionally that is received from various agencies (Colerain T).</li> <li>• Are there County links to be added to the Township website (East Cocalico T).</li> <li>• Our website will post tips prior to an event if applicable (East Petersburg B).</li> </ul>
Action 6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
Action 6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			<ul style="list-style-type: none"> <li>• Schools do on their own (East Petersburg B).</li> <li>• Police and EMA serve on school district safety committee to continuously evaluate risks (Lititz B).</li> </ul>
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Action 6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures		X				
Action 6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures			X			Could put this information in our yearly Newsletter, mailings are expensive (Colerain T).
Action 6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					1 workshop hosted by elected official (Rapho T).
Action 6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes			X			Featured in recent newsletter (Rapho T).
Action 6.2.5 Encourage the development of Radon ordinances for new construction and renovations.			X			
Caernarvon Township						
Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.		X				

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	X					
Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	X					
Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.				X		
Columbia Borough						
Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough						
Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.			X			Spoke with property owner. Unable to relocate to another facility in the Borough (Denver B).

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
East Earl Township						
Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.		x				Provided information to landowners
East Hempfield Township						
Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding	x					MS4 Planning Changed the priority of this project but it remains on the list
Ephrata Borough						
Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Lancaster City						
Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain						
Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township						
Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						
West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough						
Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Rapho Township						
Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township						
Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
West Lampeter Township						
MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.						
Retention Pond - Construct retention ponds to protect properties along Hollinger Road.						



**Table 4.3.3-1 Total Land Areas in the 1 percent and 0.2 percent Annual Chance Flood Zones (Acres)**

Municipality	NFIP-Participating Community	Total Area (acres)	1% Flood Event Hazard Area		0.2% Flood Event Hazard Area	
			Area (acres)	% of Total	Area (acres)	% of Total
West Hempfield Township	Yes	13,388.1	1,778.8	13.3%	1,877.50	14.0%
West Lampeter Township	Yes	10,626.4	576.8	5.4%	651.4	6.1%
<b>Lancaster County</b>	-	<b>628,801.2</b>	<b>53,808.8</b>	<b>8.6%</b>	<b>57,124.90</b>	<b>9.1%</b>

Source: FEMA 2000

Note: Areas listed include areas of inland waterways

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 that provide for improved management of stormwater impacts associated with development of land. In 2013, Lancaster County developed and implemented “Blueprints – An Integrated Water Resources Plan for Lancaster County,” which is the water resource element to the County’s Comprehensive Plan that promotes watershed-based planning and management. The plan also serves as the County’s stormwater management plan in accordance to Act 167. The main five goals of the plan are as follows:

- Provide water, sewer, and stormwater infrastructure to accommodate 85% of future growth in Urban Growth Areas
- Deliver essential infrastructure services to both urban and rural settlements in a cost effective manner.
- Reduce the number of miles of impaired streams.
- Institutionalize Integrated Water Resources management in Lancaster County.
- Increase the use of green infrastructure in water resources management.

Figure 4.3.3-1 shows PADEP-designated watersheds with critical facilities in Lancaster County.

The 2016 FEMA Flood Insurance Study (FIS) for Lancaster County also documents the major flooding problems in the County. According to the report, flooding is not a widespread problem for the County; this may be attributable to the physical features of the watersheds and stream channels. In addition, local residents have limited development in low-lying stream banks and floodplains (FEMA 2016).

The following are specific problem areas in the County that were identified through municipal surveys for “Blueprints,” or identified by municipal emergency management coordinators:

- Akron Borough – Heritage development along Cocalico Creek
  - Minor property damage, infiltration into sewer system
- Brecknock Township – Critical stream and street flooding, soil wash off, and stormwater pollution in every storm
  - Areas of major stream flooding (crops and properties under water)
  - Areas of flooded roads which require "High Water" and "Road Closed" signs in every storm
  - Areas of soil wash off and stream pollution mostly as a result of farming practices
- Columbia Borough – drainage problem at 10<sup>th</sup> Street and Ridge Avenue
- Conestoga Township – Critical street flooding; damage to private and public property in every storm
  - Orchard Hills Development (Supervisors have approved work to correct problem)
  - Kendig Road at Elm Street, low spot in the road floods



- Denver Borough
  - Basement flooding, vehicle and road surface deterioration on the 300 and 400 blocks of Locust Street occurs more than 10 times a year due to lack of underground drainage
  - Basement flooding, vehicle and road surface deterioration on the North 3<sup>rd</sup> and Main Street occurs more than once a year due to lack of underground drainage
  - Little Cocalico Creek and Ridge Road – stream flooding, soil washoff, bridge opening
  - Intersections of Smokestown, Miller, and Reinholds road at confluence of Little Cocalico Creek and Fry's Run – stream flooding, bridge opening
  - Fry's Run at Dogwood Drive – stream flooding, bridge opening
  - Fry's Run at White Oak Road – stream flooding, street flooding, bridge opening
  - Fry's Run at Smokestown Road – stream flooding, street flooding, bridge opening
  - Stony Run at Hill Road – street flooding, bridge opening
  - Cocalico Creek in vicinity of West Church Street – stream flooding
  - Stony Run at Bunker Hill Road – street flooding, bridge opening
  - Stony Run at West Church Street – street flooding, bridge opening
  - Cocalico Creek at Cocalico Creek Road – stream flooding
  - Haldemans Mobile Home Park (Justin Circle and Wabash Road) – stream flooding
- Earl Township
  - Cabin Road near Township line – flooding more than once a year due to overflowing stream banks
  - Rt. 322, West of Martindale Road – flooding more than once a year due to overflowing stream banks.
- East Earl Township – critical stream and street flooding, soil wash off and stormwater pollution in major events
  - Areas of roadway flooding
  - Conestoga Bridge Road, Iron Bridge Road, and Quarry Road, caused by flooding of the Conestoga River
  - Roadway flooding on Pa. Route 897 caused by runoff from Welsh Mountain and farm fields.
- East Lampeter Township – critical stream and street flooding, and stormwater pollution problems more than once a year – insufficient stormwater capacity
  - Millcross Road; Eastwood Village; Pitney Road; Greenfield Road at railroad underpass
- Ephrata Borough
  - Nissley Acres (Niss, Bellevue, and James Avenues) flooding occurs during major events, caused by too large an increase in uncontrolled runoff and uncontrolled runoff from upstream municipalities
  - 600 Block of W. Main Street – occurs during major events, caused by undersized drainage system and lack of maintenance of drainage ways
  - Walnut Street East – occurs during more than 10 times per year, caused by undersized drainage system (problem is being corrected)
- Ephrata Township – Moderate stream and street flooding and soil wash off problems
  - Frysville Road/Newswanger Road intersection – flooding from small stream more than once per year. Caused by drainage system that is too small and needs to be replaced



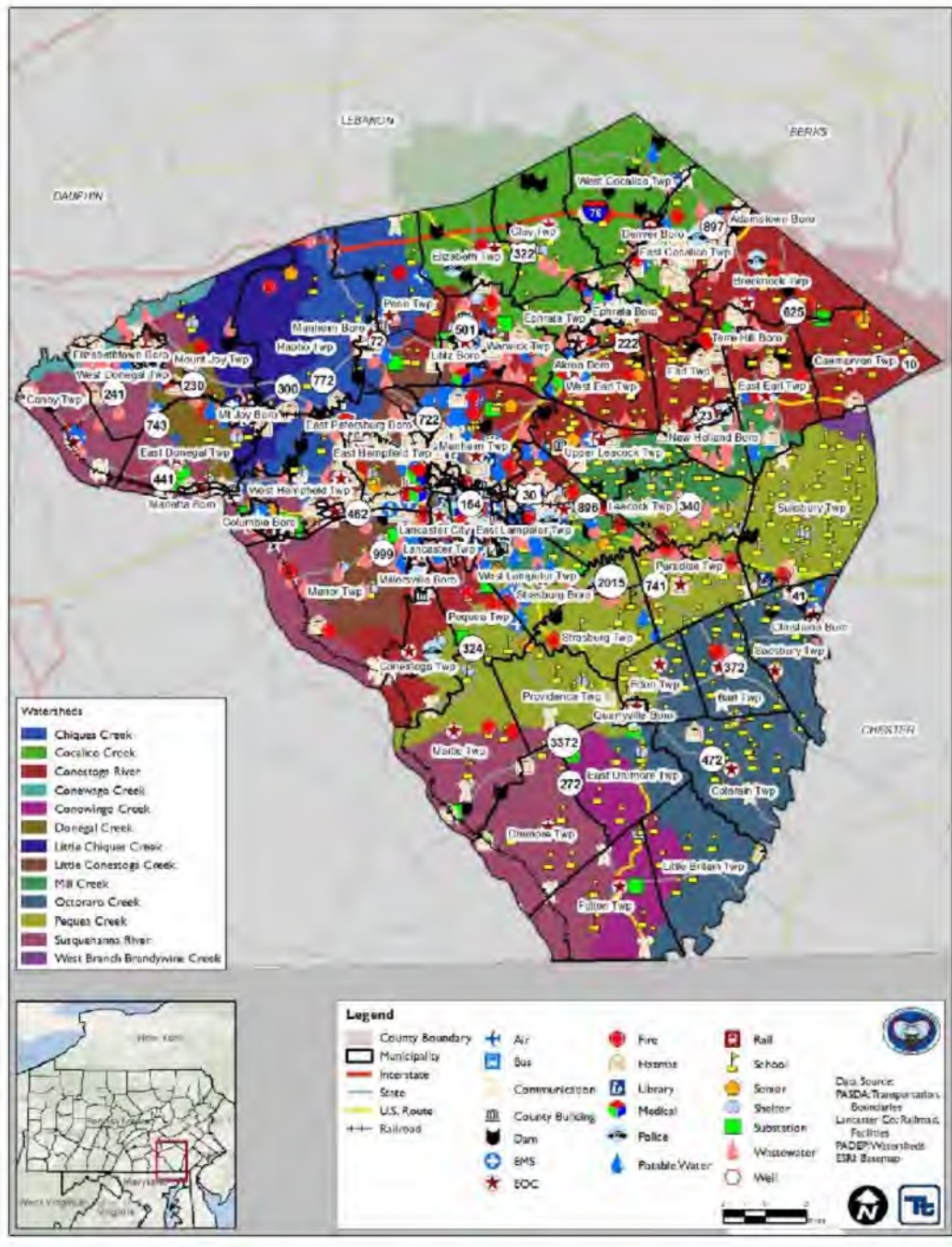
- Frysville Road/Fry's Road, flooding from two small streams and Muddy Creek in major flood events
- Lancaster City – minor street flooding and stormwater pollution
  - North Plum Street at railroad underpass; Wabank Road 70' West of Hershey Avenue; New Holland Avenue at railroad overpass (East of Ross Street); Chesapeake and Broad Streets
- Lititz Borough – problems with stream and street flooding during heavy storms more than once a year
  - Lititz Springs Parks; Lititz Run
- Manheim Borough – the area around the Chiques Creek and Little Chiques Creek
- Manheim Township – Butter Road and River Road are both vulnerable to flooding from the Conestoga River
- Millersville Borough – moderate stream and street flooding; soil wash off problems
  - Oak Ridge Drive – street flooding more than once per year
  - Barbara Street at East College Avenue – street flooding and soil washoff more than once per year
  - Creek Drive – stream flooding in major events
- Mount Joy Borough – erosion of soil and flooding of roadways:
  - Outfall pipe from Stauffer Court and erosion of the rear yard it discharges to, and the banks of the Little Chiques Creek – insufficient stormwater capacity
  - Low drainage area from Amtrak with insufficient capacity to carry flow under Route 230 – insufficient stormwater capacity
  - Release of water from underground drainage system to the surface – insufficient stormwater capacity
- Penn Township – Critical stream and street flooding in certain areas; damage to private and public property, property damage, and loss of vital services
  - Stiegel Valley Road and White Oak Road intersection, and along White Oak Road south of Hamaker Road – insufficient stormwater capacity
  - Fruitville Pike and Main Street (PA 72) intersection – obstructions in the system
- Rapho Township – stream and street flooding caused by obstructions within the waterways
- Upper Leacock Township – critical stream and street flooding, soil wash off, and stormwater pollution problems more than once a year
  - Road closures – Snake Rill Road at Conestoga River; Mondale Road at Conestoga River; Creek Hill and Hartman Station Roads (soil wash off)
- Warwick Township – stream flooding more than once a year
  - Lititz Run Road culvert – flooding across cartway
  - Millport Road Bridge – flooding across cartway
- West Cocalico Township
  - Confluence of Cocalico Creek and Hickory Road – flooding occurs more than 10 times per year, caused by undersized drainage system, obstructions in system, and lack of maintenance of drainage ways; road is too low in relation to the pipe under the road
  - Confluence of Cocalico Creek and bridge over Pineview Drive – flooding occurs during major events, caused by undersized drainage system; bridge approach is low
  - Confluence of Trout Run Creek and Hackman Road – flooding occurs during major events, caused by too large an increase in uncontrolled runoff – dangerous in major events
  - Sportsman Road and Cocalico Creek





- West Earl Township – Critical stream and street flooding, and soil wash off problems more than once a year; results in loss of life, loss of vital services, private and public property damage
  - Cabin Road; North Farmersville Road; Turtle Road (100 Block); South State Street, Talmage; South Fairmount and Saw mill Roads; South Farmersville Road; Sheaffer’s School Road
  - West side of Lampeter Road between Wiker and Plymouth Avenue – major flooding more than once a year

Figure 4.3.3-1. PADEP-Designated Watersheds with Critical Facilities



Source: PADEP





Please provide the following information for the update of actions and initiatives for your mitigation strategy. Suggested actions have been developed based on an analysis of Lancaster County's needs and capabilities or were carried over from the previous hazard mitigation plan (HMP) update. If questions do not apply to your municipality, please indicate with N/A.

Please provide as much detail as possible so that mitigation actions can be expanded and customized for your municipality to accurately reflect your capabilities and methods of operation.

1. Which properties in your jurisdiction are most at-risk to flood events and would have the greatest need for retrofitting or other flood hazard mitigation measures? All repetitive loss and severe repetitive loss properties should be included. Specific property addresses do not need to be listed, (to ensure residential privacy) but names of streets or neighborhoods can be included.
  
2. What public outreach and education actions would you be most interested in implementing?
  - A. Provide general natural hazard risk preparedness and mitigation and related National Flood Insurance Program (NFIP) information in regular newsletters and mailings.
  - B. Provide natural hazard risk and risk reduction information through social media channels and e-mail blast systems.
  - C. Post flyers and other readily available NFIP informational materials at municipal hall or distribute at regular civic meetings.
  - D. Develop/maintain a natural hazard risk management webpage on the municipal website where information and mapping can be posted.
  - E. Encourage regular offerings of the American Red Cross Citizen's Disaster Course and other relevant classes.
  - F. Encourage private business owners and managers of infrastructure that provide critical services in post-disaster situations to develop Continuity of Operations Plans or Business Continuity Plans.
  - G. Enhance public outreach to residents in NFIP floodplain areas to inform them of annual grant opportunities, which may include distributing periodic articles and including handouts in the annual newsletter.
  - H. Other:
  
3. Which critical facilities still need or would benefit from a backup generator or redundant power supply?





4. Which roads would benefit from mitigation or structural projects to reduce vulnerability to hazardous materials (HazMat) incidents? Also, please specify the types of projects that would most help a high-risk road (for example, lower speed limits), if this information is available.
  
5. Which roads would benefit from mitigation or structural projects to reduce vulnerability to flood or stormwater incidents? Also, please specify the types of projects that would most help a high-risk road (for example, new/expanded culvert, road elevation, repaving, etc.), if this information is available.
  
6. What areas in the municipality are still in need of stormwater rehabilitation and upgrades?
  
7. What other roads in the municipality are considered high-risk and would benefit from improved design, routing, and traffic control functions? Which hazards (if any) are these roads most vulnerable to?

Hazards being profiled in the HMP are drought, earthquake, flood, hailstorm, invasive species, pandemic disease, radon exposure, subsidence and sinkholes, tornado and windstorms, wildfires, winter storms, dam failures, environmental hazards (hazmat), nuclear incident, transportation accidents, and utility interruptions.

8. What other mitigation projects are you interested in or targeting for completion during the next 5 years? Please provide as much detail as possible.

## Mitigation Action Worksheet

<b>Municipality(ies):</b>	<b>Action</b>
<b>Action Number:</b>	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	
<i>Hazard(s) Addressed</i>	
<i>Priority (High, Medium, Low)</i>	
<i>Estimated Cost</i>	
<i>Potential Funding Streams</i>	
<i>Timeline</i>	
<i>Lead Agency/Department</i>	
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Mitigation Solutions Workshop #2

**SIGN-IN**

Friday, May 4, 2018 | 1:00-3:00 p.m.

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Jim Landis Roadwaster	East Drunore Twp	roadwaster@edrunore-twp.com	717-786-3622
Ale Dol McLean	WLT	decker@westhampter.com	717 464 3731
Sara Gibson/Mgr. Ben Nersikowitz	Repho Twp. LANC. COUNTY	manager@rephotownship.com bnersikowitz@lancema.us	717-665-3827 717 723 8454
Mark Hrestler	Penn Township	Manager@penntwp.org	717-665-4508
Wanda Good	Caernarvon Twp	wgood@caernarvonlanca.org	717-445-4844
Robby Norris	" "	knorris@caernarvonlanca.org	" "
Carolyn Hildebrand Laura Kretz	W Coccalico Twp Tetra Tech	wcoccalico@gmail.com laura.kretz@tetra-tech.com	717-336-8720 610-304-8988
Tony Subbio	Tetra Tech	tony.subbio@tetra-tech.com	717-545-3580





# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan (HMP) – Mitigation Strategy Review Meeting		
<b>Date</b>	May 29, 2018	<b>Time</b>	1:00 – 2:05 p.m.
<b>Location</b>	Lancaster County Public Safety Training Center		
<b>Attendees</b>	Ben Herskowitz, Lancaster County Emergency Management Agency (LEMA)		
	Dylan Getz, LEMA		
	Ray Marvin, Supervisor, Bart Township		
	Jeff Helm, Zoning and Planning Officer, Borough of Columbia		
	William Shirk, Emergency Management Coordinator, East Earl Township and Terre Hill Borough		
	Tara Hitchens, Director of Planning/Zoning Officer, East Lampeter Township		
	Paul Swangren, Superintendent of Public Works and Water, Ephrata Borough		
	Steven A. Sawyer, Township Manager and Zoning Officer, Ephrata Township		
	Scott N. Osborne, Supervisor, Fulton Township		
	Duane Ober, EMA Coordinator, Lititz Borough and Warwick Township		
	Justin Evans, Manager, Mt. Joy Township		
	Mark Hiester, Township Manager, Penn Township		
	Sara Gibson, Manager, Rapho Township		
	F. Steven Echternach, Chief of Police, Strasburg Borough; and Strasburg Township		
Tony Subbio, Tetra Tech, Inc.			

## Discussion Points

This section summarizes each discussion point addressed during the meeting.

### Welcome

Mr. Herskowitz and Mr. Subbio welcomed attendees and described the purpose of the meeting.

### Worksheet Completion Status

Mr. Subbio reviewed the completed municipal worksheets submitted to Planning Team representatives and identified the number of municipalities remaining. As of May 28, 2018, 28 municipalities still needed to provide completed worksheets; however, some of those 28 municipalities had provided at least one completed worksheet.

### Municipal Risk Factor Analysis

Attendees completed a worksheet to compare the risk from each hazard in their respective municipalities to the risk from each hazard to the County as a whole.



# MEETING NOTES

## Review Existing Mitigation Strategy

Mr. Subbio reviewed the goals and objectives for the 2018 Lancaster County HMP that were set by the Steering Committee and reviewed with the Planning Team during the last two meetings. He explained that the goals and objectives were updated to align with the Pennsylvania HMP goals and objectives, Lancaster County capabilities and vulnerabilities based on the risk analysis and capabilities assessment, and feedback received via worksheets and e-mails from representatives of municipalities within Lancaster County.

## Review Mitigation Actions

Mr. Subbio reviewed the mitigation actions that were identified for inclusion in the 2018 HMP. Actions that were carried over from the 2014 HMP were included in the list. The list of actions also included those designed to protect any critical facilities in the floodplain, address any hazard areas or issues identified during the planning process (such as roads that flood, brush fires along railroad tracks, and others), and any actions identified by municipal representatives based on the Mitigation Strategies for Consideration questions distributed at previous meetings. Mitigation actions were categorized as countywide, municipality-specific, and multi-municipal (but not countywide).

Attendees reviewed the list of actions and provided feedback to Mr. Subbio.

Mr. Subbio then discussed that each action will be listed in the main body of the updated HMP along with relevant details such as lead agency, timeline, and cost. Actions will be prioritized using a formula developed by the Pennsylvania Emergency Management Agency (PEMA); however, municipal officials can change the level of priority for each action based on municipal preferences. For instance, an action that is scored as a medium-priority action using the formula may be a high-priority action for the individual municipality, and will be reflected in the updated HMP as such.

Mr. Subbio discussed the Mitigation Action Worksheet handout and informed the group that each action in the updated HMP would have a worksheet.

## Next Steps

Mr. Subbio reviewed the following next steps in the HMP update process with attendees:

- The complete draft of the updated HMP should be completed in mid-June 2018.
- The plan will be available for public review for 30 days following completion.
- A public meeting to review the complete draft will be held after the public comment period, ideally in mid-July 2018.
- The updated HMP will be submitted to PEMA for review at the end of July 2018.
- The updated HMP will be submitted to the Federal Emergency Management Agency (FEMA) for review in mid-August 2018.

With no further questions, Mr. Herskowitz and Mr. Subbio thanked attendees for their time and participation. The meeting concluded at 2:05 p.m.





# AGENDA

## LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE Mitigation Strategy Review Meeting

Tuesday, May 29, 2018 | 1:00–3:00 p.m.

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1. **Welcome**

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  2. **Worksheet Completion Status**

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  3. **Municipal Risk Factor Analysis**

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  4. **Review Goals and Objectives**

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  5. **Review Mitigation Actions**

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  6. **Next Steps**
    - a. Finalize the Draft HMP
    - b. Public Comment Period
    - c. Conduct Draft Review Meeting
    - d. Submit Plan Update to PEMA
    - e. Submit Plan Update to FEMA

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  7. **Questions**



Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Worksheet Completion Status

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Lancaster County	X	X	X
Adamstown Borough			
Akron Borough			
Bart Township	X	X	X
Brecknock Township			
Caernarvon Township	X	X	X
Christiana Borough	X	X	X
Clay Township			
Colerain Township	X	X	X
Columbia Borough			
Conestoga Township			
Conoy Township			
Denver Borough	X	X	X
Drumore Township	X	X	X
Earl Township	X		
East Cocalico Township	X	X	X
East Donegal Township	X	X	X
East Drumore Township			
East Earl Township	X	X	X
East Hempfield Township	X		X
East Lampeter Township	X	X	X
East Petersburg Borough	X		X
Eden Township	X	X	X
Elizabeth Township	X	X	X
Elizabethtown Borough	X	X	
Ephrata Borough	X	X	X
Ephrata Township	X	X	X
Fulton Township	X	X	X
Lancaster City			
Lancaster Township			

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Municipality	Hazard Evaluation Survey	Capability Assessment Survey	Mitigation Strategy Survey
Leacock Township	X	X	X
Lititz Borough	X	X	X
Little Britain Township			
Manheim Borough	X	X	X
Manheim Township			
Manor Township			
Marietta Borough	X	X	
Martic Township	X	X	X
Millersville Borough	X		
Mount Joy Borough	X		
Mount Joy Township	X	X	X
Mountville Borough	X		
New Holland Borough		X	X
Paradise Township	X	X	X
Penn Township	X	X	X
Pequea Township			
Providence Township	X	X	X
Quarryville Borough			
Rapho Township	X	X	X
Sadsbury Township	X		
Salisbury Township	X	X	X
Strasburg Borough	X	X	X
Strasburg Township	X	X	X
Terre Hill Borough	X	X	X
Upper Leacock Township	X	X	X
Warwick Township	X	X	X
West Cocalico Township	X	X	X
West Donegal Township	X		
West Earl Township	X	X	X
West Hempfield Township	X		
West Lampeter Township		X	X

Jurisdiction Risk - \_\_\_\_\_ (Municipality)

	Drought	Earthquake	Flood, Flash Flood, and Ice Jams	Hailstorms	Invasive Species	Pandemic	Radon Exposure	Subsidence and Sinkholes	Tornado and Windstorm	Wildfire	Winter Storms	Dam Failure	Environmental Hazards	Nuclear Incidents	Transportation Accidents	Utility Interruption
	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

## Goals and Objectives

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### Goal 1: Prevent injury/death and damage from natural and human-made hazards in Lancaster County.

- Objective 1.1 Develop regulations limiting development in hazard-prone areas.
- Objective 1.2 Direct growth in designated growth areas away from hazard-prone areas, and maintain natural hazard buffers in the County.
- Objective 1.3 Encourage homeowners, renters, and businesses to insure their properties against all hazards, including flood coverage under the National Flood Insurance Program (NFIP).
- Objective 1.4 Lessen impacts on natural resources from natural and human-caused hazards.

### Goal 2: Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards.

- Objective 2.1 Protect existing structures, including critical facilities, from damage that can be caused by hazards.
- Objective 2.2 Acquire, relocate, elevate, and/or retrofit existing structures located in hazard areas.
- Objective 2.3 Acquire, relocate, elevate, and/or retrofit repetitive loss properties from flood-prone areas.
- Objective 2.4 Improve and maintain stormwater management systems to reduce back-up and flooding.
- Objective 2.5 Protect the health of County residents from disease.

### Goal 3: Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards.

- Objective 3.1 Improve coordination and communication between departments.
- Objective 3.2 Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation.
- Objective 3.3 Ensure adequacy of equipment and technology.

### Goal 4: Increase public education and awareness of existing and potential hazards in Lancaster County.

- Objective 4.1 Develop public education and outreach programs on hazards and hazard mitigation.
- Objective 4.2 Educate property owners in hazard-risk areas regarding their risks and the precautions they can take.
- Objective 4.3 Encourage residents to implement hazard mitigation and preparedness measures on their properties.
- Objective 4.4 Encourage local participation in the Community Rating System (CRS) Program.

Mitigation Actions – 2018 Hazard Mitigation Plan

Action	Location	Technique	Hazard(s)
<b>Countywide</b>			
Develop a hazard information page on the County website, and link from each municipality's website.		Education and Awareness Programs	Drought; Earthquake; Flood, Flash Flood, and Ice Jam; Hailstorm; Invasive Species; Pandemic; Radon Exposure; Subsidence/Sinkhole; Tornado and Windstorm; Wildfire; Winter Storm; Dam Failure; Environmental Hazards; Nuclear Incident; Transportation Accident; Utility Interruption
Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas		Education and Awareness Programs	Flood, Flash Flood, and Ice Jams; Subsidence/Sinkholes; Wildfire; Dam Failure; Environmental Hazards; Nuclear Incident
Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes		Education and Awareness Programs	Radon Exposure
Provide information to the public about the dangers of radon exposure.		Education and Awareness Programs	Radon Exposure
<b>Akron Borough</b>			
Protect Wastewater Pump #126 to the 0.2% annual chance flood level.	40.167978, -76.211526	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade sewer infrastructure in the Heritage Development to prevent stormwater infiltration.	Heritage Road, Westbrook Drive, Knollwood Drive, Ridgewood Drive	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams; Utility Interruption
<b>Brecknock Township</b>			
Protect the Northern Lancaster County Authority facility to the 0.2% annual chance flood level.	983 Beam Rd; 40.178472, -76.059824	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Northern Lancaster County Authority WWTP to the 0.2% annual chance flood level.	40.220447, -76.067101	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #7 to the 0.2% annual chance flood level.	40.22559, -76.066485	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams



Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
<b>Caernarvon Township</b>			
Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	40.138219, -75.967055	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	40.154469, -75.984347	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Columbia Borough</b>			
Improve stormwater drainage at 10th Street and Ridge Avenue	40.036888, -76.490480	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Columbia Municipal Authority WWTP to the 0.2% annual chance flood level.	40.025489, -76.498162	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Provide information at the overlook regarding the potential for wildfires on the hill below, and how visitors can prevent them.		Education and Awareness Programs	Wildfire
<b>Conestoga Township</b>			
Improve drainage at the low spot in the road at Kendig Road and Elm Street	39.949635, -76.339890	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Conoy Township</b>			
Protect the Bainbridge Water Authority WWTP to the 0.2% annual chance flood level.	40.086273, -76.661939	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Denver Borough</b>			
Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	40.228408, -76.132622	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install an underground stormwater management system along the 300 and 400 blocks of Locust Street	Locust Street	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install an underground stormwater management system at North 3rd and Main Streets	North 3rd and Main Streets	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Filtration #3 to the 0.2% annual chance flood level.	40.235745, -76.142786	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Dogwood Drive bridge over Fry's Run with one with a larger opening.	40.250766, -76.101033	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Replace the Miller Road bridge over the Little Cocalico Creek with one with a larger opening.	40.244635, -76.123329	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Reinholds Road bridge over Fry's Run with one with a larger opening.	40.242812, -76.123136	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Smokestown Road bridge over Fry's Run with one with a larger opening.	40.244089, -76.113576	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the White Oak Road bridge over Fry's Run with one with a larger opening.	40.248015, -76.109131	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Earl Township</b>			
Relocate businesses along US-322 west of Martindale Road	40.154495, -76.129176	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>East Cocalico Township</b>			
Protect the District Justice Office 1 to the 0.2% annual chance flood level.	2 Cardinal Dr.; 40.215337, -76.127105	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Reamstown EMS facility to the 0.2% annual chance flood level.	12 W Church St; 40.212216, -76.124908	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #8 to the 0.2% annual chance flood level.	40.224746, -76.104253	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Stony Run culvert under Hill Road with one with a larger opening.	40.228640, -76.094688	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Stony Run culvert under Bunker Hill Road with one with a larger opening.	40.217348, -76.120974	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Stony Run culvert under West Church Street with one with a larger opening.	40.212549, -76.124843	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>East Donegal Township</b>			
Protect the Mount Joy Boro Authority WWTP to the 0.2% annual chance flood level.	159 S Jacob St; 40.100016, -76.494222	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #50 to the 0.2% annual chance flood level.	40.061343, -76.531366	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #33 to the 0.2% annual chance flood level.	40.110235, -76.543092	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #79 to the 0.2% annual chance flood level.	40.110145, -76.543137	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
<b>East Earl Township</b>			
Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Work with PENNDOT to install a traffic light at the intersection of Routes 23 and 897.	40.121811, -76.029028	Structure and Infrastructure Project (SIP)	Transportation Accident
Work with PENNDOT to install a traffic light at the intersection of US-322 and PA-897.	40.112890, -76.028637	Structure and Infrastructure Project (SIP)	Transportation Accident
<b>East Hempfield Township</b>			
Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Potable Pump #37 to the 0.2% annual chance flood level.	40.072927, -76.367003	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Potable Pump #38 to the 0.2% annual chance flood level.	40.071885, -76.357454	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #22 to the 0.2% annual chance flood level.	40.070425, -76.41376	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace old and undersized culverts along the Swarr Run located at Church St.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace old and undersized culverts along the Swarr Run located at Nolt Rd.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace old and undersized culverts along the Swarr Run located at Snapper Dam Rd.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>East Lampeter Township</b>			
Install stormwater collection infrastructure on Greenfield Road at the railroad underpass.	40.043879, -76.254085	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Lancaster Mennonite High School to the 0.2% annual chance flood level.	40.028372, -76.226243	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Protect Wastewater Pump #97 to the 0.2% annual chance flood level.	40.059222, -76.252489	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #98 to the 0.2% annual chance flood level.	40.027535, -76.242699	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install backup power to traffic lights.		Structure and Infrastructure Project (SIP)	Transportation Accident; Utility Interruption
Backup generator – Install 10 more generators along Route 30 and Route 340 to make them functional emergency routes		Structure and Infrastructure Project (SIP)	Transportation Accident; Utility Interruption
Backup generator – Install backup generators in 2 fire stations that are not yet equipped with backup power.		Structure and Infrastructure Project (SIP)	Utility Interruption
Investigate the removal of dam structures at Gibson’s Park at Nolt Mill.		Structure and Infrastructure Project (SIP)	Dam Failure; Flood, Flash Flood, and Ice Jams
Investigate the removal of dam structures at Flory Park.		Structure and Infrastructure Project (SIP)	Dam Failure; Flood, Flash Flood, and Ice Jams
Identify mitigation or structural projects to reduce vulnerability to flooding incidents along Millcross Road.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at Soudersburg Road at the pump station		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at Susan Avenue		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at Greenland near Flory Park entrance		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at North Cherry Lane		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at Gibson’s Park at Nolt Mill		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at Flory Park		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at Greenfield Road		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management at the northeast side properties along Strasburg Pike		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for properties along Greenfield Road at Amtrak.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for The Waterfront Restaurant on Millcross Road		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Investigate retrofitting or other flood hazard mitigation measure for properties along Hale Drive		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for properties along the south side of Millstream Road between Gridley and Strasburg Pike.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for Gibson's Park at Nolt Mill.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for the Flory Park pump station.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for properties along Greenfield north of the Amtrak.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Investigate retrofitting or other flood hazard mitigation measure for Oaks 1 Pump Station.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Identify mitigation or structural projects to reduce vulnerability to flooding incidents along North Cherry Lane.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Identify mitigation or structural projects to reduce vulnerability to flooding incidents along Soudersburg Road.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Identify mitigation or structural projects to reduce vulnerability to flooding incidents along Millcreek Road.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve the design of the intersections at Oakview, Rte. 462, and Millstream along Rte. 30 between Rte. 462 and Soudersburg Road.		Structure and Infrastructure Project (SIP)	Transportation Accident
<b>East Petersburg Borough</b>			
Protect Filtration #5 to the 0.2% annual chance flood level.	40.107393, -76.338146	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Ephrata Borough</b>			
Improve drainage systems along 600 block of West Main Street	40.184335, -76.186020	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Electric Substation #31 to the 0.2% annual chance flood level.	40.187812, -76.171369	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Ephrata Boro WWTP #1 to the 0.2% annual chance flood level.	405 S Reading Rd; 40.175001, -76.197639	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Ephrata EMS to the 0.2% annual chance flood level.	528 W Main St; 40.183559, -76.185552	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Protect the Ephrata Borough Water and Sewer Authority WWTP to the 0.2% annual chance flood level.	40.174899, -76.197031	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #176 to the 0.2% annual chance flood level.	40.18753, -76.179874	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #177 to the 0.2% annual chance flood level.	40.182358, -76.184037	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #77 to the 0.2% annual chance flood level.	40.175177, -76.194808	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #44 to the 0.2% annual chance flood level.	40.171132, -76.175207	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Ephrata Township</b>			
Improve drainage system at the intersection of Frysville Road and Newswanger Road	40.167505, -76.115181	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Ephrata Boro WWTP #2 to the 0.2% annual chance flood level.	43 Springhouse Rd; 40.196946, -76.162595	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #120 to the 0.2% annual chance flood level.	40.171152, -76.201827	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #123 to the 0.2% annual chance flood level.	40.170309, -76.207402	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #9 to the 0.2% annual chance flood level.	40.170907, -76.20551	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Lancaster City</b>			
Protect Potable Pump #79 to the 0.2% annual chance flood level.	40.05095, -76.27583	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Potable Pump #98 to the 0.2% annual chance flood level.	40.049761, -76.275642	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Tank #7 to the 0.2% annual chance flood level.	40.049393, -76.274072	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Lancaster City Conestoga Filter Plant to the 0.2% annual chance flood level.	150 Pitney Rd; 40.049487, -76.273548	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve drainage on North Plum Street under the railroad overpass.	40.053635, -76.299621	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve drainage on New Holland Avenue under the railroad overpass.	40.052051, -76.289270	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams



Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Improve drainage on Wabank Road 70 feet west of Hershey Avenue.	40.023875, -76.316354	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Lancaster Township</b>			
Protect the Lancaster City Advanced WWTP to the 0.2% annual chance flood level.	1220 New Danville Pike; 40.017171, -76.306951	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #136 to the 0.2% annual chance flood level.	40.013403, -76.330379	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #148 to the 0.2% annual chance flood level.	40.006802, -76.32425	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #168 to the 0.2% annual chance flood level.	40.004819, -76.304607	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #169 to the 0.2% annual chance flood level.	40.025376, -76.276155	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Leacock Township</b>			
Protect Wastewater Pump #27 to the 0.2% annual chance flood level.	40.046233, -76.115938	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Lititz Borough</b>			
Protect the Warwick EMS facility to the 0.2% annual chance flood level.	151 North Ln; 40.15717, -76.302284	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #72 to the 0.2% annual chance flood level.	40.163471, -76.301533	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #74 to the 0.2% annual chance flood level.	40.159324, -76.297353	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #75 to the 0.2% annual chance flood level.	40.159364, -76.296343	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Manheim Borough</b>			
Protect Electric Substation #42 to the 0.2% annual chance flood level.	40.156481, -76.395163	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Potable Pump #101 to the 0.2% annual chance flood level.	40.15566, -76.390785	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Manheim FD station to the 0.2% annual chance flood level.	83 S Main St; 40.162194, -76.392892	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #200 to the 0.2% annual chance flood level.	40.160134, -76.384544	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Protect Well #57 to the 0.2% annual chance flood level.	40.154234, -76.40551	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #58 to the 0.2% annual chance flood level.	40.155395, -76.405643	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Manheim Township</b>			
Protect District Justice Office 13 to the 0.2% annual chance flood level.	2205 Oregon Oike; 40.086082, -76.285442	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #143 to the 0.2% annual chance flood level.	40.070761, -76.26311	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #166 to the 0.2% annual chance flood level.	40.048611, -76.282756	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #167 to the 0.2% annual chance flood level.	40.053589, -76.278118	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	40.064630, -76.343080	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Work with PENNDOT to redesign the interchange at US-30 and US-222	40.067299, -76.288254	Structure and Infrastructure Project (SIP)	Transportation Accident
<b>Manor Township</b>			
Protect Electric Substation #6 to the 0.2% annual chance flood level.	39.926608, -76.385169	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Millersville Borough WWTP to the 0.2% annual chance flood level.	39.98576, -76.347123	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Millersville WWTP to the 0.2% annual chance flood level.	500 Murrycross Way; 39.985747, -76.347142	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #140 to the 0.2% annual chance flood level.	40.005959, -76.373672	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #141 to the 0.2% annual chance flood level.	40.004795, -76.477101	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #150 to the 0.2% annual chance flood level.	39.99394, -76.47087	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #162 to the 0.2% annual chance flood level.	40.022994, -76.366472	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Protect Wastewater Pump #165 to the 0.2% annual chance flood level.	39.984613, -76.40503	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Marietta Borough</b>			
Protect the Marietta Borough Building to the 0.2% annual chance flood level.	111 E. Market St; 40.057183, -76.551958	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Marietta Donegal Sewage Treatment Plant to the 0.2% annual chance flood level.	50 Furnace Rd; 40.058267, -76.534301	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Marietta Fire Department station to the 0.2% annual chance flood level.	200 N Waterford Ave; 40.059541, -76.550953	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Marietta-East Donegal Joint Authority WWTP to the 0.2% annual chance flood level.	40.058024, -76.534528	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Susquehanna Valley EMS facility to the 0.2% annual chance flood level.	200 N Waterford Ave; 40.059546, -76.550934	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #53 to the 0.2% annual chance flood level.	40.056666, -76.551181	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Millersville Borough</b>			
Improve drainage along Oak Ridge Drive		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve drainage at Barbara Street and East Cottage Ave	40.005469, -76.346815	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #179 to the 0.2% annual chance flood level.	39.996294, -76.345776	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Mount Joy Borough</b>			
Conduct a detailed flood study of the Little Chiques Creek	N/A	Local Plans and Regulations	Flood, Flash Flood, and Ice Jams
Improve stormwater management capacity of Staufer Court and the outfall into the Little Chiques Creek	40.110999, -76.490976	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve stormwater management capacity under PA-230	PA-230 through Borough	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Mount Joy Township</b>			
Protect Wastewater Pump #84 to the 0.2% annual chance flood level.	40.138348, -76.55645	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
<b>Paradise Township</b>			
Protect the Paradise Township Sewer Authority WWTP to the 0.2% annual chance flood level.	40.012723, -76.131771	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #89 to the 0.2% annual chance flood level.	40.00703, -76.111326	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #91 to the 0.2% annual chance flood level.	40.008341, -76.139383	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Penn Township</b>			
Clear obstructions from the stormwater management system near the intersection of Fruitville Pike/New Charlotte Street and Main Street (PA-72)	40.158581, -76.389494	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the Manheim Borough Authority WWTP to the 0.2% annual chance flood level.	40.154886, -76.403426	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #199 to the 0.2% annual chance flood level.	40.165696, -76.384766	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #39 to the 0.2% annual chance flood level.	40.17114, -76.369311	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management infrastructure along White Oak Road south of Hamaker Road	40.174433, -76.388807	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade stormwater management infrastructure at the intersection of Stiegel Valley Road and White Oak Road	40.171163, -76.388247	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Providence Township</b>			
Protect the Quarryville Boro WWTP to the 0.2% annual chance flood level.	2350 Old Rd; 39.906079, -76.184995	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Rapho Township</b>			
Protect Wastewater Pump #55 to the 0.2% annual chance flood level.	40.110325, -76.453067	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Regularly clear obstructions from waterways		Natural Systems Protection	Flood, Flash Flood, and Ice Jams
<b>Sadsbury Township</b>			
Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
<b>Strasburg Township</b>			
Protect Wastewater Pump #13 to the 0.2% annual chance flood level.	39.989648, -76.217691	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Upper Leacock Township</b>			
Install drainage ditches along Creek Hill Road at Hartman Station Road to reduce soil runoff onto the roadway	40.076245, -76.233235	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>Warwick Township</b>			
Protect Wastewater Pump #67 to the 0.2% annual chance flood level.	40.148155, -76.271203	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Well #35 to the 0.2% annual chance flood level.	40.156868, -76.284404	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Replace the Lititz Run culvert under Lititz Run Road with one with a larger opening.	40.153805, -76.286345	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>West Cocalico Township</b>			
Expand intersection of Sandy Hill Road and Hillside Road	40.246795, -76.199238	Structure and Infrastructure Project (SIP)	Environmental Hazards; Transportation Accidents
Increase length of Hackman Road bridge to provide more water to flow underneath it		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Increase length of Hickory Road bridge to provide more water to flow underneath it		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Increase length of Indiantown Road bridge to provide more water to flow underneath it		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install backup power generators at two potable water wells		Structure and Infrastructure Project (SIP)	Utility Interruption
Upgrade and clear obstructions in the drainage system at the Cocalico Creek at Hickory Road.	40.274314, -76.184533	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade the drainage system at the Cocalico Creek at Pineview Drive., and elevate the bridge approach.	40.273088, -76.179289	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve drainage at the culvert at Sportsman Road east of Hickory Road	40.273088, -76.179289	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Upgrade the bridge on Sportsman Road over the Cocalico Creek to allow more water to flow underneath it.	40.275224, -76.170005	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install stormwater management infrastructure along Blue Lake Road to prevent downhill flooding	Blue Lake Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
Install stormwater management infrastructure along Girl Scout Road to prevent downhill flooding	Girl Scout Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install stormwater management infrastructure along Mountain Road to prevent downhill flooding	Mountain Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install stormwater management infrastructure along Netzley Road to prevent downhill flooding	Netzley Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install stormwater management infrastructure along Sandy Hill Road to prevent downhill flooding	Sandy Hill Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install stormwater management infrastructure along Strickler Road to prevent downhill flooding	Strickler Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Install stormwater management infrastructure along White Hall Road to prevent downhill flooding	White Hall Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Relocate the Wastewater Treatment Plant to a location outside the floodplain.	40.263798, -76.119579	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Renovate the stormwater management system in Reinholds	Reinholds	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>West Donegal Township</b>			
Protect the Elizabethtown Regional Sewer Authority WWTP to the 0.2% annual chance flood level.	40.129705, -76.624852	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #197 to the 0.2% annual chance flood level.	40.113232, -76.626272	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>West Earl Township</b>			
Protect the West Earl Township Sewer Authority WWTP to the 0.2% annual chance flood level.	40.123595, -76.203576	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect the West Earl Township Water Authority facility to the 0.2% annual chance flood level.	40.131382, -76.19831	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #184 to the 0.2% annual chance flood level.	40.121273, -76.234753	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
<b>West Hempfield Township</b>			
Protect Wastewater Pump #134 to the 0.2% annual chance flood level.	40.065493, -76.437108	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #149 to the 0.2% annual chance flood level.	40.066372, -76.477043	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams



Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Action	Location	Technique	Hazard(s)
<b>West Lampeter Township</b>			
Improve drainage along Eckman Road	Eckman Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve stormwater management along Gypsy Hill Road	Gypsy Hill Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Improve stormwater management along Hollinger Road	Hollinger Road	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Potable Pump #100 to the 0.2% annual chance flood level.	40.002164, -76.292968	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Potable Pump #61 to the 0.2% annual chance flood level.	40.025824, -76.27407	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Protect Wastewater Pump #21 to the 0.2% annual chance flood level.	40.007054, -76.267924	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Retention Pond - Construct retention ponds to protect properties along Hollinger Road.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Municipalities	Action	Location	Technique	Hazard(s)
Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Elevate structures at risk of flooding		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Lancaster County, Christiana Borough, Columbia Borough, Conestoga Township, Conoy Township, Denver Borough, Drumore Township, Earl Township, East Cocalico Township, East Donegal Township, East Earl Township, East Hempfield Township, East Lampeter Township, East Petersburg Borough, Elizabethtown Borough, Ephrata Township, Fulton Township, Lancaster City, Leacock Township, Lititz Borough, Manheim Borough, Manheim Township, Manor Township, Marietta Borough, Martic Township, Mount Joy Borough, Mount Joy Township, Mountville Borough, New Holland Borough, Paradise Township, Penn Township, Rapho Township, Sadsbury Township, Salisbury Township, Strasburg Township, Upper Leacock Township, Warwick Township, West Cocalico Township, West Donegal Township, West Earl Township, West Hempfield Township	Work with the railroad and property owners to provide a wider buffer between the tracks and vegetation.		Education and Awareness Programs	Wildfire
Brecknock Township, Caernarvon Township, Christiana Borough, Columbia Borough, Conestoga Township, Conoy Township, Drumore Township, Earl Township, East Donegal Township, East Drumore Township, East Hempfield Township, East Lampeter Township, Elizabethtown Borough, Ephrata Borough, Ephrata Township, Lancaster City, Lancaster Township, Leacock Township, Lititz Borough, Manheim	Acquire repetitive loss properties to convert them to open space		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Municipalities	Action	Location	Technique	Hazard(s)
Borough, Manheim Township, Manor Township, Marietta Borough, Martic Township, Mount Joy Borough, Paradise Township, Pequea Township, Rapho Township, Strasburg Township, Upper Leacock Township, West Earl Township, West Hempfield Township, West Lampeter Township				
Clay Township, East Earl Township, Elizabeth Township, Elizabethtown Borough, Lancaster Township, Manheim Township, Martic Township, West Cocalico Township	Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community		Structure and Infrastructure Project (SIP)	Dam Failure
Denver Borough, Earl Township, Lititz Borough, West Hempfield Township	Work with hazardous materials facilities in the floodplain to floodproof structures up to the 0.2% annual chance flood level.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
East Earl Township, Salisbury Township	Work with the Lancaster Conservancy to provide information at the Welsh Mountain Nature Preserve regarding the potential for wildfires and how visitors can prevent them.	601 Gault Road, New Holland, PA	Education and Awareness Programs	Wildfire
Ephrata Borough, Ephrata Township	Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Lancaster County, East Donegal Township	Protect the structures in Chickie's Park to the 0.2% annual chance flood level.	1467 Long Lane, East Donegal Township	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Lancaster County, Manor Township	Work with PPL to protect the Conestoga KV Substation to the 0.2% annual chance flood level.	1 Powerhouse Road; 39.925915, -76.38515	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Lancaster County, Manor Township	Work with the Safe Harbor Water Power Corporation to protect their	1 Powerhouse Road; 39.92507, -76.3893	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

Lancaster County Planning Team  
Mitigation Strategy Review Meeting

Municipalities	Action	Location	Technique	Hazard(s)
	facilities to the 0.2% annual chance flood level.			
Lancaster County, Martic Township	Work with PPL to protect the Holtwood facility to the 0.2% annual chance flood level.	482 Old Holtwood Road; 39.82693, - 76.3304	Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams
Paradise Township, West Earl Township	Work with the Amish community to protect their critical facilities (e.g., schools) in the floodplain.		Structure and Infrastructure Project (SIP)	Flood, Flash Flood, and Ice Jams

## Mitigation Action Worksheet

<b>Municipality(ies):</b>	<b>Action</b>
<b>Action Number:</b>	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	
<i>Hazard(s) Addressed</i>	
<i>Priority (High, Medium, Low)</i>	
<i>Estimated Cost</i>	
<i>Potential Funding Streams</i>	
<i>Timeline</i>	
<i>Lead Agency/Department</i>	
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	







LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Mitigation Strategy Review Meeting

Tuesday, May 29, 2018 | 1:00-3:00 p.m.

SIGN-IN

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
BEN NEASHOWITZ	LEMA	Bneashowitz@lancema.us	
Dylan Getz	EMA	dylangetz@gmail.com	717-826-7633
F.S. FORTERMACH	STRASSBURG BORO/TWP	ECHTERLIS@POLICE.CO. LANCASTER, PA, US	717-687-7128
Ray Marvin	Bart Twp	marvin@bbsgrocery.com	717-629-1042
WILLIAM SHIRK	EAST GAIL TWP, TERRACE HILL BORO	WJSHIRK@HOTMAIL.COM	717 314 5496
Steven A. Sawyer	Ephrata Township	ssawyer@ptd.net	717-733-1044
Mark Henders	Penn Township	Memaps@	717-666-4500
MS Sawyer A.	Ephrata Borough	BolanCrem@EphrataBoro.org	717 587 0292
Juane Ober EMA Coord.	Warwick Twp / Litzitz Boro	dober@warwicktownship.org	626-8900 (717)
Tara Hitchens	East Lampeter Township	hitchens@eastlampeter-township.org	717 393 1507 x 3505





LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Mitigation Strategy Review Meeting

Tuesday, May 29, 2018 | 1:00-3:00 p.m.

# SIGN-IN

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Justin Evans, Mgr.	Mt. Joy Twp.	Justin@mtjoytwp.org	717-367-8917
Scott N. OSBORNÉ	FULTON TOWNSHIP	SUSBORNE12345@gmail.com	717-808-3252
JEFF HELM	BOROUGH OF COLUMBIA	jhelm@columbia.pa.net	717-449-0922
Sara Gibson	Rapho Twp	manager@raphtowship.com	717-665-3827
Tony Subbio / PM	Tetra Tech	tony.subbio@tetra-tech.com	717-545-3550





# MEETING NOTES

<b>Meeting</b>	Lancaster County Hazard Mitigation Plan (HMP) – Plan Draft Review Meeting		
<b>Date</b>	September 24, 2018	<b>Time</b>	7:00 – 8:00 p.m.
<b>Location</b>	Lancaster County Public Safety Training Center		
<b>Attendees</b>	Ben Herskowitz, Lancaster County Emergency Management Agency (LEMA)		
	Michael Hoover, Emergency Management Coordinator, Bart Township		
	Jeff Helm, Zoning and Planning Officer, Borough of Columbia		
	William Shirk, Emergency Management Coordinator, East Earl Township and Terre Hill Borough		
	Shawn D. Vinson, Emergency Management Coordinator, Eden Township		
	William L. Harvey, Emergency Management Coordinator, Ephrata Borough		
	Scott N. Osborne, Supervisor, Fulton Township		
	Duane Ober, EMA Coordinator, Lititz Borough and Warwick Township		
	Lori Shenk, Emergency Management Coordinator, Rapho Township		
	B. Keith Yohn, Assistant Administrative Director, Lancaster County Career and Technology Center		
	Beatriz Pérez, Medical Case Manager, Spanish American Civic Association		
	Tony Subbio, Tetra Tech, Inc.		

## Discussion Points

This section summarizes each discussion point addressed during the meeting.

### Welcome

Mr. Herskowitz and Mr. Subbio welcomed attendees and described the purpose of the meeting.

### Review the Planning Process

Mr. Subbio reviewed the timeline of project from the beginning to the conclusion of the project and gave a brief summary of issues addressed at each previous meeting. He then provided a summary of the continuing efforts pertaining to the HMP update project and also discussed which stakeholders participated in the planning process.

### Review the Document

Mr. Subbio gave a brief summary of each section of the updated HMP, as summarized below:

- Section 1: Introduction provides the background, purpose, and scope of the HMP.
- Section 2: County Profile discusses the nature of Lancaster County, its communities, and its environment. It also discusses the limitations of data used in developing the HMP.
- Section 3: Planning Process summarizes the process by which the HMP was updated. It identifies the municipalities and stakeholders that participated in the planning process.



# MEETING NOTES

- Section 4: Risk Assessment includes the hazard profiles and vulnerability summary.
- Section 5: Capability Assessment describes the plans, regulations, staff, and resources available to implement hazard mitigation throughout the County.
- Section 6: Mitigation Strategy includes the goals, objectives, and over 200 actions identified in the planning process.
- Section 7: Plan Maintenance describes how the HMP will be maintained over the next 5 years from adoption, including the annual review process.
- Section 8: Plan Adoption includes template resolutions for each participating jurisdiction to adopt the HMP.
- The appendices include documentation of the planning process. Appendix H is particularly long, as it includes a 1-page worksheet for each of the 200+ actions. Appendix I lists the critical facilities that were analyzed in the risk assessment; this appendix is not available to the public for security reasons.

## Mitigation Project Funding

Mr. Subbio reviewed the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) grants. The application period for both grants opens on October 1 and extends to December 31, 2018. The Pennsylvania Emergency Management Agency (PEMA) will set an interim deadline for counties to submit their sub-applications to PEMA. Municipalities that wish to pursue grant funding for a project should start working with Mr. Herskowitz to submit an application.

Mr. Subbio explained that because the 2014 HMP is still valid, municipalities can pursue implementation of projects listed in that version of the HMP. The 2018 HMP is still in draft form, and though it details hundreds of specific actions for implementation, these projects would not be eligible for grant funding unless the 2014 HMP was amended with actions from the 2018 HMP draft. Mr. Subbio asked attendees to contact himself or Mr. Herskowitz if any municipality wishes to pursue grant funding this year for any projects from the draft HMP.

## Next Steps

Mr. Subbio reviewed the following next steps in the HMP update process with attendees:

- Tetra Tech will incorporate any comments on the draft HMP by September 28, 2018.
- Tetra Tech will submit the HMP to PEMA for review by October 1, 2018.
- After PEMA completes its review, Tetra Tech will make any required changes and submit the plan to the Federal Emergency Management Agency (FEMA) for formal review, probably around mid-October 2018.
- With no further questions, Mr. Herskowitz and Mr. Subbio thanked attendees for their time and participation. The meeting concluded at 8:00 p.m.





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**Lancaster County  
Hazard Mitigation Plan (HMP) Update  
Plan Draft Review Meeting**

### Agenda

- Welcome
- Review the Planning Process
- Review the Document
- Mitigation Project Funding
- Next Steps
- Questions

### Welcome

### Review the Planning Process

- Planning Team Kickoff Meeting  
August 9, 2017
- Emergency Management Coordinator Meeting  
– August 17, 2017
- Risk Assessment Update  
– August 9, 2017–February 6, 2018
- Mitigation Strategy Update  
– August 9, 2017–May 29, 2018
- Develop the HMP Document  
– August 9, 2017–August 17, 2018
- Public Review Period  
– August 20–September 24, 2018

### Review the Planning Process

<b>County</b>	<b>School Districts</b>
Emergency Management Agency	Donegal School District
Planning Commission	Hempfield School District
Court of Common Pleas	
<b>50 out of 60 Municipalities</b>	
Strasburg Borough Police Department	
Pennsylvania Emergency Management Agency (PEMA)	Millersville University Center for Disaster Research and Education (CDRE)
<b>Businesses</b>	
Brethren Village	Lancaster General Health
Exelon	Landis Homes
Fairmount Homes	Maple Farm
Harrison House of Christiana	Mennonite Home
Homestead Village	Mount Hope Nazarene Retirement Community
Lancaster Regional Medical Center and Heart of Lancaster Regional Medical Center	Wellspan Ephrata
<b>1 member of the general public</b>	

### Review the Document

- Section 1: Introduction
  - Background
  - Purpose
  - Scope
- Section 2: County Profile
  - Geography and Environment
  - Community Facts
  - Population and Demographics
  - Land Use and Development
  - Data Sources and Limitations







## Mitigation Project Funding

- Federal Mitigation Grants Open in October
  - Pre-Disaster Mitigation (PDM)
  - Flood Mitigation Assistance (FMA)
- Projects from 2014 HMP
- Projects from Updated Draft HMP
- Application Process



## Next Steps

- Finishing touches
  - September 25–28, 2018
- Submission to PEMA
  - On or about October 1, 2018
- Submission to FEMA Region III
  - On or about October 22, 2018



## Questions?

Thank you for your time!



## Contacts



Ben Herskowitz  
bherskowitz@lancema.us  
(717) 664-1200



Tony Subbio  
tony.subbio@tetrattech.com  
(717) 545-3580





# AGENDA

## LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE Plan Draft Review Meeting

Monday, September 24, 2018 | 7:00–8:30 p.m.

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1. Welcome
2. Review the Planning Process
3. Review the Document
4. Mitigation Project Funding
5. Next Steps
6. Questions



Lancaster County Planning Team  
Risk Assessment/Capability Assessment Review Meeting

Risk Ranking for Lancaster County

HAZARD RISK	HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
<b>HIGH</b>	Flood, Flash Flood, and Ice Jam	4	4	2	3	3	3.4
	Tornado, Windstorm	3	3	4	4	2	3.2
	Invasive Species	4	2	4	1	4	3.1
	Pandemic	2	4	4	1	4	3.1
	Utility Interruptions	4	3	4	4	2	3.1
	Winter Storm	3	2	4	2	2	2.7
	Environmental Hazards	4	2	1	4	2	2.6
	Drought	3	1	4	1	4	2.5
	Hailstorms	3	1	4	4	1	2.5
<b>MODERATE</b>	Transportation Accidents	4	1	2	4	1	2.4
	Radon Exposure	3	1	3	1	4	2.3
	Earthquake	2	1	4	4	1	2.2
	Wildfire	4	1	1	4	1	2.2
	Subsidence and Sinkholes	3	1	1	4	3	2.1
<b>LOW</b>	Nuclear Incidents	1	2	2	4	2	1.9
	Dam Failure	1	1	1	3	2	1.3



LANCASTER COUNTY HAZARD MITIGATION PLAN UPDATE  
Plan Draft Review Meeting

SIGN-IN

Monday, September 24, 2018 | 7:00-8:30 p.m.

NAME/TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Wm. H. HARVEY	Em. Mgmt Coord EPHATA Borough	harveyw@police.co. lanaster.pa.us	717-738- 9244 x264
Shawn D. Vinson	Eden Township Em. Mgt.	EdenTwpConductible@Comcast.com	717-824- 5968
Michael Hoover	Bart Twp EMC	BartEMCO Comcast.net	717-989-5667
WILLIAM SHIRK	GAST GRAB TWP TERRACE HILL BOROUGH	W25HARK@HOTMAIL.COM	717 314 5496
BENJAMIN NENSKONIGT	LEMA	bhenkonig@lencmp.us	717 723 8154
B. Keith Wher	Lancaster County Career & Technology Center	kcyohw@lancasterdc.edu	717-464-7050
SCOTT N. OSBORNE	FULTON TOWNSHIP	SOSBORNE12345@GMAIL.COM	717-808-3252
JEFF HELM	BOROUGH OF COLUMBIA	jhelm@columbiapa.net	717-449-0922
Lori Sherk	Rapho Twp	lsherk@dejazzd.com	717 331 8282
Diane Ober	Warwick Twp. Little Bar	dobere-warwicktownship.org	717- 224-0114





# Lancaster County Emergency Management Agency Training Attendance Record



Page \_\_\_\_\_ of \_\_\_\_\_ County ID No. \_\_\_\_\_ (If Applicable)

Course Title: LEMA Quarterly Training- Active Shooter Presentation			Instructors: William Harvey			
Location: Lancaster County Public Safety Training Center			Date: 11/16/17			
	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	Randy Gockley		Lancaster Co, EMA		664-1201	rgockley@lancema.us
2	Wm L HARVEY		Ephrata Buro	on file	717 587-4294	on file
3	Dave Fetterman		Mount Joy EMA	2010 Crestayck Cir Mount Joy, PA	717 653-2168	fetter144@comcast.net
4	Peg Hamm		MJY EMA	255 Terrace Ave Mount Joy, PA	717-653-2121	peghamm@jovcail.com
5	Rick Hamm		MJY EMA	"	"	
6	RICH KAELEBERER		SARC/LUSRA	460 N. LINES E TOWN	717-571-0636	RICHKAE@COMCAST.NET
7	Brad Roth		manheim Regional Ema	106 Frederick St manheim Pa 17545	717-413 9194	bjrtk@ptd.net
8	Gene Galeschewski		E-Town Reg EMA	813 Knoll Drive Mt Joy PA 17557	717-587-0589	geneg71@aol.com
9	Warren Mueller Jr		E-Town Reg EMA	405 Sunrise Blvd E-Town. PA 17022	717-572-3162	w-muellerjr@msn.com
10	JEFF HELM		COLUMBIA EMA	308 LOCUST ST COLUMBIA, PA 17512	717-449-0922	jhelm@columbiapa.net








# Lancaster County Emergency Management Agency Training Attendance Record

Page \_\_\_\_\_ of \_\_\_\_\_ County ID No. \_\_\_\_\_ (If Applicable)

Course Title: LEMA Quarterly Training- Active Shooter Presentation      Instructors: William Harvey

Location: Lancaster County Public Safety Training Center      Date: 11/16/17

#	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	WILLIAM SHIRK		EAST CARL TWP TERRI HILL BOROUGH	1620 SILVER VALLEY EAST CARL	717 314 5496	WJSHIRK@HOTMAIL.COM
2	Lori Shenk		Rapho EMA	2129 N Colebrook Rd Manheim PA 17545	717-371-8287	
3	Kim Stoubraker		WellsPA Ephrata	527 N MAPLE ST Ephrata PA 17522	717 615 6263	KStoubraker5@WellsPA-PA.org
4	Dvane Ober		Warwick Twp Lititz Boro	315 clay Rd Lititz	717-224-0114	dobere warwicktownship.org
5	Joe Smith		MT Joy Boro EMA	314 Sassafras Twp MT Joy 17552	717 7580229	slushey26@gmail.com
6						
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# Lancaster County Emergency Management Agency Training Attendance Record

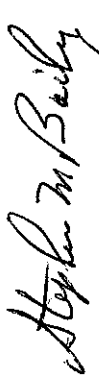

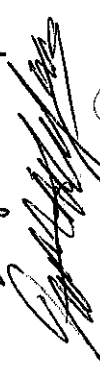
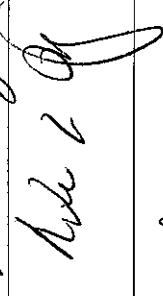

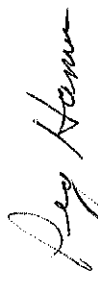




Page      of      County ID No.      (If Applicable)

Instructors: Matthew Shenk / Philip Colvin

Course Title: LEMA Quarterly Training- Radio programming/WebEOC

Date: 2/15/18

Location: Lancaster County Public Safety Training Center

	Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1	STEVE BAILEY		MARIETTA	416 W. MARKET ST MARIETTA	717-278-7783	5083900@ COMCAST.NET
2	Cresory Leisen		AKRON	911 Eshelman Dr	717 989-5474	gleiseric@ gmail.com
3	Nathan H Wolf III		LEMA	AKRON PA B N. State St. Apt. 308 Ephrata	717-314-6451	natehw@ live.com
4	Wm L HARVEY		Ephrata	120 S. State St Ephrata 17512	717 587-0290	on file
5	Rick Hamm		Mount Joy LEMA	755 Terrace Ave Mount Joy, PA	717-653-2121	rshema@ gmail.com
6	Peg Hamm		Mount Joy LEMA	755 Terrace Ave Mount Joy, PA	717-653-2121	peg.hamm@ gmail.com
7	WILLIAM SHARR		EAST CAROL TWO TERREHILL BR	1620 S. LAGER VALLEY EAST CAROL PA	717 314 5996	WTSHARR@ HOTMAIL.COM
8	Diane Barber		EHT EPB			
9	MATT SHENK		LCWC	LCWC		
10	Lori Shenk		Rapho	2129 N Eslebrook Rd Manheim.		lshenk@ dynamilis.com

# Lancaster County Emergency Management Agency Training Attendance Record


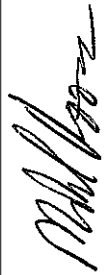
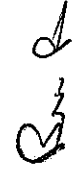
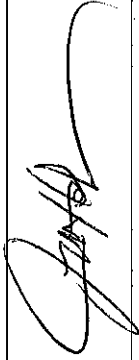

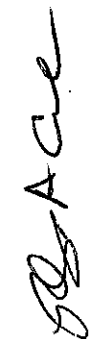
Page \_\_\_\_\_ of \_\_\_\_\_ of \_\_\_\_\_  
(If Applicable)

County ID No. \_\_\_\_\_  
Instructors: Matthew Shenk / Philip Colvin

Course Title: LEMA Quarterly Training - Radio programming/WebEOC

Date: 2/15/18

Location: Lancaster County Public Safety Training Center

Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1 David Boucher		LEMA	28 South Charlotte St. Mantoloking, PA 17545	717- 664-1200	dboucher@ lancema.us
2 Michael Hoover		Bart Twp EMA	2115 Mine Rd. Paradise PA 17562	717 989-5667	BATEMC@ comcast.net
3 Brad Roth		Mantoloking EMA	106 Frederick St. Mantoloking Pa 17545	717 413-9194	bisath@ptd. net
4 JEFF HELM		Columbia Borough	308 Locust St. Columbia PA	717-449-0922	Jeffhelm@ Columbiapennet
5 Duane Ober		Warwick Twp Lititz Boro	315 Clay Rd Lititz PA 17543	717-224-0114	dober@ warwicktownship.org
6 Phil Colvin		Lanc Co EMA			
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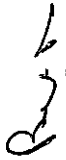

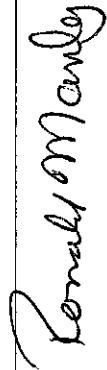
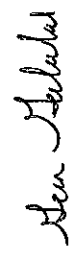

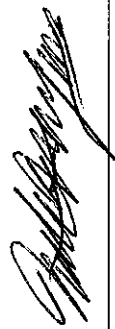

Lancaster County Emergency Management Agency  
Training Attendance Record

Page \_\_\_\_\_ of \_\_\_\_\_ (If Applicable)  
County ID No. \_\_\_\_\_

Course Title: LEMA Quarterly Training- Unmanned Aircraft Systems		Instructor: Benjamin Herskowitz			
Location: Lancaster County Public Safety Training Center		Date: 8/16/18			
Name (Print Clearly)	Signature	Affiliation	Address	Phone	Email
1 David Boucher		Lancaster Co. EMA	28 S. Carlisle St. Manheim, PA	717-380-5911	dboucher@lancema.us
2 Roger Weir		Adamstown E.M.A.	220 Whitehall Rd Reinhold, PA	484-5844	rogerweir@td.net
3 WILLIAM SHIRK		EAST CARL TWP TEAR HILL BOA.	1620 SILVER VALLEY EAST CARL	717 314 5496	WJSHIRK@HOTMAIL.COM
4 KEN BARTO		MOUNT JOY EMA	COLUMBIA PA	717 368 4701	KENBARTO52@GMAIL.COM
5 Peg Haman		MOUNT JOY EMA			
6 Rick Haman		MOUNT JOY EMA			
7 Josh Deering		MOUNT JOY EMA		717-991-9218	psu1rules@yahoo.com
8 Lori Shenk		Rapho EMA		717 371-8882	
9 F.S. ECHTERNACH		STRASSBURG RES. EMA	145 PRESSION AVE STRASSBURG PA 17579	717-682-7126	FCHTEAD@POLICE.CO.LANCASTER, PA. 03
10 Diane Barber		EHT ERP			

# Lancaster County Emergency Management Agency Training Attendance Record

Page \_\_\_\_\_ of \_\_\_\_\_ County ID No. \_\_\_\_\_ (If Applicable)

Course Title: LEMA Quarterly Training- Unmanned Aircraft Systems		Instructor: Benjamin Herskowitz				
Location: Lancaster County Public Safety Training Center		Date: 8/16/18				
No.	Name (Print Clearly)	Signature	Affiliation			
			Address			
			Phone			
			Email			
1	Duane Ober		WESC			
2	Bruce Rubin		MREMA			
3	JEFF HELM		COLUMBIA	308 LOCUST ST. COLUMBIA, PA	717-449-0922	jhelm@colombiapaper.net
4	RONALD MANLEY		COLUMBIA	B308 LOCUST ST COLUMBIA, PA	717-449-0666	MANLEYDEX@GMAIL.COM
5	Gene Galeschewsk		E-Town Reg. EMA		717-587-0589	GeneGT1@aol.com
6	Kim Stoneraker		Wellspan Echank	529 N MAPLE ST Ephrata PA 17522	717-615-6263	KStoneraker5@Wellspan.org
7	Nathan Hurlbitt		LEMA	13 N church st Apt. 308 Ephrata, PA	717-314-6451	nathh@live.com
8	Deron Gue		HAZMAT	89 Mill St Washington Boro	717-449-0194	LDfranes@comcast.net
9						
10						

# Hazard Identification and Risk Evaluation Worksheet

Name: BREBON PITTMAN

Title: EMS & CISM, MRC, HEALTH.

Jurisdiction: COUNTY

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	I	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	I <del>See</del>	SOME AS DROUGHT
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	I	INCREASE POP & TOURISM AGING INFRASTRUCTURE



PART II

Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species                        |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                               |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike                        |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic <i>WHEN, NOT IF</i> |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                                 |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano                                 |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                       |  |

Other Comments:

ELECTRICITY DEPENDANT INDIVIDUALS  
MEDICAL DIVICES, ELEVATORS, POWER CHAIRS  
SEE <sup>HHS</sup> HMP POWER MAP 2.0

# Hazard Identification and Risk Evaluation Worksheet

Name: James Cowhey

Title: Exec. Director

Jurisdiction: County Planning

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	Moderate increase	Include water system & DEP in groundwater/well analysis
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	Increase	
Wildfire	Slight increase	AF hot/dry summer
Winter Storm	Slight increase	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	Slight increase from petroleum trains and pipeline expansion	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

### Capability Assessment Survey

Jurisdiction: County Planning  
 Phone: 717 299-8333

Point of Contact Name and Title: James Couhey  
 Email: Couhey@Co.Lancaster.pa.us

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan					
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan	✓				
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan					
Zoning Regulations					



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations					
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)					
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	✓	2013			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	✓				
Building Code					
Fire Code					
Other					

*Handwritten notes:*  
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*Handwritten notes:*  
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2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
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 (includes building inspectors)				
Emergency Manager				
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	✓			
Grant writers or fiscal staff to handle large/complex grants	✓			
Staff with expertise or training in Benefit-Cost Analysis				
Other				





3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
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				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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				



5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			✓
Administrative and Technical Capability	✓		
Financial Capability	✓		
Education and Outreach	✓		

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: James Courhey Title: Executive Director Jurisdiction: County Planning

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	<i>Most New growth should occur w/in growth areas - analyze growth areas for hazard-prone areas.</i>
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	← Please refrain this objective.
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	





Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	Unk.					Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space			✓			
1.2.2 Ensure safety buffer between industrial facilities and population			✓			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance						Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	Unk.					Contact South Central Transit Authority
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			✓			Note lack of support for requirements for residential sprinkler systems.
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding			✓			
2.2.1 Regularly inspect and maintain bridges and culverts			✓			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			✓			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						
3.3.1 Implement the new Lancaster County radio system						
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues						
5.1.1 Develop and implement source water protection plans			✓			
5.1.2 Reduce the number of miles of impaired streams in the County		✓				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			✓			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation						Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures						
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.						
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammettown Road Bridge - Address flood problem at the bridge at 141 Hammettown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Michael F. Hoover Title: Emergency Management Coordinator

Jurisdiction: Bart Township, Lancaster County, PA

## PART I

How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community? Identified Hazards 2014 HMP NC = No Change; I = Increase; D = Decrease (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)		
Identified Hazards 2014 HMP	NC = No Change; I = Increase; D = Decrease	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**



### Capability Assessment Survey

Jurisdiction: BART TOWNSHIP

Point of Contact Name and Title: CATHY SNYDER - SEC/TREAS.

Phone: 717-786-2877

Email: bartfwp@comcast.net

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status In Place	Date Adopted or Updated	Under Develop- ment	Dept./Agency Responsible	Comments
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	2014		Lancaster Co. EMA	<b>We piggyback on the County HMP</b>
Emergency Operations Plan	X	11/3/2011		Bart Twp. EMA	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan	X	11/3/2011		Bart Twp. EMA	
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X	3/30/12		Board of Supervisors	
Zoning Regulations	X	10/4/17		Board of Supervisors	



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	4/1/16		Board of Supervisors	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	12/1/04		Board of Supervisors	A.K.A. The Octorara Region Joint Strategic Comprehensive Plan
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	5/7/14		Board of Supervisors	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X			County of Lancaster FARMLAND PRESERVATION	
Building Code	X			ZONING / CODE	ADMINISTRATORS
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		ZONING OFFICER	
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager	X		EMA	
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs			Solanco School District	Annual severe weather drill
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Bart Township Fire Company	Annual Fire prevention program at Bart-Colerain Elementary School and Parochial Schools in Bart Twp.
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach		X	





## Mitigation Strategy 5-Year Mitigation Plan Review

Name: CATHY SNOYER Title: Sec/TEENS. Jurisdiction: BART TOWNSHIP

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.

**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population	X					
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)			X			
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans			X			
5.1.2 Reduce the number of miles of impaired streams in the County			X			
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	✓					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	✓					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	✓					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	✓					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Terry L. Martin

Title: Roadmaster/Supervisor

Jurisdiction: Caernarvon Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	Frequency of Events
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	I	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	I	Land fill
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species            |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**

Jurisdiction Risk - Caernarvon Twp (Municipality)

	2.5	Drought	>
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	=
	2.5	Hailstorms	=
	3.1	Invasive Species	=
	3.1	Pandemic	=
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	=
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	>
	2.7	Winter Storms	>
	1.3	Dam Failure	<
	2.6	Environmental Hazards	=
	1.9	Nuclear Incidents	<
	2.4	Transportation Accidents	=
	3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

Jurisdiction Risk - Caernarvon Township (Municipality)

2.5	Drought	=
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	=
2.5	Hailstorms	=
3.1	Invasive Species	>
3.1	Pandemic	=
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	=
3.2	Tornado and Windstorm	=
2.2	Wildfire	=
2.7	Winter Storms	=
1.3	Dam Failure	<
2.6	Environmental Hazards	=
1.9	Nuclear Incidents	<
2.4	Transportation Accidents	<
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



**Capability Assessment Survey**

Jurisdiction: Cornwren Twp. Point of Contact Name and Title: Kathryn Morris - Sec./Treas.

Phone: 717-445-4244 Email: knorris@cornwrenlanaster.org

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action
Hazard Mitigation Plan	X			County EMA	
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X				
Zoning Regulations	X				





Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2016			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				ELANCO Regional Comp. Plan
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X	2014			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X			Farmland Trust - Lancaster	
Building Code	X			AB1	
Fire Code					
Other					



Capability Assessment Survey

2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			Engineer - Vision Engineering zoning - Geo consultant
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager	X		Lancaster Petrusheim	
NEIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



Capability Assessment Survey

3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)		X		If necessary, funds could be transferred
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Financial Capability		X	
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Kathryn Morris Title: Sec./Treas Jurisdiction: Cornwaton Twp.

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



*Mitigation Action Plan Review Worksheet*

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			✓			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	✓					
1.2.2 Ensure safety buffer between industrial facilities and population			✓			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			✓			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	✓					
1.4.2 Coordinate with PA DOH on issues related to pandemics	✓					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	✓					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	✓					



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			✓	✓		Statewide Bldg. code
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	✓					
2.2.1 Regularly inspect and maintain bridges and culverts			✓			Has this activity been integrated into the municipality's normal operations? Yes
2.2.2 Require special use permits for hazard-prone areas			✓			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			✓			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	✓					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			✓			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	✓					Has this activity been integrated into the municipality's normal operations?





Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	✓					
3.3.1 Implement the new Lancaster County radio system				✓		Fire Dept.
3.3.2 Inventory all available equipment and technology used for emergency response			✓			
4.1.1 Ensure that the County's dams are structurally sound	N/A					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	N/A					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			✓			
5.1.1 Develop and implement source water protection plans	✓					
5.1.2 Reduce the number of miles of impaired streams in the County		✓				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			✓			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	✓					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	✓					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	✓					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	✓					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	✓					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	✓					Has this activity been integrated into the municipality's normal operations?



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	✓					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	✓					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	✓					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	✓					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.		✓				
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.		✓				
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.		✓				
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.				✓		



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





# Hazard Identification and Risk Evaluation Worksheet

Name: Carol L. Pringle

Title: Borough Manager

Jurisdiction: Christiana Borough

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	
Radon		
Subsidence, Sinkhole	NC	
Tornado, Windstorm	I	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	But we do have a railway which I feel is deteriorating underpass

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Capability Assessment Survey**

Jurisdiction: Borough of Christiana Point of Contact Name and Title: Carol L. Pringle

Phone: 610-593-5199 Email: christiana.boro@comcast.net

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate if it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				under county
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP	X				
NFIP - Community Rating System					
Floodplain Regulations (Spec. NFIP Flood Damage Prevention Ordinance)	X	4/5/2016			
Floodplain Management Plan	X				
Zoning Regulations	X	1/3/2012			



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	8/4/2015			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	12/7/2004			
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X	5/6/2014			
Natural Resource Protection Plan					
Capital Improvement Plan	X				for sewer upgrade only
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	6/23/2004		Cadet Zoning Dept.	
Fire Code	X			R	Part of Building Code
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	✓		Becker Engineering	
Planners or engineers (with natural and/or human caused hazards knowledge)	✓		Becker Engineering	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	✓		Becker Engineering	
Emergency Manager	✓		Daryl Maser	
NFIP Floodplain Administrator	✓		Campbell Code Service	
Land Surveyors	✓	<del>✓</del>	Becker Engineering	
Scientists or staff familiar with the hazards of the community		✓		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	✓		Becker Engineering	
Grant writers or fiscal staff to handle large/complex grants		✓		
Staff with expertise or training in Benefit-Cost Analysis		✓		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
Community Development Block Grants (CDBG)				
Special Purpose Taxes		X		
Gas / Electric Utility Fees				
Water / Sewer Fees	X		Christiana Borough	
Stormwater Utility Fees		X		
Development Impact Fees	X		SALDO	
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements	X		Police, Fire Co.	
Other				





**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Carol Finkle Title: Manager/Secretary Jurisdiction: Christiana Borough

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	Unknown					Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	NO					
1.2.2 Ensure safety buffer between industrial facilities and population	Unknown					
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	No					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	Unknown					
1.4.2 Coordinate with PA DOH on issues related to pandemics	Unknown					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	Unknown					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	Unknown					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status						Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued		
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				Completed for Commercial			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	Unknown						
2.2.1 Regularly inspect and maintain bridges and culverts			Yes			Has this activity been integrated into the municipality's normal operations?	
2.2.2 Require special use permits for hazard-prone areas	Unknown						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	Unknown					Has this activity been integrated into the municipality's normal operations?	
2.3.1 Create and maintain a database and map of all critical facilities in the County	Unknown						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	Unknown						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	Unknown					Has this activity been integrated into the municipality's normal operations?	



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	Unknown					
3.3.1 Implement the new Lancaster County radio system	Unknown					
3.3.2 Inventory all available equipment and technology used for emergency response	Unknown					
4.1.1 Ensure that the County's dams are structurally sound	Unknown					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	Unknown					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	Unknown					
5.1.1 Develop and implement source water protection plans				Borough Complete		
5.1.2 Reduce the number of miles of impaired streams in the County	Unknown					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	Unknown					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	Unknown					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	Unknown					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	Unknown					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	Unknown					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	Unknown					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures		In Progress				Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	Unknown					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	Unknown					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	Unknown					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	Unknown					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	Unknown					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	Unknown					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	Unknown					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	Unknown					



Mitigation Strategy 5-Year Mitigation Plan Review

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Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.	Unknown					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	Unknown					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	Unknown					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	Unknown					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
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Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: \_Bruce Leisey Title Township Manager

Jurisdiction: Clay Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	nc	
Earthquake	nc	
Floods, Flash Floods, and Ice Jams	nc	
Radon	nc	
Subsidence, Sinkhole	nc	
Tornado, Windstorm	nc	
Wildfire	nc	
Winter Storm	nc	
<b>Human-made Hazards</b>		
Dam Failure	nc	
Environmental Hazards	nc	
Nuclear Incident	nc	
Transportation Accident	nc	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano          |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

## Capability Assessment Survey

Jurisdiction: Clay Township Point of Contact Name and Title: Bruce Leisey, Township Manager

Phone: 717-733-9675 Email: bruce@claytwp.com

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			<b>LEMA</b>	<b>Under Review</b>
Emergency Operations Plan	X	<b>03/2017</b>		<b>Clay Twp. EMA</b>	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP	X	<b>2016</b>		<b>FEMA</b>	<b>New maps developed by FEMA</b>
NFIP – Community Rating System	X	<b>2016</b>		<b>FEMA</b>	<b>New maps developed by FEMA</b>
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	<b>2016</b>		<b>Township Supervisors</b>	
Floodplain Management Plan	X	<b>2016</b>			
Zoning Regulations	X	<b>2016</b>		<b>Township Supervisors</b>	





Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2014		Township Supervisors	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	1995		Township Supervisors	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	2001		Township Supervisors	
Stormwater Management Plan / Ordinance	X	2014		Township Supervisors	
Natural Resource Protection Plan	X	1995			Included in Comp Plan
Capital Improvement Plan	X	2016			Capital Plans for public works and all infrastructure
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X				
Fire Code	X				
Ephrata Area Wastewater Plan (Act 537)	X	1995			



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Clay Township Planning Commission	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Hanover Engineering	Subcontracted
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Hanover Engineering, Associated Building Inspections, LLC	Subcontracted
Emergency Manager	X		Clay Township EMA	
NFIP Floodplain Administrator	X		Clay Township Zoning Officer	
Land Surveyors	X		Diehm and Sons	Subcontracted
Scientists or staff familiar with the hazards of the community	X		Hanover Engineering	Subcontracted
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Hanover Engineering	Subcontracted
Grant writers or fiscal staff to handle large/complex grants	X		Township Manager	
Staff with expertise or training in Benefit-Cost Analysis	X		Township Manager	
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Township Staff	
Community Development Block Grants (CDBG)	X		Township Staff	
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			Sewer only
Stormwater Utility Fees	X			During Plan Submission
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X		Lancaster County EMA	
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Township Staff	Environmental education relating to storm water
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Local Fire Companies and Ambulance Associations	
Other				



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability			X
Education and Outreach		X	



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Bruce Leisey Title: Township Manager Jurisdiction Clay Township, Lancaster County

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	<b>Led by FEMA</b>
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	<b>Collaboration between Township staff and Emergency Service Providers</b>
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	<b>Stormwater, floodplain, bridge and road projects</b>
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	<b>Zoning and Subdivision and Land Development Ordinances</b>
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	<b>Emergency Service Providers</b>
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts		X				
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies		X				
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					
3.2.1 Encourage multi-jurisdictional exercises and drills			X			



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.3.1 Implement the new Lancaster County radio system		X				
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains		X				
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					



# Hazard Identification and Risk Evaluation Worksheet

Name: Carmen B. Wiker Title: Secretary/Treasurer

Jurisdiction: Colerain Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	Salt and Anti-Skid costs
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

### Capability Assessment Survey

Jurisdiction: Colerain Township      Point of Contact Name and Title: Carmen B. Wiker, Secretary/Treasurer

Phone: 717-529-2570      Email: colerain@epix.net

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan		<b>6/2003</b>		<b>Colerain Township</b>	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	<b>Updated 2016</b>		<b>Colerain Township</b>	<b>Part of Zoning Ordinance</b>
Floodplain Management Plan					
Zoning Regulations	X	<b>2015</b>		<b>Colerain Township</b>	<b>Latest Revision 2015</b>



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	3/6/2016		Colerain Township	Adopted
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	12/30/04		Octorara Joint Region Comprehensive Plan	Bart, Colerain, Sadsbury & Christiana
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	5/5/2014		Colerain Township	Adopted
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X			Colerain Township	We follow the UCC Rules for PA
Fire Code					
Other					





**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning Commission	7 Members that are appointed
Planners or engineers (with natural and/or human caused hazards knowledge)	X		MAC, Inc.	Appointed (Jack Seber)
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		MAC, Inc.	Appointed BCO
Emergency Manager	X		Colerain Township	Steve Hastings, Appointed
NFIP Floodplain Administrator	X		Mac, Inc.	Appointed (Joe Chrisman)
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Colerain Township	Secretary & Zoning Officer skilled in the Lanc. Cty. GIS System
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other		X		

**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other		X		



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other		X		

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	X					We have no Hazard Areas
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					Cannot afford to do this even if we had areas
1.2.2 Ensure safety buffer between industrial facilities and population	X					We have no Industrial
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations? No
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					Would have no idea how to even get started on this
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					We are not an EPZ Municipality
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					We only require in Commercial
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					No plans for this
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations? Yes, but we cannot afford to fix everything
2.2.2 Require special use permits for hazard-prone areas	X					We have no Hazard Prone Areas
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations? There is no formal policy in place
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					The Pine Gove Dam is maintained and monitored by the Chester Water Authority
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					See above





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use						Has this activity been integrated into the municipality's normal operations?
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system	X					Too expensive and it isn't working properly
3.3.2 Inventory all available equipment and technology used for emergency response	X					This could be kept in a Spreadsheet
4.1.1 Ensure that the County's dams are structurally sound	X					We have no Dams in Colerain
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					The Chester Water Authority has an Emergency Operations Plan for the Pine Grove Dam. It is in good condition.
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues		X				Looking into a Grant to replace a Bridge that floods often
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	X					Has this activity been integrated into the municipality's normal operations? Yes, no improvements are allowed in our Floodplains
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations? We put items on our Website at times
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk			X			We have a Township website, and we do put on information occasionally that we receive from various agencies
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					We could put this information in our yearly Newsletter, mailings are expensive
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						



# Hazard Identification and Risk Evaluation Worksheet

Name: Jeff Helm

Title: Zoning/Planning Officer

Jurisdiction: Borough of Columbia, PA

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species            |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption      |
| <input checked="" type="checkbox"/> Disorientation                 | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input checked="" type="checkbox"/> Drowning                       |   |

**Other Comments:**

Jurisdiction Risk - Borough of Columbia, PA (Municipality)

	2.5	Drought	<
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	<
	2.5	Hailstorms	<
	3.1	Invasive Species	<
	3.1	Pandemic	>
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	=
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	<
	2.7	Winter Storms	<
	1.3	Dam Failure	<
	2.6	Environmental Hazards	=
	1.9	Nuclear Incidents	>
	2.4	Transportation Accidents	>
	3.1	Utility Interruption	<

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



**Capability Assessment Survey**

Jurisdiction: Borough of Columbia, PA Point of Contact Name and Title: Jeff Helms

Phone: 717-684-2467 Email: jhelms@columbia.pa.net

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate its estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	1-1-2008		Cola EMA	S
Emergency Operations Plan	X	3-13-06 w/ <i>annual updating</i>		" "	S
Disaster Recovery Plan			X	" "	S
Evacuation Plan	X			" "	S
Continuity of Operations Plan			X	" "	S
NFIP					S
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	8-23-99		Zoning/Planning Division	S
Floodplain Management Plan			X	" "	S
Zoning Regulations	X	8-23-99		" "	S



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X			Code Compliance Dept	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X			"	
Open Space Management Plan (or Parks/Rec or Greenways Plan)			X	P&R Rec Committee	
Stormwater Management Plan / Ordinance	X	Jan-2014		Code Compliance Dept	S
Natural Resource Protection Plan					
Capital Improvement Plan	X			Boys Fire Admin	S
Economic Development Plan	X			" Admin	S
Historic Preservation Plan	X			" " / HARB	N
Farmland Preservation					
Building Code	X			Code Compliance Dept	S
Fire Code	X			"	S
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel/Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Boro Engineer	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager	X		Boro EMC	
NFIP Floodplain Administrator	X		Zoning Officer	
Land Surveyors				
Scientists or staff familiar with the hazards of the community	X		Boro Engineer	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program			" "	
Grant writers or fiscal staff to handle large/complex grants	X		Finance Mgr	
Staff with expertise or training in Benefit-Cost Analysis	X		" "	
Other				





Capability Assessment Survey

3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Finance Dept	
Community Development Block Grants (CDBG)	X		" "	
Special Purpose Taxes				
Gas / Electric Utility Fees				
Water / Sewer Fees				
Stormwater Utility Fees				
Development Impact Fees				
General Obligation, Revenue, and/or Special Tax Bonds	X		Finance Dept.	
Partnering Arrangements or Intergovernmental Agreements	X		" "	
Other				



4. Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification				
StormReady certification				
Natural disaster or safety related school programs	X		<del>Cola Boro Fire Dept</del> " " " " Police Dept	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Cola Boro - Website " " " " Fire Dept	
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.	X		Cola Boro EMTA Advisory Group	
Other				



Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach		X	





## Mitigation Strategy 5-Year Mitigation Plan Review

Name:

*Jeff Helton*

Title:

*Zoning Officer*

Jurisdiction:

*Borough of Columbia*

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Mitigation Strategy 5-Year Mitigation Plan Review

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review/Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space		X				
1.2.2 Ensure safety buffer between industrial facilities and population	X					
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations		X				
1.4.2 Coordinate with PA DOH on issues related to pandemics			X			
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						N/A
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status						Review Comments
	No Progress / Unknown	In Progress/ Not Yet Completed	Continuous	Completed	Discontinued		
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings							
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding		X					New structures only, as req'd
2.2.1 Regularly inspect and maintain bridges and culverts				X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas							
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X				Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X				
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster		X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use		X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review/Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound						N/A
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						N/A
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans				X		
5.1.2 Reduce the number of miles of impaired streams in the County		X				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains				X		Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk		X				
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation			X			
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						N/A
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations? N/A

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures			X			
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes			X			
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.		X				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress, Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.		<del>✓</del>	X			Testing of vacant & blighted properties is routine
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



Jurisdiction Risk - Greentown Twp. (Municipality)

2.5	Drought	>
2.2	Earthquake	>
3.4	Flood, Flash Flood, and Ice Jams	>
2.5	Hailstorms	=
3.1	Invasive Species	=
3.1	Pandemic	<
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	=
3.2	Tornado and Windstorm	=
2.2	Wildfire	>
2.7	Winter Storms	=
1.3	Dam Failure	=
2.6	Environmental Hazards	>
1.9	Nuclear Incidents	=
2.4	Transportation Accidents	<
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

# Hazard Identification and Risk Evaluation Worksheet

Name: Michael Hession

Title: Borough Manager

Jurisdiction: Denver Borough

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	Tropical storm Lee, heavy Summer winds
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	I	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	I	MSY - fuel spills, trucks
Nuclear Incident	NC	
Transportation Accident	I	More vehicles, driving faster

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**

Lancaster County Planning Team  
 Risk Assessment/Capability Assessment Review Meeting

Jurisdiction Risk - Danner-Benoist (Municipality)

2.5	Drought	≠
2.2	Earthquake	≠
3.4	Flood, Flash Flood, and Ice Jams	≠
2.5	Hailstorms	≠
3.1	Invasive Species	≠
3.1	Pandemic	≠
2.3	Radon Exposure	≠
2.1	Subsidence and Sinkholes	>
3.2	Tornado and Windstorm	≠
2.2	Wildfire	<
2.7	Winter Storms	=
1.3	Dam Failure	<
2.6	Environmental Hazards	>
1.9	Nuclear Incidents	≠
2.4	Transportation Accidents	>
3.1	Utility Interruption	>

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



**Capability Assessment Survey**

Jurisdiction: Denver County

Point of Contact Name and Title: Michael Hession, Bond Manager

Phone: 717-336-2831

Email: Mhession@denvercountycolorado.gov

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			Local EMA	
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan	X		X		
NFIP	X				
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X				
Zoning Regulations	X				In process of update is new.





Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2005			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2003			
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	2002			
Stormwater Management Plan / Ordinance	X	2015			
Natural Resource Protection Plan					
Capital Improvement Plan	X				Dispersed. Annual update
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X				Zoning, National Inspection agencies
Fire Code					
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)		X		
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager		X		
NFIP Floodplain Administrator	X		Robt. Nokes / 2011, 14	
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants	X		Adwin A. Stanton	
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Administration	Used Annually
Community Development Block Grants (CDBG)	X			
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X		Administration	
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X		Administration	Severe Incident - 2016
Other				



4. Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X		Lancaster County	
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Emergency Skills Newsletter	
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			Localities Greed Watchdog Association
Other				



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach			X





# Mitigation Strategy 5-Year Mitigation Plan Review

Name: Michael Hessler Title: Book Manager Jurisdiction: Dutton Borough

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		





Mitigation Action Plan Review Worksheet

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X	X		State's De build. Code
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	n/a					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	n/a					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans			X	X		
5.1.2 Reduce the number of miles of impaired streams in the County		X	X			
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					<i>Has this activity been integrated into the municipality's normal operations?</i>
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					<i>Has this activity been integrated into the municipality's normal operations?</i>



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	X		X			Spoke with property owner. Under the state law to relocate the building in 11 months from 1/1/11. The Borough
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





# Hazard Identification and Risk Evaluation Worksheet

Name: **Brian C. Bannon**

Title: **EMC**

Jurisdiction: **Drumore Township, Lancaster County, PA**

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	PBAPS Risk Community
Transportation Accident	NC	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano          |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**



## Capability Assessment Survey

Jurisdiction: **Drumore Township, Lancaster County, PA** Point of Contact Name and Title: **Brian C. Bannon, Drumore EMC**

Phone: **610-299-4703** Email: **DrumoreEMC@gmail.com**

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan				Lancaster County Plan	Coordinated with Lancaster County
Emergency Operations Plan	X	04/2017		Drumore EMC	
Disaster Recovery Plan					
Evacuation Plan	X	2016		Drumore EMC	coordinate evacuation routes, messaging and planning with county and REPP plans
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations					



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Floodplain Management Plan					
Zoning Regulations	X				
Subdivision Regulations	X				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X				
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X				
Fire Code	X				
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)		X		coordinate with county and state
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Drumore EMC	Certified Emergency Manager EMC
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Drumore Township	available by contract or mutual aid
Emergency Manager	X		Drumore EMC	volunteer EMC
NFIP Floodplain Administrator				
Land Surveyors	X			available by contract
Scientists or staff familiar with the hazards of the community	X		Drumore EMC/LCEMA	coordinated with county
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program	X			coordinated with county
Grant writers or fiscal staff to handle large/complex grants				
Staff with expertise or training in Benefit-Cost Analysis				
Other				





**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other		X		



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X		County	
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other		X		



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Brian C. Bannon

Title: EMC

Jurisdiction: Drumore Township, Lancaster County, PA

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	<b>No comments from Drumore</b>
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	<b>No comments from Drumore</b>
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	<b>Consider strengthening the capabilities and capacities of the mostly volunteer response and emergency management community as an objective. Also consider encouraging/facilitating regionalization/mutual aid/combinaton to pool resources</b>
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	<b>Consider managing impervious surfaces, incorporating sustainability and resilience measures.</b>
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	





<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			<i>Has this activity been Integrated into the municipality's normal operations?</i>
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						<i>not applicable at this time</i>
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					<i>Has this activity been Integrated into the municipality's normal operations?</i> <i>Volunteer EMC and deputy EMC Lack sufficient resources to do this work</i>
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations			X			<i>maintained for REPP - not web based due to HPPA/security concerns.</i>
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					<i>no resources to coordinate with PA DOH - defer to LCEMA</i>



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)			X			part of REPP
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					defer to LCEMA
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings					X	Not applicable to Drumore Township
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding					X	Not applicable to Drumore Township
2.2.1 Regularly inspect and maintain bridges and culverts					X	Not applicable to Drumore Township
2.2.2 Require special use permits for hazard-prone areas					X	Not applicable to Drumore Township
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies					X	Not applicable to Drumore Township
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			maintained by EMC
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a					X	Not applicable to Drumore Township



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use					X	Not applicable to Drumore Township
3.2.1 Encourage multi-jurisdictional exercises and drills					X	Not applicable to Drumore Township
3.3.1 Implement the new Lancaster County radio system					X	Not applicable to Drumore Township
3.3.2 Inventory all available equipment and technology used for emergency response					X	Not applicable to Drumore Township
4.1.1 Ensure that the County's dams are structurally sound					X	Not applicable to Drumore Township
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community					X	Not applicable to Drumore Township
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues					X	Not applicable to Drumore Township
5.1.1 Develop and implement source water protection plans					X	Not applicable to Drumore Township
5.1.2 Reduce the number of miles of					X	Not applicable to Drumore



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Impaired streams in the County						Township
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains					X	Not applicable to Drumore Township
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation					X	Not applicable to Drumore Township
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk					X	Not applicable to Drumore Township
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation					X	Not applicable to Drumore Township
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation					X	Not applicable to Drumore Township





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities					X	Not applicable to Drumore Township
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures					X	Not applicable to Drumore Township
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures					X	Not applicable to Drumore Township
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas					X	Not applicable to Drumore Township
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes					X	Not applicable to Drumore Township
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.					X	Not applicable to Drumore Township
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.</p>						
<p>East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.</p>						
<p>Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.</p>						
<p>Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station</p>						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 Intersection is in need of improvement to						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.</p>						
<p>Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.</p>						
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide</p>						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.						
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.						





# Hazard Identification and Risk Evaluation Worksheet

Name: Randa Beeler

Title: Adm/Sec/Treas.

Jurisdiction: Earl Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |  |
|--|--|
| <input type="checkbox"/> Avalanche/Glacier                     | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic                    |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                               |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption                        |
| <input type="checkbox"/> Disorientation                 | <input checked="" type="checkbox"/> <u>War and Criminal Activity</u> |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

drug driven increasing criminal activity.

# Hazard Identification and Risk Evaluation Worksheet

Name: Scott Russell, PE

Title: Manager

Jurisdiction: East Cocalico Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community? <i>NC = No Change; I = Increase; D = Decrease</i> <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
--------------------------------	--	---------------------

Natural Hazards		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
Human-made Hazards		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	13 reportable accidents per year at the Denver Interchange caused by congestion and tourist unfamiliar with the area. Interchange needs to be added to the TIP for Federal funding to build a new interchange.





**Other Comments:**

- Drowning
- Disorientation
- Civil Disturbance
- Building or Structure Collapse
- Levee Failure
- Utility Interruption
- War and Criminal Activity

**Human-Caused**

- Hurricane, Tropical Storm, Nor'easter
- Hailstorm
- Extreme Temperature
- Expansive Soils
- Dust, Sand Storm
- Coastal Erosion
- Avalanche/Glacier
- Invasive Species
- Landslide
- Lightning Strike
- Pandemic
- Tsunami
- Volcano

**Natural**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (if so, please check the box)

**Other Hazards:**

**PART II**

Lancaster County Planning Team  
Risk Assessment/Capability Assessment Review Meeting

Jurisdiction Risk - East Coalinga Township (Municipality)

Drought	2.5	2.2	3.4	2.5	3.1	3.1	2.3	2.1	3.2	2.2	2.7	1.3	2.6	1.9	2.4	3.1
Earthquake	=	=	=	=	=	=	=	>	=	=	* >	=	=	<	* >	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

\* Denver Interchange at 222 and Turnpike is a high accident area and is also a detour route when Turnpike is closed.  
\* Some roads with steep grades

### Capability Assessment Survey

Jurisdiction: **EAST COCALICO TWP.**

Point of Contact Name and Title: **SCOTT RUSSELL, PE**

Phone: **(717) 336-1720**

Email: **Manager@EastCocalicoTownship.com**

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	<b>X</b>			<b>County EMS</b>	
Emergency Operations Plan					
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP		<b>2014</b>			
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	<b>X</b>				
Zoning Regulations	<b>X</b>				





Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				Riparian Buffer Ordinance
Stormwater Management Plan / Ordinance	X	2014			
Natural Resource Protection Plan					
Capital Improvement Plan			X		
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X				
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			Zoning / Becker Engineering / Township Manager
Planners or engineers (with natural and/or human caused hazards knowledge)	X			Zoning / Becker Engineering / Township Manager
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			Zoning / Becker Engineering / Township Manager
Emergency Manager	X			Police Chief
NFIP Floodplain Administrator	X			Rettew Associates
Land Surveyors	X			Rettew Associates
Scientists or staff familiar with the hazards of the community	X			Township Manager
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X			Zoning / Rettew Associates
Grant writers or fiscal staff to handle large/complex grants	X			Township Manager / Rettew Associates
Staff with expertise or training in Benefit-Cost Analysis	X			Township Manager
Other				

**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X			Township Manager
Community Development Block Grants (CDBG)	X			Township Manager / Rettew Associates
Special Purpose Taxes	X			Township Manager
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			ECTA
Stormwater Utility Fees	X			Township Manager
Development Impact Fees	X			Township Manager
General Obligation, Revenue, and/or Special Tax Bonds	X			Township Manager
Partnering Arrangements or Intergovernmental Agreements	X			Township Manager
Other				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification	X			Township Fire Marshall
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.	X		<b>Cocalico Creek Watershed Association</b>	
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		<b>X</b>	
Administrative and Technical Capability		<b>X</b>	
Financial Capability		<b>X</b>	
Education and Outreach		<b>X</b>	

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: SCOTT RUSSELL, PE Title: MANAGER Jurisdiction: East Cocalico Twp.

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions, however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	N/A					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				X		Statewide Building Code adopted.
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			ECT Police
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound			X			
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	N/A					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues		X				Part of MS4 program - PRP
5.1.1 Develop and implement source water protection plans		X				Part of MS4 program - PRP
5.1.2 Reduce the number of miles of impaired streams in the County		X				Part of MS4 program - PRP
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations? Twp. has Riparian Buffer

Ord. that takes into account the 100-year flood plain.





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					Is there County links to be added to the Township website?
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	N/A					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





# Hazard Identification and Risk Evaluation Worksheet

Name: JEFFREY BURTON

Title: TWP. MANAGER

Jurisdiction: EAST DUNELM TWP.

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	I	INCREASE ACTIVITY IN STORMWATER FACILITIES
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Capability Assessment Survey

Jurisdiction: East Donegal Twp.

Point of Contact Name and Title: Terri Joy Butler, Twp. Manager

Phone: 717.426.3167

Email: jeff@eastdonegaltp.com

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			County EMA	
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	3/3/2016		Twp. Zoning	
Floodplain Management Plan	X	3/3/2016		Twp. Zoning	
Zoning Regulations	X	12/2010		Twp. Zoning	





Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X			<i>Twp. Board</i>	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	<i>2011</i>		<i>Regional Plan</i>	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X	<i>2014</i>			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X				
Building Code	X	<i>2007</i>		<i>Twp. Code Officer / Code Administrators</i>	
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Zoning/Code Enforcement	
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager	X		Appointed by Gov.	
NFIP Floodplain Administrator	X		Twp. Zoning Officer	
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				





4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		<i>Tom Newketter Tom. WASSIRE</i>	
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach		X	





## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Tiffany Burton

Title: Twp. Manager

Jurisdiction: East Twp. Berks

*Purpose:* To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

*Instructions:* Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.

**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)			X			Issue Reviewed To Date
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding			X			Requires elevation of structures
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response	X					
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	N/A					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	N/A					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	N/A					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	N/A					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	1					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	NA					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	1					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.	NA					
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>	NA					
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population						
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance		X				Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics				X		
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)				X		
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				Complete		
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	Unknown					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations? <i>yes</i>
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies		X				Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	<del>X</del>	X				
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster		X				
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						<i>EMC - Foe Co,</i>
3.3.1 Implement the new Lancaster County radio system	X					
3.3.2 Inventory all available equipment and technology used for emergency response				X		
4.1.1 Ensure that the County's dams are structurally sound	—					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	—					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues				X		
5.1.1 Develop and implement source water protection plans		X				
5.1.2 Reduce the number of miles of impaired streams in the County		X				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains				X		<i>Has this activity been integrated into the municipality's normal operations?</i>





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation		X				Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation		X				
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities			X			
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	—					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures		K				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes		X				
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



# Hazard Identification and Risk Evaluation Worksheet

Name: William SHARK

Title: GMC

Jurisdiction: EAST GORAL TWP  
TOWNE HALL BLDG

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	D	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	I	
Nuclear Incident	NC	
Transportation Accident	I	

PART II

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species <i>Resistant weas</i> |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike                       |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic  |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami   |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano   |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**

Jurisdiction Risk - EAST BRAC TWP (Municipality)

2.5	Drought	<
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	>
2.5	Hailstorms	=
3.1	Invasive Species	>
3.1	Pandemic	=
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	>
3.2	Tornado and Windstorm	=
2.2	Wildfire	>
2.7	Winter Storms	=
1.3	Dam Failure	=
2.6	Environmental Hazards	>
1.9	Nuclear Incidents	<
2.4	Transportation Accidents	=
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

### Capability Assessment Survey

Jurisdiction: East Earl Township Point of Contact Name and Title: William Shirk, EMC

Phone: 717-314-5496 Email: wjshirk@hotmail.com

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	2014		LEMA	
Emergency Operations Plan	X	2015		EMC	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	2016		Supervisors	
Floodplain Management Plan					
Zoning Regulations	X	2017		Supervisors	





Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2017		Supervisors	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2008		Supervisors	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	2004		Supervisors	
Stormwater Management Plan / Ordinance	X	2014		Supervisors	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	2017		Zoning Officer	
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning commission	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Planning commission	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Zoning officer	
Emergency Manager	X		EMC	
NFIP Floodplain Administrator	X		Zoning officer	
Land Surveyors				
Scientists or staff familiar with the hazards of the community	X		Planning commission	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		<b>Supervisors</b>	
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X			
Special Purpose Taxes	X			
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X			
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		

# Mitigation Strategy 5-Year Mitigation Plan Review

+ *Traer-Hill 5200*

Name: William Shirk Title: EMC

Jurisdiction: East Earl Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?





**Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.**



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			x			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	x					
1.2.2 Ensure safety buffer between industrial facilities and population			x			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			x			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	x					
1.4.2 Coordinate with PA DOH on issues related to pandemics	x					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	x					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	xx					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system		X				
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans				X		
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			

Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes			X			
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 Intersection.		x				Pointed info to landowners
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Diane Garber Title: Emerg Servs Coord

Jurisdiction: E. Hempfield Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	<del>I</del> NC	
Environmental Hazards	I	
Nuclear Incident	NC	
Transportation Accident	I	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |  |
|--|--|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species    |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide           |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike    |
| <input type="checkbox"/> Expansive Soils                       | <input checked="" type="checkbox"/> Pandemic |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami             |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano             |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input checked="" type="checkbox"/> Civil Disturbance   | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

### Capability Assessment Survey

Jurisdiction: EAST EHMFIELD TWP Point of Contact Name and Title: DIANE GARBER – EMERGENCY SERVICES COORDINATOR

Phone: 7178983100 X268 Email: EHTEMA@EASTHEMPFIELD.ORG

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					<b>NO</b>
Emergency Operations Plan	X				
Disaster Recovery Plan			X		
Evacuation Plan			X		
Continuity of Operations Plan			X		
NFIP	X	4/2016		Planning Dept	
NFIP – Community Rating System	X	4/2016		Planning Dept	
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	4/2016		Planning Dept	
Floodplain Management Plan	X	4/2016		Planning Dept	
Zoning Regulations	X	4/2016		Planning Dept	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	4/2016		Planning Dept	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	4/2016		Planning Dept	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	4/2016		Planning Dept	
Stormwater Management Plan / Ordinance	X	4/2016		Planning Dept	
Natural Resource Protection Plan			X	Planning Dept	
Capital Improvement Plan			X	Planning Dept	
Economic Development Plan			X	Planning Dept	
Historic Preservation Plan			X	Planning Dept	
Farmland Preservation	X			Planning Dept	
Building Code	X			Planning Dept	
Fire Code					NO
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning Dept	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Planning Dept	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X	Twp Engineer	Consultant
Emergency Manager	X		Emergency Services - Admin	
NFIP Floodplain Administrator	X		Planning Dept	
Land Surveyors		X	Twp Engineer	Consultant
Scientists or staff familiar with the hazards of the community		X	Twp Engineer	Consultant
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program	X		Planning Dept	
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis	X		Finance Dept	
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State or Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Planning Dept	
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements	X		Twp Manager/Asst Manager	
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs	X		EMERGENCY SERVICES	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		EMERGENCY SERVICES	
Public-private partnership initiatives addressing disaster-related issues	X		EMERGENCY SERVICES	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		EMERGENCY SERVICES	
Other				



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability			X
Financial Capability			X
Education and Outreach		X	



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Jurisdiction: \_\_\_East Hempfield \_\_\_\_\_

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	





Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	X					Has this activity been integrated into the municipality's normal operations?
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2. Ensure safety buffer between industrial facilities and population	X					
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2. Coordinate with PA DOH on issues related to pandemics	X					
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts	X					Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1. Encourage multi-jurisdictional exercises and drills	X					
3.3.1. Implement the new Lancaster County radio system	X					
3.3.2. Inventory all available equipment and technology used for emergency response	X					
4.1.1. Ensure that the County's dams are structurally sound	X					
4.1.2. Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1. Continue mitigation efforts/programs already in place to address flooding issues	X					
5.1.1. Develop and implement source water protection plans	X					
5.1.2. Reduce the number of miles of impaired streams in the County	X					
5.2.1. Coordinate with the municipal zoning boards to stop growth in floodplains	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	X					MS4 Planning Changed the priority of this project but it remains on the list



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: TARA HITCHENS

Title: DIRECTOR OF PLANNING

Jurisdiction: EAST LANCASTER TOWNSHIP

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	BURN ORDINANCE REMAINS IN EFFECT / FOLLOW COUNTY BURN NOTICE
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	INCREASE	① GREENFIELD ROAD AT AMTRAK OVERPASS ② ROUTE 30
Radon	NC	
Subsidence, Sinkhole	NC	RECORD OCCURRENCES, THUS MORE AWARE OF EXISTENCE
Tornado, Windstorm	NC	TORRENTIAL RAIN OF 7" FLOODED ROUTE 30 AT BYPASS + DUTCH WOODLANDS IN 240L
Wildfire	NC	
Winter Storm	NC	CONTINUE TO RECEIVE REIMBURSEMENT FOR DISASTER RELATED STORMS
<b>Human-made Hazards</b>		
Dam Failure	NC	2 ALONG MILLCREEK - RELY ON DEP INSPECT
Environmental Hazards	NC	SPOTTED LANTERN FLY PENNDOT OIL SPILL INTO STREAM
Nuclear Incident	NC	
Transportation Accident	INCREASE	SUBJECTIVE, I HAVE NO DATA TO BACK THIS AT THIS PARTICULAR TIME

- ① Route 30 School BUS ACCIDENT
- ② MILLSTREAM RD AT RT. 30
- ③ ROUTE 30 AT BYPASS
- ④ ROUTE 340 - Pedestrian/vehicular issues
- ⑤ NEW HOLLAND PIKE (RT 23) - Pedestrian/vehicular issues
- ⑥ Tractor trailer traffic along Route 30
- ⑦ Amtrak + Norfolk Southern - derailment potential environmental hazards
- ⑧ Airport Issues @ plane through barn on Rt. 340
- ⑨ Ultralight crash beyond Mount Sidney Road
- ⑩ plane down on Startlight Drive
- ⑪ plane crash into hanger & burnt
- ⑫ hanger fire



PART II

Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse   | <input type="checkbox"/> Levee Failure   |
| <input checked="" type="checkbox"/> Civil Disturbance<br>- Dignitary Visits<br>- Lancaster Host<br>- Conference center | <input checked="" type="checkbox"/> Utility Interruption<br>- Two use of generators for traffic signals but would need Penn DOT signs for reroute/departures<br>- PW Building could be a shelter   |
| <input type="checkbox"/> Disorientation<br>- Pipeline protestors<br>- Animal rights protestors                         | <input checked="" type="checkbox"/> War and Criminal Activity<br>- Prostitution on Rt. 3<br>- Significant retail theft<br>- Opioid use increase resulting in<br>o theft increase<br>o human trafficking<br>o robbery      o pharmacy fraud |
| <input type="checkbox"/> Drowning  |  |

Other Comments:

EAST LANPETER TOWNSHIP SAW A HOUSE EXPLODE DUE TO A PROPANE EXPLOSION, OTHER AREAS OF COUNTY SAW THE SAME TYPES OF EVENTS WITH NATURAL GAS, THUS RESULTING IN UTILITY INTERRUPTION.





Jurisdiction Risk - EAST LANCASTER TOWNSHIP (Municipality)

Drought	2.5	>
Earthquake	2.2	=
Flood, Flash Flood, and Ice Jams	3.4	>
Hailstorms	2.5	=
Invasive Species	3.1	=
Pandemic	3.1	=
Radon Exposure	2.3	=
Subsidence and Sinkholes	2.1	>
Tornado and Windstorm	3.2	=
Wildfire	2.2	=
Winter Storms	2.7	=
Dam Failure	1.3	>
Environmental Hazards	2.6	=
Nuclear Incidents	1.9	<
Transportation Accidents	2.4	>
Utility Interruption	3.1	>

Significant  
 water geology

Esp. when related or in  
 conjunction w/ traffic  
 or transportation  
 accidents

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

ASIDE

LOOK AT / CONSIDER THE FOLLOWING SOURCES OF DATA FOR TRANSPORTATION

- ① MPO TOP 25 HIGH CRASH LOCATIONS
- ② STATE WIDE HIGH CRASH LOCATIONS
- ③ FHWA - TO EACH STATE SAFETY IMPLEMENTATION PLAN

**Capability Assessment Survey**

Jurisdiction: EAST LANPETER TOWNSHIP

Point of Contact Name and Title: TARA HITCHENS

Phone: 717-393-1567 x3505

Email: hitchens@eastlanpeter-township.org

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool/Program	In Place	Status		Under Development	Dept./Agency Responsible	Comments
		Date Adopted or Updated				
EXAMPLE: Hazard Mitigation Plan	X	4/1/2008			Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan						
Emergency Operations Plan	X	6/4/03			TWP BOS	
Disaster Recovery Plan						
Evacuation Plan						
Continuity of Operations Plan						
NFIP						
NFIP - Community Rating System						
Floodplain Regulations (Spec. NFIP Flood Damage Prevention Ordinance)	X	8/2017			EAST LANPETER TWP	As part of zoning ordinance
Floodplain Management Plan						
Zoning Regulations	X	8/2017			EAST LANPETER TWP	



Capability Assessment Survey

Tool / Program	Status		Development	Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated			
Subdivision Regulations	X			Twp BOS	currently updating
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X			Twp BOS	part of 2003 comes together valley regional plan and 2007 growing together
Open Space Management Plan (or Parks/Rec or Greenways Plan)	✓		X	Twp BOS + Parks Board	
Stormwater Management Plan / Ordinance	X			Twp BOS	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X			Twp BOS	
Fire Code	X			Twp BOS	
Other - IPMC				Twp BOS	



Capability Assessment Survey

2. Administrative and Technical Capability: Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			
Planners or engineers (with natural and/or human caused hazards knowledge)	X			
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager				
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X			
Grant writers or fiscal staff to handle large/complex grants				
Staff with expertise or training in Benefit-Cost Analysis				
Other				



Capability Assessment Survey

3. Financial Capability: Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for hazard mitigation purposes (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
Community Development Block Grants (CDBG)				
Special Purpose Taxes				
Gas / Electric Utility Fees				
Water / Sewer Fees	X			
Stormwater Utility Fees				
Development Impact Fees				
General Obligation, Revenue, and/or Special Tax Bonds				
Partnering Arrangements or Intergovernmental Agreements				
Other				



4. Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification				
StormReady certification	X		COUNTY	
Natural disaster or safety related school programs				
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Stormwater management and shelters	
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.	K		watered groups for Millerick + Pegasus	
Other				





Capability Assessment Survey

5. Self-Assessment of Capability: Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach	X		

;



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: TRAA HITCHENS

Title: DIRECTOR OF PLANNING

Jurisdiction: EAST LAMPETER TWP

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
Goal 1	Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	
Goal 2	Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						
1.2.2 Ensure safety buffer between industrial facilities and population						
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance						Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Completed	Completed	Discontinued		
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						Dept. of Labor + Industry
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts						
2.2.2 Require special use permits for hazard-prone areas			X			through zoning ordinance
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						Has this activity been integrated into the municipality's normal operations? County GIS
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress/Unknown	In Progress/Not Yet Complete	Ongoing	Complete	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						
3.3.1 Implement the new Lancaster County radio system			X			
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						Here bridge (covered) being removed on Reigan Creek
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues						
5.1.1 Develop and implement source water protection plans						
5.1.2 Reduce the number of miles of impaired streams in the County						
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations? Municipal zoning ordinance



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continues	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations? throughout program
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures						
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.						
Caernarvon Township - Municipally-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Completed	Continued	Completed	Discontinued	
<p><b>Columbia Borough - Radon Hazard Testing -</b> Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.</p>						
<p><b>Denver Borough - Denver Beer Distributor Relocation -</b> The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.</p>						
<p><b>East Earl Township - Shilka Run Diversion -</b> Work with landowners to reduce the possibility of flooding damage in an area east of Shilka Run at the Route 322 and Route 29 interchange.</p>						
<p><b>East Hempfield Township - Culvert Replacement -</b> Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Noll Rd. The three roads are subject to frequent flooding due to undersized culverts.</p>						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	Progress / Underway	In Progress / Not Yet Completed	Completed	Discontinued		
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 Intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiansa Borough watershed.						



Mitigation Strategy 5 Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continued	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Robin Hemperly Title: Manager

Jurisdiction: East Petersburg Borough

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	I	We have a water system dependent on wells
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	I	Increased localized developments
Tornado, Windstorm	I	We have five traffic light on two major highways
Wildfire		
Winter Storm	I	We seem to get more large storms
<b>Human-made Hazards</b>		
Dam Failure	D	HAS BEEN ALOT OF LOW HEAD DAMS REMOVED
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	I	We are in the path of airport We are on the border of rail road

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Capability Assessment Survey**

Jurisdiction: EAST PETERSBURG BOROUGH

Point of Contact Name and Title: Robin Herpaly, Manager

Phone: 717-529-9282

Email: therpaly@eastpetersburgborough.org

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/11/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	?			Very old.
Emergency Operations Plan	X	?	X	County's Emergency Dept + Domic Carbon	Our Fire Company has one
Disaster Recovery Plan	X				
Evacuation Plan	X				
Continuity of Operations Plan	X				" "
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP)					
Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X	2016		East Peter Bord Arns East Peter Bord	
Zoning Regulations	X	9/2016		East Peter Bord Arns East Peter Bord	



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2016		East Petersburg Board	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)					
Open Space Management Plan (or Parks/Rec or Greenways Plan)			X	Arno Consulting	
Stormwater Management Plan / Ordinance	X	2016		East Petersburg Board	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	2016		East Petersburg Board	
Fire Code					
Other					





2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Arro Consulting Land Studies	
Planners or engineers (with natural and/or human caused hazards knowledge)				
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Arro Consulting	
Emergency Manager	X		ASST Debra Barber	
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Arro Consulting	for our service hubs
Grant writers or fiscal staff to handle large/complex grants	X		East Pottsville Borough Land Studies	
Staff with expertise or training in Benefit-Cost Analysis				
Other				

3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		we never qualify above any. budget issues
Special Purpose Taxes	X			Fire Tax
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X		Water Department	ATRO CONSULTING ON STATE
Stormwater Utility Fees		X		
Development Impact Fees	X		East Gate Boro	Open Space Fee
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				



4. Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X	<del>X</del>	Under County level	
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		East Gettysburg	on own Web Site
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				

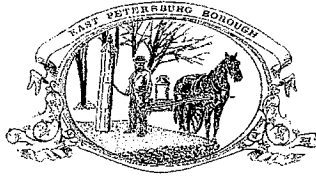


5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach	X		



EAST PETERSBURG BOROUGH



January 11, 2018

Lancaster County EMA  
Attn: Randall Gockley  
P.O. Box 219  
Manheim, PA 17545-0219

RE: Lancaster County Hazard Mitigation Plan – 2017-2018 Update

Dear Mr. Gockley,

Enclosed please find the original worksheet, completed, for East Petersburg Borough.  
We answered to the best of our ability.

Please let me know if you have any questions.

Regards,



Robin Hemperly  
Manager

CC: EMA Coordinator  
EMA plan file

6040 MAIN STREET  
EAST PETERSBURG PA 17520  
PHONE (717) 569-9282  
FAX (717) 569-3731

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Robin Kempsey

Title: Manager

Jurisdiction: EAST PETERSBURG BOROUGHS

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			✓			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	✓					
1.2.2 Ensure safety buffer between industrial facilities and population			✓			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	✓					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations		✓				
1.4.2 Coordinate with PA DOH on issues related to pandemics	✓					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	✓					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	✓					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			✓	✓		
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	✓					EAST Pate has VERY little flooding
2.2.1 Regularly inspect and maintain bridges and culverts		✓				Has this activity been integrated into the municipality's normal operations? No East Pate
2.2.2 Require special use permits for hazard-prone areas						NO ones like this
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			✓			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			✓			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			✓			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
3.2.1 Encourage multi-jurisdictional exercises and drills			✓			with Dan Fine Co. and EMA.
3.3.1 Implement the new Lancaster County radio system				✓		
3.3.2 Inventory all available equipment and technology used for emergency response			✓	✓		
4.1.1 Ensure that the County's dams are structurally sound	N/A					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	N/A					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	N/A					
5.1.1 Develop and implement source water protection plans			✓	✓		
5.1.2 Reduce the number of miles of impaired streams in the County			✓	✓		
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	N/A					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	✓					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk		✓				Our website will post TIPS prior to an event if applicable
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	N/A					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	N/A					Our school clubs their own
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	N/A					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	N/A					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	N/A					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	N/A					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	✓					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.		✓				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	N/A					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





Lods on Dumpster +  
Community Center LFD

Robert

State J.

# Hazard Identification and Risk Evaluation Worksheet

Name: Silvia Trounman

Title: Secretary/Treasurer

Jurisdiction: Eden Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	



**PART II**

**Other Hazards:** N/A

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

**Human-Caused** N/A



- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Jurisdiction Risk -

*EDEN TWP*

(Municipality)

	2.5	Drought	>
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	>
	2.5	Hailstorms	=
	3.1	Invasive Species	=
	3.1	Pandemic	=
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	<
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	<
	2.7	Winter Storms	
	1.3	Dam Failure	=
	2.6	Environmental Hazards	>
	1.9	Nuclear Incidents	
	2.4	Transportation Accidents	=
	3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

### Capability Assessment Survey

Jurisdiction: Eden Township

Point of Contact Name and Title: Silvie Trouman / Secretary/Treasurer

Phone: 717-386-7915

Email: edentype@concast.net

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan	X				
Continuity of Operations Plan					
NFIP					
NFIP - Community Rating System					
Floodplain Regulations (Spec. NFIP Flood Damage Prevention Ordinance)	X	2/2016			
Floodplain Management Plan	X	2/2016			
Zoning Regulations	X	1/2004			



Capability Assessment Survey

Tool/Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	3/2016			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)			X		
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	5/2014			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	1/2005			
Fire Code					
Other					





2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning Commission	
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Light-Heigel Eng. Code Administrators Inc.	
Emergency Manager	X			
NFIP Floodplain Administrator	X		Zoning Officer	
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Twp Engineer Zoning Officer	
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

<b>Financial Resources</b>	<b>Yes</b>	<b>No</b>	<b>Department/Agency</b>	<b>Comments</b>
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other		X		



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X			County level.
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X	X	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X	X		
Other		X		



Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach		X	



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Silvia Troshman Title: Secretary/Treasurer Jurisdiction: Eden Twp

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations? <b>Yes</b>
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance		X				Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						

*to be included in worksheet*



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			based on County data
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use						Has this activity been integrated into the municipality's normal operations?



Existing Mitigation Action	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						
3.3.1 Implement the new Lancaster County radio system		X				
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues						
5.1.1 Develop and implement source water protection plans						
5.1.2 Reduce the number of miles of impaired streams in the County						
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations? Yes



<b>Existing Mitigation Action</b>	<b>Status</b>					<b>Review Comments</b>
	<b>No Progress/ Unknown</b>	<b>In Progress/ Not Yet Complete</b>	<b>Continuous</b>	<b>Completed</b>	<b>Discontinued</b>	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation						Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?





<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures.			X			
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.			X			
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



<b>Existing Mitigation Action</b>	<b>Status</b>					<b>Review Comments</b>
	<b>No Progress/ Unknown</b>	<b>In Progress/ Not Yet Complete</b>	<b>Continuous</b>	<b>Completed</b>	<b>Discontinued</b>	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

<i>Existing Mitigation Action</i>	Status					Review/Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



<i>Existing Mitigation Action</i>	Status					Review Comments
	No Progress/ Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Glenn Martin

Title: Road Supt.

Jurisdiction: Elizabeth Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	D	speed well lake dam was re-made, reinforced
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	





**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano          |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |   |
|---|---|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption                 |
| <input type="checkbox"/> Disorientation                 | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |   |

**Other Comments:**

### Capability Assessment Survey

Jurisdiction: Elizabeth Township

Point of Contact Name and Title: Glen Martin / Rod Spt.

Phone: 717-626-4302

Email: glen.martin@elizabeth-township.net

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status		Date Adopted or Updated	Under Development	Dept./Agency Responsible	Comments
	In Place	Not In Place				
EXAMPLE: Hazard Mitigation Plan	X		1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X		2014		Lancaster County EMA	
Emergency Operations Plan	X		6/19/2003		Elizabeth Twp	
Disaster Recovery Plan						
Evacuation Plan						
Continuity of Operations Plan						
NFIP						
NFIP – Community Rating System						
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)						
Floodplain Management Plan						
Zoning Regulations	X					



Tool / Program	Status		Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated		
Subdivision Regulations				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X			
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X			
Stormwater Management Plan / Ordinance	X			
Natural Resource Protection Plan	X			
Capital Improvement Plan	X			
Economic Development Plan	X			
Historic Preservation Plan	X			
Farmland Preservation	X			
Building Code	X			
Fire Code	X			
Other				



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
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 (includes building inspectors)		✓		
Emergency Manager		✓		
NFIP Floodplain Administrator		✓		
Land Surveyors		✓		
Scientists or staff familiar with the hazards of the community		✓		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		✓		
Grant writers or fiscal staff to handle large/complex grants		✓		
Staff with expertise or training in Benefit-Cost Analysis		✓		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		✓		
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				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization				Department/Agency		Comments
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						





**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Financial Capability			X
Education and Outreach			X



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Shawn Martin

Title: Road Dept

Jurisdiction: Elizabeth Twp.

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

	<b>Existing Goals and Objectives</b>	<b>Comments</b>
Goal 1	Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	
Goal 2	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



Mitigation Action Plan Review Worksheet

Instructions: List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	In Progress / Not Yet Complete	Completed	Discontinued	Unknown	Comments	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	✓					Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	✓					
1.2.2 Ensure safety buffer between industrial facilities and population	✓					
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance		✓				Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	✓					
1.4.2 Coordinate with PA DOH on issues related to pandemics	✓					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	✓					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	✓					





Mitigation Strategy 5-Year Mitigation Plan Review

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Has this activity been integrated into the municipality's normal operations?
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings												
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding												
2.2.1 Regularly inspect and maintain bridges and culverts												Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas												
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies												Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County												
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster												
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use												Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy	Status		Has this activity been integrated into the municipality's normal operations?
	Continuous	Completed	
3.2.1 Encourage multi-jurisdictional exercises and drills			
3.3.1 Implement the new Lancaster County radio system			
3.3.2 Inventory all available equipment and technology used for emergency response			
4.1.1 Ensure that the County's dams are structurally sound			
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community			
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			
5.1.1 Develop and implement source water protection plans			
5.1.2 Reduce the number of miles of impaired streams in the County			
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains		✓	

*Has this activity been integrated into the municipality's normal operations?*



	Status	Priority	Funding	Timeline	Responsible Party	Notes
<p>6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation</p>	✓					<p>Has this activity been integrated into the municipality's normal operations?</p>
<p>6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk</p>						
<p>6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation</p>						
<p>6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation</p>						
<p>6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities</p>						
<p>6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures</p>	✓					<p>Has this activity been integrated into the municipality's normal operations?</p>



		Status		
		Continuous		
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas				
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes				
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.				
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.				
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.				
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.				



Mitigation Strategy 5-Year Mitigation Plan Review


	Status				
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.					



		Status				
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.		Continuous				
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





							
<p>Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.</p>							
<p>Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.</p>							
<p>Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.</p>							
<p>Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.</p>							



Mitigation Strategy 5-Year Mitigation Plan Review

		Status				Review Comments
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>		Continuous				
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Warren Mueller Jr Title: coordinator

Jurisdiction: Elizabethtown Regional E.M.A

*Elizabethtown Borough*

*West Donegal Township Mt Joy Township* **PART I**

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	<i>NC</i>	
Earthquake	<i>NC</i>	
Floods, Flash Floods, and Ice Jams	<i>Increase</i>	<i>Projects in place for mitigation.</i>
Radon	<i>NC</i>	
Subsidence, Sinkhole	<i>NC</i>	
Tornado, Windstorm	<i>I increase.</i>	
Wildfire	<i>NC</i>	
Winter Storm	<i>I increase</i>	
<b>Human-made Hazards</b>		
Dam Failure	<i>NC</i>	
Environmental Hazards	<i>NC</i>	
Nuclear Incident	<i>NC</i>	
Transportation Accident	<i>NC</i>	

## PART II

### Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

#### *Natural*

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

#### *Human-Caused*

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

#### Other Comments:

## Hazard Identification and Risk Evaluation Worksheet

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Jurisdiction: ELIZABETH TOWNSHIP

### PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**





Capability Assessment Survey

Jurisdiction: ELIZABETHTOWN Point of Contact Name and Title: Warren Mueller, Regional EMA Coordinator  
 Phone: \_\_\_\_\_ Email: w\_muellerjr@msn.com

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Hazard Mitigation Plan	X	4/1/2017		EMA	
Emergency Operations Plan	X	4/1/2017		Emergency Mgmt	
Disaster Recovery Plan	X	4/1/2017		EMA	
Evacuation Plan	X	4/1/2017		EMA	
Continuity of Operations Plan	X	4/1/2017		EMA	
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	2016		Elizabethtown Borough	
Floodplain Management Plan					
Zoning Regulations	X	2016		Elizabethtown Borough	

Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2008		Elizabethton Borough	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2010		Elizabethton Borough, Mount Joy Twp, West Donegall Twp, Conoy Twp	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	2010			within the Regional Strategic Plan and Zoning Ordinance
Stormwater Management Plan / Ordinance	X	2013		Elizabethton Borough	
Natural Resource Protection Plan					
Capital Improvement Plan	X	2018		Elizabethton Borough	
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					N/A
Building Code	X			Labor & Industry	
Fire Code	X			Labor & Industry	
Other					



Capability Assessment Survey

2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Elizabethton Borough	
Planners or engineers (with natural and/or human caused hazards knowledge)				
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Elizabethton Borough	Third party - Commonwealth Code Hanover Engineering
Emergency Manager	X		Emergency Mgmt	Warren Mueller
NFIP Floodplain Administrator	X		Elizabethton Borough	
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Elizabethton Borough	
Grant writers or fiscal staff to handle large/complex grants	X		Elizabethton Borough	
Staff with expertise or training in Benefit-Cost Analysis				
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for **hazard mitigation purposes** (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Elizabethton Borough	
Community Development Block Grants (CDBG)				
Special Purpose Taxes				
Gas / Electric Utility Fees				
Water / Sewer Fees	X		Elizabethton Borough	EB - sewer Elizabethton Area Water Authority - water
Stormwater Utility Fees				
Development Impact Fees				
General Obligation, Revenue, and/or Special Tax Bonds	X		Elizabethton Borough	
Partnering Arrangements or Intergovernmental Agreements	X		Elizabethton Borough	Regional EMA with West Donegal Twp and Mount Joy Township
Other				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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)	X		Elizabethtown Fire Dept Emergency Mgmt	
Public-private partnership initiatives addressing disaster-related issues	X		Elizabethtown Fire Dept Emergency Mgmt	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			
Administrative and Technical Capability			
Financial Capability			
Education and Outreach			





# Hazard Identification and Risk Evaluation Worksheet

Name: Wm. L. HARVEY

Title: 09 Aug 2017

Jurisdiction: Ephrata Boro

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, <u>Sinkhole</u>	INCREASE (Awareness)	Nov 2016 - large use more awareness / more reports
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	Increased (slightly)	more business factories
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

NA

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

**Human-Caused**

NA

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

# Hazard Identification and Risk Evaluation Worksheet

Name: William L. Harvey Title: Emergency Management Coordinator

Jurisdiction: Ephrata Borough

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	Increased	Two events - 2017 & 2017
Tornado, Windstorm	Increased	2017 straight line winds
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |  |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Nor’easter – several winter storms in recent years**

**Invasive Species – in quarantine area for Spotted Lanternfly**

## Capability Assessment Survey

Jurisdiction: Ephrata Borough

Point of Contact Name and Title: William L. Harvey

Phone: 717-738-9200 x200

Email: [harveyww@police.co.lancaster.pa.us](mailto:harveyww@police.co.lancaster.pa.us)

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan	X	4/17/2018		Ephrata Office of Emergency Management	Constantly reviewed & updated
Disaster Recovery Plan	X	4/17/2018		Ephrata Office of Emergency Management	Constantly reviewed & updated
Evacuation Plan	X	4/17/2018		Ephrata Office of Emergency Management	Constantly reviewed & updated
Continuity of Operations Plan	X	4/17/2018		Ephrata Office of Emergency Management	Constantly reviewed & updated
NFIP	X	4/19/2005		Codes and Engineering	
NFIP – Community Rating System	na				
Floodplain Regulations (spec. NFIP)	X	3/14/2016		Codes and Engineering	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X	3/14/2016		Codes and Engineering	
Zoning Regulations	X	9/20/1989 amended 4/8/1996		Codes and Engineering	Currently working on revising the zoning ordinance
Subdivision Regulations	X	3/13/2000		Codes and Engineering	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	9/8/2014		Codes and Engineering	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	na				
Stormwater Management Plan / Ordinance	X	11/11/2013		Codes and Engineering	
Natural Resource Protection Plan	na				Some elements are within the zoning ordinance
Capital Improvement Plan	X	12/11/2017		Engineering and Public Works	A 5 year Capital plan is in place and is reviewed and adjusted annually
Economic Development Plan			X	Ephrata Development Organization	A newly created community organization will be addressing this. The Borough sits on the board and provides some of the funding.
Historic Preservation Plan	na				We will be looking at this with the zoning ordinance rewrite
Farmland Preservation	NA				Urbanized area. Very limited farmland





Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Building Code	X	6/14/2004		Codes	
Fire Code	X	6/14/2004		Codes	
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Engineering	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Engineering	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Codes and Engineering	
Emergency Manager	X		<b>Ephrata Office of Emergency Management</b>	William L Harvey – EMC Paul Swangren – Deputy EMC
NFIP Floodplain Administrator	X		Engineering	Nancy Harris – Planning and Engineering Manager
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community	X		<b>Ephrata Office of Emergency Management</b>	William L Harvey – EMC Paul Swangren – Deputy EMC
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program	X		Engineering/Public Works	
Grant writers or fiscal staff to handle large/complex grants		X		<b>Boro CFO</b>
Staff with expertise or training in Benefit-Cost Analysis	X		<b>Ephrata Borough - staff</b>	<b>Boro CFO</b>
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Engineering	
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X		Ephrata Office of Emergency Management	Through NOAA State College
Natural disaster or safety related school programs	X		Ephrata Office of Emergency Management Ephrata Area School District and Ephrata Police SRO	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Ephrata Office of Emergency Management. Pioneer Fire Co and Lincoln Fire Co	
Public-private partnership initiatives addressing disaster-related issues	X		Complete Restorations works closely with police and fire projects	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Ephrata Area Repeater Society – HAM radio	Participants with Lancaster Co's EMA 2 meter Emergency Net
Other	X		Ephrata Police Department	Crime Prevention and Safety Programs

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach		X	

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: William L. Harvey

Title: Emergency Management Coordinator

Jurisdiction: Ephrata Borough

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Ongoing with review of building and zoning permit applications
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					No funds available for acquisition
1.2.2. Ensure safety buffer between industrial facilities and population			X			Regulations in the zoning ordinance – ongoing review
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			As residents in flood prone areas apply for permits or contact the municipality we review it verbally with them
1.4.1. Create and maintain a web-based inventory of the County’s access and functional needs population to strengthen emergency response and evacuation operations		X	X			Quarterly updates of medical certifications requiring electric power
1.4.2. Coordinate with PA DOH on issues related to pandemics			X			Pandemics 2007, Avian Flu2015 , Swine Fly 20016
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	NA					Not in any EPZ Zones
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters			X			Distribution points at Ephrata High School



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				X		Enforce PA UCC to require sprinklers in multi-family and required commercial/industrial properties
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					No funding available to acquire properties
2.2.1 Regularly inspect and maintain bridges and culverts			X			PennDOT inspects the one locally owned bridge every 2 years. Culverts inspected annually by borough staff
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Most information regarding parcels is obtained from the county.
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			All critical facilities within the borough are mapped on our GIS
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			All facilities are inspected annually by insurance carriers as well as ongoing inspections by personnel using/servicing the facilities



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.1.1. Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Multiple departments maintain information. There is no policy for sharing
3.2.1. Encourage multi-jurisdictional exercises and drills			X			Recent Active Shooter Event full scale exercise at Ephrata Wells span
3.3.1. Implement the new Lancaster County radio system				X		P25 Project completed
3.3.2. Inventory all available equipment and technology used for emergency response			X			Yearly updates on rolling stock and equipment
4.1.1. Ensure that the County's dams are structurally sound			X			Borough owned dams are inspected regularly
4.1.2. Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1. Continue mitigation efforts/programs already in place to address flooding issues			X			Encourage mitigation efforts for redevelopments
5.1.1. Develop and implement source water protection plans			X			Plan dated June 6, 2014
5.1.2. Reduce the number of miles of impaired streams in the County			X			Follow requirements of the MS4 permit
5.2.1. Coordinate with the municipal zoning boards to stop growth in floodplains			X			The Zoning Officer updates the Zoning Hearing Board on coordination efforts





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation			X			Strong relationship with BR Channel 11 and Ephrata Review on all hazards approach to public safety
6.1.4 Utilize existing programs for school education on hazards, hazard safety, and mitigation			X			EPD Officer that serves as SRO to local school district has taken on all- hazards approach to overall school safety
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					Not in EPZ zone
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<b>Ephrata Borough</b> - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.	X					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
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Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





# Hazard Identification and Risk Evaluation Worksheet

Name: Steven A. Sawyer Title: Township Manager

Jurisdiction: Ephrata Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami          |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                            | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                                  |   |

**Other Comments:**

## Capability Assessment Survey

Jurisdiction: Ephrata Township Point of Contact Name and Title: Steven A. Sawyer, Township Manager

Phone: 717-733-1044 Email: ssawyer@ptd.net

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	
Emergency Operations Plan	X	8/5/2014		Ephrata Township EMA	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	3/1/2016		Ephrata Township Zoning	
Floodplain Management Plan					
Zoning Regulations	X	2/8/2000		Ephrata Township Zoning	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	x	2/8/2000		Ephrata Township Planning	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	x	2/18/1992		Ephrata Township	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	x	1993		Ephrata Township	
Stormwater Management Plan / Ordinance	x	5/6/2014		Ephrata Township Zoning and Planning	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	x	4/6/2004		Ephrata Township Building Code Official and Zoning	
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Ephrata Township Planning Dept	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Ephrata Township Engineering Firm	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Ephrata Township engineer and ABL Associates	
Emergency Manager	X		Ephrata Township EMA	
NFIP Floodplain Administrator	X		Ephrata Township Zoning Officer	
Land Surveyors	X		Ephrata Township Engineering Firm	
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Ephrata Township staff and engineering firm	
Grant writers or fiscal staff to handle large/complex grants	X		Ephrata Township staff	
Staff with expertise or training in Benefit-Cost Analysis		X		
Other		X		

**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Ephrata Township Supervisors	
Community Development Block Grants (CDBG)	X		Lancaster County CDBG	
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X		Ephrata Township Supervisors	
Partnering Arrangements or Intergovernmental Agreements	X		Ephrata Township Supervisors	
Other		X		





**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs	X		Ephrata School Resource Officer	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Ephrata Township Website	
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other		X		



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach		X	

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Steven A. Sawyer Title: Township Manager Jurisdiction: Ephrata Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	<b>No suggested changes</b>
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	<b>No suggested changes</b>
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	<b>No suggested changes</b>
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	<b>No suggested changes</b>
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	<b>No suggested changes</b>
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	<b>No suggested changes</b>
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			All new infrastructure is reviewed to ensure that it is located out of hazard prone areas.
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space		X				
1.2.2. Ensure safety buffer between industrial facilities and population			X			
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Information as sent to all property owners whose property was being effected by the new FEMA floodplain maps.
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2. Coordinate with PA DOH on issues related to pandemics	X					
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	x					
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			x			Enforcement of the PA State-Wide Building Code
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding		x				Ephrata Township purchased one property in floodplain and demolished the structure
2.2.1 Regularly inspect and maintain bridges and culverts			x			All bridges and culverts are inspected
2.2.2 Require special use permits for hazard-prone areas			x			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	x					
2.3.1 Create and maintain a database and map of all critical facilities in the County	x					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			x			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			x			Shared GIS data between Ephrata Borough and Ephrata Township



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system	X					
3.3.2 Inventory all available equipment and technology used for emergency response			X			Completed as part of the Emergency Operations Plan
4.1.1 Ensure that the County's dams are structurally sound		X				
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			Through enforcement of the Floodplain regulations contained in the Zoning Ordinance
5.1.1 Develop and implement source water protection plans			X			Through the Ephrata Area Joint Water Authority Plan
5.1.2 Reduce the number of miles of impaired streams in the County		X				Through the Ephrata Township MS4 Program and the Ephrata Township Pollution Reduction Plan
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Enforce Floodplain Regulations that prohibit new development in floodplains



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	x					
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	x					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	x					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	x					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	x					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	x					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	X					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	X					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	X					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.	x					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	x					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	x					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	x					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.	x					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	x					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	x					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	x					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.	xx					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.	x					
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	xx					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.	x					
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	x					



# Hazard Identification and Risk Evaluation Worksheet

Name: SCOTT N. OSBORNE

Title: SUPERVISOR

Jurisdiction: FULTON TOWNSHIP

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	N/C	
Earthquake	N/C	
Floods, Flash Floods, and Ice Jams	N/C	
Radon	N/C	
Subsidence, Sinkhole	N/C	
Tornado, Windstorm	N/C	
Wildfire	N/C	
Winter Storm	N/C	
<b>Human-made Hazards</b>		
Dam Failure	N/C	
Environmental Hazards	N/C	
Nuclear Incident	N/C	
Transportation Accident	N/C	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano          |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Capability Assessment Survey**

**MIKE CHURCH**

Jurisdiction: FULTON TOWNSHIP

Point of Contact Name and Title: SCOTT N. OSBORNE SUPERVISOR

Phone: 717-548-3514

Email: ~~FULTON~~ FULTONTWP@LANCASTER

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				
Emergency Operations Plan	X				
Disaster Recovery Plan	X				
Evacuation Plan	X				
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (Spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X				
Zoning Regulations	X				





Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X				
Natural Resource Protection Plan					
Capital Improvement Plan	X				
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X				
Building Code	X				
Fire Code	X				
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			
Planners or engineers (with natural and/or human caused hazards knowledge)	X			
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager	X			
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program				
Grant writers or fiscal staff to handle large/complex grants				
Staff with expertise or training in Benefit-Cost Analysis				
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
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				

4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification				
StormReady certification				
Natural disaster or safety related school programs	X			
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X			
Public-private partnership initiatives addressing disaster-related issues	X			
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			
Administrative and Technical Capability			
Financial Capability			
Education and Outreach			



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: SCOTT N. OSBORNE

Title: SUPERVISOR

Jurisdiction: EVLTON TOWNSHIP

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	

Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	X					Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations			X			
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)			X			
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans			X			
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk			X			
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiansa Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						





# Hazard Identification and Risk Evaluation Worksheet

Name: David Amico Title: Deputy Fire Chief

Jurisdiction: Lancaster City

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	Snow events create more problems now than in the past
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**I’m not sure what is profiled in the County hazard mitigation plan I would include the following:**

**Under Natural** – Hurricane, Tropical storm, Nor’easter

**Human-Caused** - Building or Structure collapse & Utility Interruption

## Capability Assessment Survey

Jurisdiction: City of Lancaster, PA Point of Contact Name and Title: Douglas Smith, Senior Planner

Phone: 717-291-4755 Email: dsmith@cityoflanasterpa.com

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Hazard Loss Reduction (Supports, Neutral, or Hinders)	Comments
	In Place	Date Adopted or Updated	Under Development			
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	S	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan						
Emergency Operations Plan	X	12/4/2015		City of Lancaster, Bureau of Fire	S	
Disaster Recovery Plan						
Evacuation Plan	X	5/14/2013		City of Lancaster, PA	S	The evacuation plan is a chapter within the Emergency Operations Plan
Continuity of Operations Plan	X			Public Works & Public Safety	S	Water, Wastewater, and Emergency Command Center
NFIP	X	4/29/16		City of Lancaster, Department of Economic Development and Neighborhood Revitalization	S	
NFIP – Community Rating System						



Capability Assessment Survey

Tool / Program	Status		Dept./Agency Responsible	Hazard Loss Reduction (Supports, Neutral, or Hinders)	Comments
	In Place	Date Adopted or Updated			
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	x	10/22/2013	City of Lancaster, Department of Economic Development and Neighborhood Revitalization, Bureau of Planning and Code Compliance and Inspections	S	The City's floodplain regulations are found in the Zoning Ordinance, Subdivision and Land Development Ordinance and Building Code
Floodplain Management Plan					
Zoning Regulations	x	7/14/2017	Department of Economic Development and Neighborhood Revitalization, Bureau of Planning	S	
Subdivision Regulations	x	11/24/2015	Department of Economic Development and Neighborhood Revitalization, Bureau of Planning	S	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	x	2015	Department of Economic Development and Neighborhood Revitalization, Bureau of Planning	S	The 2007 Comprehensive Plan was reaffirmed in 2015
Open Space Management Plan (or Parks/Rec or Greenways Plan)	x	7/31/2009	Department of Public Works	N	Part of the Inter-municipal comprehensive plan called <i>Growing Together</i> . There's also a Parks, Rec & Open Space plan from 2009.
Stormwater Management Plan / Ordinance	x	2/24/2015	Department of Public Works, Bureau of Stormwater	S	
Natural Resource Protection Plan	x	4/10/2007	Department of Economic Development and	S	Part of <i>Growing Together</i> comprehensive plan



Capability Assessment Survey

Tool / Program	Status		Dept./Agency Responsible	Hazard Loss Reduction (Supports, Neutral, or Hinders)	Comments
	In Place	Date Adopted or Updated			
			Neighborhood Revitalization		When a bond issue is going to occur, the Directors and Mayor determine what projects are needed. This list is submitted to City Council for approval. As time goes on and projects are completed, etc., the list can be amended by City Council. The last CI plan was passed in Ordinance No. 14-2016 as Appendix A.
Capital Improvement Plan	x		City of Lancaster, PA	N	
Economic Development Plan	x	8/11/2015	Department of Economic Development and Neighborhood Revitalization	N	Developed in partnership with Lancaster City Alliance
Historic Preservation Plan	x	4/10/2007	Department of Economic Development and Neighborhood Revitalization	N	Part of the Inter-municipal comprehensive plan called <i>Growing Together</i>
Farmland Preservation					
Building Code	x	6/22/2004	Department of Economic Development and Neighborhood Revitalization	S	
Fire Code	x	7/27/2010	Bureau of Fire	S	
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	x		Department of Economic Development and Neighborhood Revitalization	
Planners or engineers (with natural and/or human caused hazards knowledge)	x		Department of Economic Development and Neighborhood Revitalization and Department of Public Works	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	x		Department of Economic Development and Neighborhood Revitalization and Department of Public Works	
Emergency Manager	x		Bureau of Fire	
NFIP Floodplain Administrator	x		Department of Economic Development and Neighborhood Revitalization	Currently the Director for the Department of Economic Development and Neighborhood Revitalization, but more often this is the Senior Planner's responsibility.
Land Surveyors	x		Department of Public Works	
Scientists or staff familiar with the hazards of the community	x		Department of Public Works	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	x		Department of Economic Development and Neighborhood Revitalization and Department of Public Works	
Grant writers or fiscal staff to handle large/complex grants	x		Department of Economic Development and Neighborhood Revitalization and Administrative Services	
Staff with expertise or training in Benefit-Cost Analysis		x		
Other		x		





**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Department of Public Works	Yes, if specific projects identified in capital improvement plan are directly related to FEMA hazard mitigation.
Community Development Block Grants (CDBG)	X		Department of Economic Development and Neighborhood Revitalization	While the City is regularly awarded CDBG grants and can use them for hazard mitigation purposes, it is unlikely because of high demand for other uses of the funds.
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			Yes, if FEMA hazard mitigation is an integrated part of the project.
Stormwater Utility Fees	X			Yes, if FEMA hazard mitigation is an integrated part of the project.
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements		X		
Other		X		

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		x		
StormReady certification		x		
Natural disaster or safety related school programs		x		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	x		Fire Bureau and Stormwater Bureau	Fire Bureau conducts safety programs for industrial/commercial buildings, installs residential smoke detectors and answers general fire safety questions. The Bureau also leads 10 fire drills a year in each school.
Public-private partnership initiatives addressing disaster-related issues		x		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	x		Council of Churches	Father Peck from St. James Episcopal oversees emergency sheltering.
Other		x		

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach		X	

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Douglas Smith Title: Senior Planner Jurisdiction: City of Lancaster

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	Objective 1.4 should be more specific. Hazard Mitigation is often about community scale, so what is the community health problem we are protecting against? Are we talking about eating your greens or mitigating hazard related health impacts? Is it protecting health to mitigate hazards (e.g., flu) or protecting health in the wake of disaster (e.g., air quality). No telling. Alternative wording might be "Protect County residents from the health impacts caused by natural and human-made hazards" or "Protect County residents' health to mitigate hazards and their impacts."
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	





<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	Objective 6.1 should be more specific. Does this include data platforms for land owners? See suggested objective below.
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
<b>Goal</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective</b>	Develop and regularly test emergency communication systems for emergency services and County residents.	
<b>Objective</b>	Develop protocols for mass casualty scenarios.	
<b>Objective</b>		

<b>Goal</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective</b>	Develop online interactive hazard awareness resources for at-risk populations and landowners.	This is an example of a more specific Objective 6.1.
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Integrated into the review process for all development.
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					The City does not acquire properties in hazard areas and does not foresee doing that in the near future. The County has transferred floodplain areas to the City for use as future trails.



<p>1.2.2 Ensure safety buffer between industrial facilities and population</p>			<p>X</p>			<p>The City does this to the best of its ability understanding that prior development in the City had manufacturing and populations built in close proximity of each other – Novelty Brush, Walter Jackson, Kunzler to name a few. Current zoning still has some manufacturing areas in close proximity to residential, but updates have worked to establish buffers. The Suburban Manufacturing zoning district permits the most intense industrial uses, and the SM-zoned areas are located away from residential zoning districts. Due to historic development patterns in the city, industries of the early 1900s were in proximity to neighbors for easy access by employees. New industries in these Central Manufacturing zoning district with potential impacts on residential districts require special exception zoning board approval. The Mixed Use zoning district, which permits manufacturing uses as well as residential uses, prohibits manufacturing facilities requiring storage of any hazardous or highly flammable materials or chemicals.</p>
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Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance				X		In March 2014, the City mailed 170 notices to owners of all properties located in the 100-year floodplain informing them of changes in the National Flood Insurance Program, including changes to the Flood Insurance Rate Maps, and advised them of the importance of flood insurance.
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics			X			The City participates in the PA Health Alert Network.
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					The City is aware of the PA DOH's offering of KI, but is not involved in access or distribution.
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			The City follows the 2009 building & fire code requirements
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding			X			The City will continue to evaluate this on an as needed basis.





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
2.2.1 Regularly inspect and maintain bridges and culverts			X			The City regularly inspects and maintains drainage infrastructure; most large culverts and bridges are owned/inspected/maintained by PENNDOT.
2.2.2 Require special use permits for hazard-prone areas			X			Special use permits are required for floodplain development.
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			The GIS staff within the Public Works Dept continuously works within the organization and with County GIS staff to maintain up to date GIS data layers.
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			The Public Works Dept has an formal data sharing agreement formed used to share GIS data with third party businesses and freely within the Organization.
3.2.1 Encourage multi-jurisdictional exercises and drills		X				Working with Manheim Township.



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.3.1 Implement the new Lancaster County radio system				X		Completed In 2015.
3.3.2 Inventory all available equipment and technology used for emergency response	X					
4.1.1 Ensure that the County's dams are structurally sound			X			The existing City dam is rated as a low-hazard.
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					The City is unaware of any dams in City limits aside from the one low-risk dam.
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans				X		Approved in November 2012
5.1.2 Reduce the number of miles of impaired streams in the County			X			Efforts ongoing under regulatory permits and integrated water management programs within the City.
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			This is an ongoing effort with the City Zoning Hearing Board.
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					The City is unaware of any direct impacts from upstream dam failures that would be greater than a heavy rainstorm.
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures					X	



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.</p>						
<p>East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.</p>						
<p>East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.</p>						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.		X				In 2013 this facility was moved and raised above 100-year floodplain; however, the new 2016 FIRMs put the finished floor elevation 1'-1.5'ft below the 100-year flood elevation. Not possible to relocate again at this time.
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.		X				In 2013 this facility was moved and raised above 100-year floodplain; however, the new 2016 FIRMs put the finished floor elevation 1'-1.5'ft below the 100-year flood elevation. Not possible to relocate again at this time.





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.		X				In 2013 this facility above 100-year floodplain; however, the new 2016 FIRMs put the finished floor elevation 1'-1.5'ft below the 100-year flood elevation. Not possible to relocate again at this time.
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.</p>						
<p>Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.</p>						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: FRANK E. HOWE

Title: SECRETARY / TREASURER

Jurisdiction: LEACOCK TOWNSHIP

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	D	less severe winters
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                            | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                                  |   |

**Other Comments:**

Jurisdiction Risk - LEAOCK TOWNSHIP (Municipality)

	2.5	Drought	↕
	2.2	Earthquake	→
	3.4	Flood, Flash Flood, and Ice Jams	→
	2.5	Hailstorms	→
	3.1	Invasive Species	→
	3.1	Pandemic	↓
	2.3	Radon Exposure	→
	2.1	Subsidence and Sinkholes	↕
	3.2	Tornado and Windstorm	↕
	2.2	Wildfire	↓
	2.7	Winter Storms	↕
	1.3	Dam Failure	↔
	2.6	Environmental Hazards	↓
	1.9	Nuclear Incidents	↓
	2.4	Transportation Accidents	→
	3.1	Utility Interruption	→

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



**Capability Assessment Survey**

Jurisdiction: LEACOCK TOWNSHIP Point of Contact Name and Title: FRANK E. HOWE, Secretary/Treasurer

Phone: 717-768-8588 Email: frank@leacocktwp.com

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	In Place	Status		Dept./Agency Responsible	Comments
		Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan					county plan
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X	1-7-14			PART OF ZONING ORD
Zoning Regulations	X	1-7-14		Zoning Board LEACOCK Twp.	



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	11-09		SUPERVISORS LEACOCK TWP	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2-14 85-03		SUPERVISORS - LANCASTER " "	Regua Valley Strategic Plan COMPREHENSIVE PLAN
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	5-6-14		SUPERVISORS LEACOCK TWP	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	?		VCC	
Fire Code					
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)		X		
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager		X		
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



Capability Assessment Survey

3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State or Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X		Supervisors	
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X		Municipal Authority	
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X		Supervisors	
Partnering Arrangements or Intergovernmental Agreements	X		Supervisors	
Other				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach		X	





## Mitigation Strategy 5-Year Mitigation Plan Review

Name: FRANK E. HOWE

Title: Secretary Treasurer Jurisdiction: LEAOCK Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
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- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population				X		
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				X		UCC
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	/		X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system	X					
3.3.2 Inventory all available equipment and technology used for emergency response	X					
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues		X				
5.1.1 Develop and implement source water protection plans		X				
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiansa Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Duane Ober

Title: EM. Mgt. Coordinator

Jurisdiction: Warwick Twp. / Litz Boro

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	D	low risk
Floods, Flash Floods, and Ice Jams	D	Improvements made to Spedwell Lake Dam
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	Blizzard in 2016
<b>Human-made Hazards</b>		
Dam Failure	D	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Always a risk for hailstorms, lightning, etc., but not sure how you "prepare" extensively



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2/11/10		Boro Council	Last Amended 11/29/16
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	5/28/12	X		Close to adopting next 5-year plan (Forge 2022)
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	March 2002			Final Plan Adopted
Stormwater Management Plan / Ordinance	X	4/29/14			Stormwater Plan prepared 10/11/16
Natural Resource Protection Plan					N/A
Capital Improvement Plan			X		Creating C.I.P. for fire, police, public works, etc.
Economic Development Plan	X	2008	X		Downtown Plan being reviewed
Historic Preservation Plan	X	2008			Incorporated into Zoning
Farmland Preservation		N/A			
Building Code	X	12/27/16			Uniform Construction Code
Fire Code	X				Under the Building Code
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Director of Planning and Community Development	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Director of Planning and Community Development	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Borough Engineer Code Administrators (Bldg. Code)	
Emergency Manager	X		Lititz Borough Emergency Mgt.	
NFIP Floodplain Administrator	X		Code Enforcement Officer	
Land Surveyors			N/A	
Scientists or staff familiar with the hazards of the community	X		Public Works, Planner, Boro Council, and more	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program	X		Director of Planning and Community Development	
Grant writers or fiscal staff to handle large/complex grants	X		Boro Manager, Boro Bookkeeper, Dir. Of Planning	
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Borough Staff	Ability to use, but not very active
Community Development Block Grants (CDBG)	X		Borough Staff	
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			Not used for hazard mitigation except when they impact the system (sinkholes)
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			Could issue a bond if needed
Partnering Arrangements or Intergovernmental Agreements		X		
Other				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		N/A
StormReady certification	X		Lancaster County EMA	
Natural disaster or safety related school programs		X		Handled by school districts
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Warwick Emergency Services Commission	Community safety education
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Lititz Fire Company No. 1 Warwick Ambulance	Emergency Services
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability		X	
Financial Capability		X	
Education and Outreach	X		

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: \_ Duane Ober \_\_\_\_\_ Title: Emergency Mgt. Coordinator \_\_\_\_\_ Jurisdiction: \_\_ Lititz Borough, Lancaster Co. \_

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	<b>Led / influenced by FEMA</b>
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	<b>Mission and directives of Warwick Emergency Services Commission (WESC), a regional function of Warwick Township, Lititz Borough, and Elizabeth Township.</b>
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	<b>Stormwater, floodplain, bridge, and road projects</b>
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	<b>Zoning and Subdivision and Land Development Ordinances</b>
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	<b>WESC or Emergency Management</b>
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	





<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>	<b>Littitz Borough – Emergency Services Review of all submitted land development plans</b>	
<b>Objective</b>	Receive input from emergency services prior to approval of land development plans	<b>Currently in place and constantly being improved</b>
<b>Objective</b>	Reduce future issues with emergency vehicle access or emergency services needs that were overlooked	
<b>Objective</b>	Cooperation by developer and emergency services for partnership to keep our community safe	

<b>Goal</b>	<b>Littitz Borough – Reduce impact of storms or natural disasters on residents and businesses</b>	
<b>Objective</b>	Evaluate ways to cope with long-term power outages	<b>Identify areas of concern to local utility companies to prevent loss of service</b>
<b>Objective</b>	Continue to evaluate areas prone to flooding	
<b>Objective</b>	Evaluate infrastructure impact from flooding (water supply, wastewater facility, etc.)	

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2. Ensure safety buffer between industrial facilities and population			X			
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations			X			Community emergency management planning, but relying on population to provide us with information
1.4.2. Coordinate with PA DOH on issues related to pandemics	X					
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			Following adopted building codes
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts	X					
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					
3.2.1 Encourage multi-jurisdictional exercises and drills			X			Warwick Emergency Services Commission / LB EMA



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
3.3.1 Implement the new Lancaster County radio system		X				System is in place, upgrades being made to it
3.3.2 Inventory all available equipment and technology used for emergency response			X			Continuously being analyzed by local emergency services
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	X					
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	X					
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			Police and EMA serve on school district safety committee to continuously evaluate risks
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					





# Hazard Identification and Risk Evaluation Worksheet

Name: Brad Roth

Title: EMA Coordinator

Jurisdiction: Marheim Boro & Penn Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

# Hazard Identification and Risk Evaluation Worksheet

Name: James R Fisher, PE, CBO Title: Borough Manager

Jurisdiction: Manheim Borough

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	nc	
Earthquake	nc	
Floods, Flash Floods, and Ice Jams	nc	
Radon	nc	
Subsidence, Sinkhole	nc	
Tornado, Windstorm	nc	
Wildfire	nc	
Winter Storm	i	Larger snow storms
<b>Human-made Hazards</b>		
Dam Failure	nc	
Environmental Hazards	nc	
Nuclear Incident	nc	
Transportation Accident	i	Three traffic signal poles were hit within the past 2 years

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |  |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity       |
| <input checked="" type="checkbox"/> Drowning            |  |

**Other Comments:**

## Capability Assessment Survey

Jurisdiction: Manheim Borough Point of Contact Name and Title: James R Fisher, PE, CBO, Borough Manager

Phone: 717-665-2461 Email: JimFisher@ManheimBoro.org

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	2014		Lancaster County	
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP	X				
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	2016			
Floodplain Management Plan	X	2016			
Zoning Regulations	X	2016			



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2014			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2010			
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	2010			
Stormwater Management Plan / Ordinance	X	2014			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X				
Fire Code	X				
Other					





**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager	X			
NFIP Floodplain Administrator	X			
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis	X			
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Special Purpose Taxes	X			
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X			
Other				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X			
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X			
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach		X	



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: James R Fisher, PE CBO Title: Borough Manager Jurisdiction: Manheim Borough

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	X					Has this activity been integrated into the municipality's normal operations?
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space			X	X		
1.2.2. Ensure safety buffer between industrial facilities and population						
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations?
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2. Coordinate with PA DOH on issues related to pandemics						
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						
3.3.1 Implement the new Lancaster County radio system						
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues						
5.1.1 Develop and implement source water protection plans						
5.1.2 Reduce the number of miles of impaired streams in the County						
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures		X				Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures						
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.						
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Rick Kane Title: Fire Chief/Emergency Management  
Director\_

Jurisdiction: Manheim Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

### Capability Assessment Survey

Jurisdiction: Manheim Township Point of Contact Name and Title: Rick Kane, EMC

Phone: (717) 397-5881 Email: rkane@manheimtownship.org

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP	X				
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X				
Floodplain Management Plan					
Zoning Regulations					



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations					
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)					
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance					
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code					
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)		X		
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager	X			
NFIP Floodplain Administrator	X			
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other		X		



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other		X		



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X			
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other		X		



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach	X		





## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Rick Kane Title: EMC Jurisdiction: Manheim Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2. Ensure safety buffer between industrial facilities and population	X					
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations?
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2. Coordinate with PA DOH on issues related to pandemics	X					
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1. Encourage multi-jurisdictional exercises and drills	X					
3.3.1. Implement the new Lancaster County radio system	X					
3.3.2. Inventory all available equipment and technology used for emergency response	X					
4.1.1. Ensure that the County's dams are structurally sound	X					
4.1.2. Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1. Continue mitigation efforts/programs already in place to address flooding issues	X					
5.1.1. Develop and implement source water protection plans	X					
5.1.2. Reduce the number of miles of impaired streams in the County	X					
5.2.1. Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	X					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	X					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	X					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.	X					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	X					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	X					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.	X					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	X					
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.	X					
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.	X					
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>	X					
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>	X					



# Hazard Identification and Risk Evaluation Worksheet

Name: Sharon L. Bradnick Title: Secretary/Treasurer

Jurisdiction: Borough of Marietta

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	Increase	Risk of oil cars on trains



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Increase in oil cars traveling through of Borough on the Norfolk Southern trains. This has been addressed.**

Jurisdiction Risk - Marietta Borough (Municipality)

Drought	2.5	=
Earthquake	2.2	=
Flood, Flash Flood, and Ice Jams	3.4	=
Hailstorms	2.5	=
Invasive Species	3.1	<
Pandemic	3.1	=
Radon Exposure	2.3	=
Subsidence and Sinkholes	2.1	>
Tornado and Windstorm	3.2	=
Wildfire	2.2	=
Winter Storms	2.7	=
Dam Failure	1.3	=
Environmental Hazards	2.6	=
Nuclear Incidents	1.9	=
Transportation Accidents	2.4	>
Utility Interruption	3.1	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

## Capability Assessment Survey

Jurisdiction: Marietta Borough Point of Contact Name and Title: Sharon L. Bradnick Secretary/Treasure

Phone: (717) 426-4143 Email: sharon@boroughofmarietta.com

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	1/1/08			
Emergency Operations Plan	X	1/1/08			
Disaster Recovery Plan	X	1/1/08			
Evacuation Plan	X	1/1/08			
Continuity of Operations Plan	X	1/1/08			
NFIP	X	1/1/08			
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X	3/8/2016			
Zoning Regulations	X	7/12/16			



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	3/8/2016			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	8/2011			
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	4/8/2014			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan	X	7/8/13			
Historic Preservation Plan					
Farmland Preservation					
Building Code					
Fire Code					
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning Commission	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		ARRO	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		ARRO	
Emergency Manager	X		Marietta EMA	
NFIP Floodplain Administrator				
Land Surveyors		X		Contact professionals as needed
Scientists or staff familiar with the hazards of the community		X		“
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program		X		“
Grant writers or fiscal staff to handle large/complex grants		X		“
Staff with expertise or training in Benefit-Cost Analysis		X		“
Other				

**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		

# Hazard Identification and Risk Evaluation Worksheet

Name: Karen Sellers Title: Manager

Jurisdiction: Martic Township

## PART I

How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?		
Identified Hazards 2014 HMP	NC = No Change; I = Increase; D = Decrease	Additional Comments
<i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>		
Natural Hazards		
Drought	N/C	
Earthquake	N/C	
Floods, Flash Floods, and Ice Jams	N/C	
Radon	N/C	
Subsidence, Sinkhole	N/C	
Tornado, Windstorm	N/C	
Wildfire	N/C	
Winter Storm	N/C	
Human-made Hazards		
Dam Failure	N/C	
Environmental Hazards	N/C	
Nuclear Incident	N/C	
Transportation Accident	N/C	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Capability Assessment Survey**

Jurisdiction: Martic Township

Point of Contact Name and Title: Karen Sellers, Manager

Phone: 717-284-2167

Email: Martie@marticot.net

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status		Under Development	Dept./Agency Responsible	Comments
	In Place	Adopted or Updated			
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			County EMA	
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan	X				
Zoning Regulations	X				



Tool / Program	Status		Under Development	Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated			
Subdivision Regulations	X	2016			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	1991			
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	2014			
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X			Farmland Preservation	
Building Code	X			Commonwealth Code	
Fire Code					
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Zoning & Manager	
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager		X		
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)		X		<i>only to be used if necessary</i>
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				







5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Financial Capability		X	
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Karen Sellers Title: Manager Jurisdiction: Martinsburg

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Remarks/Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			Building Code Repeals
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts	X					Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
3.2.1 Encourage multi-jurisdictional exercises and drills			X		
3.3.1 Implement the new Lancaster County radio system				X	
3.3.2 Inventory all available equipment and technology used for emergency response			X	X	
4.1.1 Ensure that the County's dams are structurally sound	N/A				
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	N/A				
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X		
5.1.1 Develop and implement source water protection plans	X				
5.1.2 Reduce the number of miles of impaired streams in the County	X				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X		Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Mitigation Strategy	Status					Reviewed by
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.					



Mitigation Strategy 5-Year Mitigation Plan Review

Mitigation Strategy	Status					Region
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

	Status				Total \$/Program	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: MICHAEL TOSCANI

Title: ZONING/CODE ENFORCEMENT OFFICER

Jurisdiction: MILLERSVILLE BOROUGH

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	
Radon	NC	
Subsidence, Sinkhole	I	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input checked="" type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic                    |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                            | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                                  |   |

**Other Comments:**

Jurisdiction Risk - MILFORDSVILLE BOBORGH (Municipality)

2.5	Drought	<
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	<
2.5	Hailstorms	=
3.1	Invasive Species	=
3.1	Pandemic	=
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	=
3.2	Tornado and Windstorm	=
2.2	Wildfire	<
2.7	Winter Storms	=
1.3	Dam Failure	<
2.6	Environmental Hazards	=
1.9	Nuclear Incidents	<
2.4	Transportation Accidents	<
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

**Capability Assessment Survey**

Jurisdiction: MILLERSVILLE BOROUGH Point of Contact Name and Title: MICHAEL TUSCAN / Zoning/Capital Planner  
 Phone: 717-872-4645 Email: mtuscan@millersvilleborough.org

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			Burr Rock Fire/EMS	
Emergency Operations Plan	X			"	
Disaster Recovery Plan	X			"	
Evacuation Plan	X			"	
Continuity of Operations Plan	X			"	
NFIP	X	3/22/2016		Zoning	
NFIP - Community Rating System	X	"		Zoning	
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	3/22/2016		Zoning	
Floodplain Management Plan	X	"		Zoning	
Zoning Regulations	X	"		Zoning	

Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	6/22/2012		ZONING	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	8/28/2012		PLANNING/ ZONING	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	" "		PARKS COMMISSION BOROUGH	
Stormwater Management Plan / Ordinance	X	5/27/2014		STREETS / ZONING	
Natural Resource Protection Plan	X				
Capital Improvement Plan	X				
Economic Development Plan	X			PLANNING	
Historic Preservation Plan	X			ZONING/HISTORIC COMM	
Farmland Preservation					
Building Code	X			BOROUGH CODE PLANNING	
Fire Code	X			BOROUGH CODE PLANNING	
Other					





2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		BOBOUGH	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		PAV BOBOUGH	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		PAV EXTENSIVES	
Emergency Manager	X		Blue Rock Fire Dept	
NFIP Floodplain Administrator	X		Zoning OFFICER	
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		ZONING BOBOUGH STAFF	
Grant writers or fiscal staff to handle large/complex grants	X		BOBOUGH STAFF	
Staff with expertise or training in Benefit-Cost Analysis	X		FINANUCK/BOBOUGH	
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
Community Development Block Grants (CDBG)				
Special Purpose Taxes				
Gas / Electric Utility Fees				
Water / Sewer Fees				
Stormwater Utility Fees	X		Bonds	
Development Impact Fees				
General Obligation, Revenue, and/or Special Tax Bonds				
Partnering Arrangements or Intergovernmental Agreements				
Other				

4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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)	X			
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				

Capability Assessment Survey

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: MICHAEL R. TUSCH Title: County Board Enforcement Official Jurisdiction: MILLERSVILLE BOROUGH

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.

**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



Mitigation Action Plan Review Worksheet

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					<b>NO PROPERTIES IN HAZARD AREAS</b>
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>
2.2.2 Require special use permits for hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>

Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system						
3.3.2 Inventory all available equipment and technology used for emergency response	X					
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans			X			
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations? <b>YES</b>

Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations? Yes
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk			X			
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures			X			Has this activity been integrated into the municipality's normal operations? Yes

Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.						
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.						



# Hazard Identification and Risk Evaluation Worksheet

Name: Peg Hamm

Title: Deputy EMC

Jurisdiction: Mount Joy Borough

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams		
Radon	NC (unknown)	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	N/A	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |  |
|--|--|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species                                    |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide   |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike                                    |
| <input type="checkbox"/> Expansive Soils                       | <input checked="" type="checkbox"/> Pandemic ? Bird Flu<br>(Chickens & eggs) |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami   |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano   |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Many possible hazards, but most involve localized affects, Short Term interruptions -i.e. storms, wind, snow, rain

# Hazard Identification and Risk Evaluation Worksheet

Name: Warren Mueller Jr Title: coordinator

Jurisdiction: Elizabethtown Regional EMA

Elizabethtown Borough  
West Donegal Township MT Joy Township **PART I**

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	N/C	
Earthquake	N/C	
Floods, Flash Floods, and Ice Jams	Increase	Projects in place for mitigation.
Radon	N/C	
Subsidence, Sinkhole	N/C	
Tornado, Windstorm	I increase.	
Wildfire	N/C	
Winter Storm	I increase	
<b>Human-made Hazards</b>		
Dam Failure	N/C	
Environmental Hazards	N/C	
Nuclear Incident	N/C	
Transportation Accident	N/C	

## PART II

### Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

#### *Natural*

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

#### *Human-Caused*

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

#### Other Comments:

# Hazard Identification and Risk Evaluation Worksheet

Name: Justin Evans

Title: Twp. Manager

Jurisdiction: Mount Joy Twp.

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	less frequent, more powerful snow events
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	





## PART II

### Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

#### *Natural*

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

#### *Human-Caused*

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

### Other Comments:

N/A

Lancaster County Planning Team  
 Risk Assessment/Capability Assessment Review Meeting

Jurisdiction Risk - MOUNT JOY TOWNSHIP (Municipality)

	2.5	Drought	=
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	<
	2.5	Hailstorms	=
	3.1	Invasive Species	=
	3.1	Pandemic	=
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	=
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	=
	2.7	Winter Storms	=
	1.3	Dam Failure	=
	2.6	Environmental Hazards	=
	1.9	Nuclear Incidents	>
	2.4	Transportation Accidents	>
	3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

Capability Assessment Survey

Jurisdiction: Mount Joy Twp. Point of Contact Name and Title: Justin Evans/Twp. Mgr.  
 Phone: 717-367-8917 Email: justin@mtjoytwp.org

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X	/2014		Lancaster Co. / Twp.	2014 County Plan
Emergency Operations Plan					
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP	X	3/21/2016		Mt. Joy Twp. (MST)	recent re-adoption of FIRMS
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	3/21/2016		MST	recent update to regs.
Floodplain Management Plan					
Zoning Regulations	X	4/17/2012		MST	ord, rewrite in 2012



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	4/17/2012		MJT	ord. rewrite in 2012
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	4/29/2010		MJT	Regional Comp. Plan w/ Conroy Twp., Elizabethtown Boro. & W. Donegal Twp.
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	3/26/2005		MJT	
Stormwater Management Plan / Ordinance	X	4/17/17		MJT	
Natural Resource Protection Plan					
Capital Improvement Plan	X	4/9/2016		MJT	
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X			MJT	PA UCC adopted by Commonwealth
Fire Code					
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Twp. Administration	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Twp. Administration	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Twp. Administration	not on staff; consultant to Twp.
Emergency Manager		X		
NEIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community	X		Twp. Administrator	general knowledge of hazards, less expertise
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Twp. Administration	
Grant writers or fiscal staff to handle large/complex grants	X		Twp. Administration	
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources **for hazard mitigation purposes** (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Twp. Administration	
Community Development Block Grants (CDBG)	X		Twp. Admin. / LEHRA	
Special Purpose Taxes	X		Twp. Administration	MST currently implements a Fire Tax
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees	X		Twp. Administration	MST currently implements Act 209 Impact Fee
General Obligation, Revenue, and/or Special Tax Bonds	X		Twp. Administration	
Partnering Arrangements or Intergovernmental Agreements	X		Twp. Administration	
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				





Capability Assessment Survey

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Jushia Evans Title: Top Manager Jurisdiction: Mount Joy Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	<p>countywide hazard mapping/ regulatory guidance (other than NFIP) is a helpful resource for munis.</p>
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	<p>identification of critical structures/facilities/ properties → targeted outreach</p>
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	✓
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	weigh costs/benefits of flood-control vs. buy-outs, mitigation, etc.
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	✓
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	countywide outreach for consistent message... news is can help distribute
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Mitigation Strategy 5-Year Mitigation Plan Review

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Actor	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned Infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population	X					
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings				X		PRC/C not all residential bladders, require sprinklers
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations? NEEP / zoning / SRDO
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response				X		NWERPD equipment
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	X					
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County		X				recently adopted Pollut and Reduction Plan
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains				X		Has this activity been integrated into the municipality's normal operations? regs. accepted



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk		X				Top plans to overhaul municipal website in 2018, will revisit after completion
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.	X					N/A
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	X					N/A
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	X					N/A
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	X					N/A



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.	X					N/A
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	X					N/A
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	X					N/A
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	X					N/A



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.	X					N/A
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					N/A
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					N/A
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					N/A
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.	X					N/A



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.	X					N/A
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.	X					N/A
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 Intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.	X					N/A
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	X					N/A





Mitigation Strategy 5-Year Mitigation Plan Review

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West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.	X					N/A
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	X					N/A





# Hazard Identification and Risk Evaluation Worksheet

Name: FRANCIS ZIMMER

Title: CBO, COUNCILMAN

Jurisdiction: MOUNTVILLE BOROUGH, PA

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	N/C	
Earthquake	D	
Floods, Flash Floods, and Ice Jams	I	
Radon	N/C	
Subsidence, Sinkhole	D	
Tornado, Windstorm	I	
Wildfire	D	
Winter Storm	I	
<b>Human-made Hazards</b>		
Dam Failure	I	
Environmental Hazards	I	
Nuclear Incident	I	
Transportation Accident	I	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species    |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide           |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike    |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami             |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano             |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                            | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                                  |   |

**Other Comments:**

**Capability Assessment Survey**

Jurisdiction: Neel Holland Avenue

Point of Contact Name and Title: Richard Faltner, Manager 8-22-12

Phone: 717-354-4567

Email: jr.faltner@harrisburg.gov

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status		Date Adopted or Updated	Under Development	Dept./Agency Responsible	Comments
	In Place	Updated				
EXAMPLE: Hazard Mitigation Plan	X		1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				County EMA	
Emergency Operations Plan	X					
Disaster Recovery Plan						
Evacuation Plan						
Continuity of Operations Plan						
NFIP						
NFIP – Community Rating System						
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)						
Floodplain Management Plan	X					
Zoning Regulations	X					



Tool / Program	Status Date Adopted or Updated	In Place	Under Develop- ment	Dept./Agency Responsible	Comments
Subdivision Regulations		X			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)		X			
Open Space Management Plan (or Parks/Rec or Greenways Plan)			X		
Stormwater Management Plan / Ordinance		X	2008		
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code		X		Code Administrators	
Fire Code					
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Adm.	Mgr. with consultants
Planners or engineers (with natural and/or human caused hazards knowledge)	X		paid consultants	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		paid consultants	
Emergency Manager	X			Mgr. serves as Adm. E.S. &
NFIP Floodplain Administrator		X		N/A
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants	X		Adm.	Manager experienced
Staff with expertise or training in Benefit-Cost Analysis	X		Adm.	Manager experienced
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Adm.	As annual budget allows
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements	X		Adm.	Police Services, Fire Dept. Funding, Other shared elements
Other				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs	X		Police Dept.	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Adm.	Newsletters Brochures
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				





**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability			X
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Richard Fulcher Title: Planner Jurisdiction: New Holland Perry Co

Purpose: To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

Instructions: Complete the Goal and Objective Review Worksheet and Mitigation Action Plan Review Worksheet on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			State Code
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			
3.3.1 Implement the new Lancaster County radio system			X			
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	X					
5.1.1 Develop and implement source water protection plans			X			
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
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6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X				
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X				
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X				
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Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.					
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Mitigation Strategy 5-Year Mitigation Plan Review

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East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



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Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.					



Mitigation Strategy 5-Year Mitigation Plan Review

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Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
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West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.						
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**FAX/EMAIL COVER SHEET**

DATE: 2/13/18

TO: TONY SUBBIO

FAX/EMAIL: TONY.SUBBIO@TETRA TECH.COM

FROM: DENNIS R. GROFF

SUBJECT: EMC FORMS

Pages including cover: \_\_\_\_\_

**Message:**

TONY,

EMAIL ME THAT YOU GOT  
THESE REPORTS.

THANKS,

DENNIS

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# Hazard Identification and Risk Evaluation Worksheet

Name: DENNIS R. GROFF

Title: EMC/SUPERVISOR/ROADMASTER

Jurisdiction: \_\_\_\_\_

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	D	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NA	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	I	



## PART II

### Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

#### *Natural*

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

#### *Human-Caused*

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                       |  |

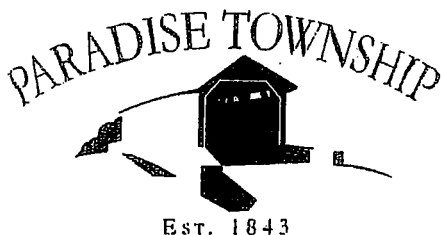
### Other Comments:

Jurisdiction Risk - PARADISE TOWNSHIP (Municipality)

	2.5	Drought
SAME	2.2	Earthquake
SAME	3.4	Flood, Flash Flood, and Ice Jams
SAME	2.5	Hailstorms
SAME	3.1	Invasive Species
LESS	3.1	Pandemic
MORE	2.3	Radon Exposure
SAME	2.1	Subsidence and Sinkholes
SAME	3.2	Tornado and Windstorm
SAME	2.2	Wildfire
MORE	2.7	Winter Storms
SAME	1.3	Dam Failure
MORE	2.6	Environmental Hazards
LESS	1.9	Nuclear Incidents
MORE	2.4	Transportation Accidents
MORE	3.1	Utility Interruption

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

SUPERVISORS  
DONALD L. RANCK  
DENNIS R. GROFF  
MARLIN G. GROFF  
CRAIG S. KEENAN  
RAYMOND L. RICE



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PARADISE, PA 17562

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Fax 768-8221

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**Capability Assessment Survey**

Jurisdiction: PARADISE TOWNSHIP Point of Contact Name and Title: DENNIS R. GRIFF, ENC  
 Phone: (717) 768-8222 Email: dgriff@paradise.township.pa.gov

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXISTING</i> Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy. completed one action
Hazard Mitigation Plan			X		
Emergency Operations Plan			X		
Disaster Recovery Plan			X		
Evacuation Plan			X		
Continuity of Operations Plan			X		
NFIP	X				
NFIP – Community Rating System			X		
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X				
Floodplain Management Plan	X				
Zoning Regulations	X				



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X				
Natural Resource Protection Plan			X		
Capital Improvement Plan			X		
Economic Development Plan			X		
Historic Preservation Plan	NA	NA	NA		
Farmland Preservation	X				
Building Code	X				
Fire Code	X				
Other					





2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			
Planners or engineers (with natural and/or human caused hazards knowledge)	X			
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager	X			
NFIP Floodplain Administrator	X			
Land Surveyors	X			
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X			
Grant writers or fiscal staff to handle large/complex grants	X			
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X			
Special Purpose Taxes	X			
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X			
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X			
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability		X	
Education and Outreach		X	

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## Mitigation Strategy 5-Year Mitigation Plan Review

Name: DENNIS R. GROFF Title: SUPERVISOR/READMASTER Jurisdiction: PARADISE TOWNSHIP

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- **Do the goals, objectives, and actions address current and expected conditions?**
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- **Other?**

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	← IN PLACE
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	← IN PLACE
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	← NO
<b>Objective 1.4</b>	Protect the health of County residents	← IN PLACE
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	← IN PLACE
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	← IN PLACE
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	← IN PLACE
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	← NO





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	← IN PLACE
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	← IN PLACE
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	← IN PLACE
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	← IN PLACE
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	← N/A
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	← IN PLACE
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	← IN PLACE
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	← IN PLACE
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	← IN PLACE



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance		X				Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	X					Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			
3.3.1 Implement the new Lancaster County radio system			X			
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County			X			
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation		X				Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk		X				
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes		X				
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.			X			
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.	X					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.	X					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.	X					





2/13/18

Paradise Township continually makes required repairs/upgrades to their municipally owned road system(s). The following lists are the major road projects installed in the past several years along with a list of anticipated upgrades for this fiscal year.

- 2016 – Replacement of the road/stream culvert located on S. Vintage Road. This project required the installation of a new aluminum culvert and required road paving repairs for the new installation. New guardrail and seeding were also done at this area. The old concrete culvert was sinking and in need of replacement for safety purposes.
- 2017 – The 30" galvanized storm water pipe under Wolf Rock Road was replaced due to the high deterioration of the existing pipe. The replacement pipe that was installed was concrete pipe and the project included new guardrail, several tree removals as needed to accommodate the project work, and new guardrail at this location.
- 2017 - Road widening and intersection improvements were done along N. Belmont Road and Frog Town Road. These projects included tree removals for better site distance at the intersection, storm gutter drain improvements, and road widening for safer vehicular travel.
- 2018 – The following road improvement project is planned for the section of roadway maintained by Paradise Township along Mine Road.
  - Have required power and communication poles relocated to accommodate the road work.
  - Storm upgrades for gutter improvements along this section of roadway as required.
  - Road widening work as required along this section of roadways maintained by Paradise Township for safer vehicular use.

Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.	X					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.	X					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.	X					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.	X					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.	X					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.</p>	X					
<p>Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.</p>	X					
<p>Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.</p>	X					
<p>Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.</p>	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.	X					
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	X					



# Hazard Identification and Risk Evaluation Worksheet

Name: Brad Roth

Title: EMA Coordinator

Jurisdiction: Manheim Boro & Penn Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**



# Hazard Identification and Risk Evaluation Worksheet

Name: Mark Hreder

Title: Manager

Jurisdiction: Penn Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community? <i>last 5 yrs</i> NC = No Change; I = Increase; D = Decrease <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	I	
Earthquake	I	
Floods, Flash Floods, and Ice Jams	I	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	I	
Wildfire	I	
Winter Storm	I	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards		
Nuclear Incident	NC	
Transportation Accident	I	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species                |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                       |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike     |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic - Avian Flu |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                         |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                         |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Jurisdiction Risk - Penn Township (Municipality)

2.5	Drought	>
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	<
2.5	Hailstorms	=
3.1	Invasive Species	<
3.1	Pandemic	>
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	<
3.2	Tornado and Windstorm	=
2.2	Wildfire	>
2.7	Winter Storms	=
1.3	Dam Failure	>
2.6	Environmental Hazards	=
1.9	Nuclear Incidents	<
2.4	Transportation Accidents	=
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

Jurisdiction Risk - Penn Township (Municipality)

2.5	Drought	=
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	>
2.5	Hailstorms	=
3.1	Invasive Species	=
3.1	Pandemic	>
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	=
3.2	Tornado and Windstorm	=
2.2	Wildfire	>
2.7	Winter Storms	=
1.3	Dam Failure	>
2.6	Environmental Hazards	=
1.9	Nuclear Incidents	<
2.4	Transportation Accidents	=
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



### Capability Assessment Survey

Jurisdiction: Penn Township  
 Phone: 717-665-4508

Point of Contact Name and Title: Mervis Hiesler, Manager Sept 20, 2017  
 Email: Manager @ penn.twp.lancs.org

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			County EMA	
Emergency Operations Plan	X			Township	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP	X			Township	
NFIP – Community Rating System	X			Township	
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X			Township	
Floodplain Management Plan					
Zoning Regulations	X	2015		Township	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2011		Township	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2010		Township	
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	2016		Township	
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	2003		Township	
Fire Code					
Other	X	2010		Township	

*Property Maintenance Code*





**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
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 (includes building inspectors)	✓			
Emergency Manager	✓			
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	✓			
Grant writers or fiscal staff to handle large/complex grants	✓			
Staff with expertise or training in Benefit-Cost Analysis	✓			
Other				





**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
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				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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)	✓			Website, email blasts, Facebook.
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.	✓			Watershed associations
Other <i>Swift 911 Emergency Notices</i>	✓		<i>Authority</i>	<i>Public sewer or Public water</i>

911





**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		✓	
Administrative and Technical Capability		✓	
Financial Capability		✓	
Education and Outreach		✓	



## Mitigation Strategy 5-Year Mitigation Plan Review

Sept 20, 2017

Name: Marc Hreber

Title: Manager

Jurisdiction: Penn Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			✓			Has this activity been integrated into the municipality's normal operations? <i>yes</i>
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	✓					<i>No.</i>
1.2.2 Ensure safety buffer between industrial facilities and population			✓			<i>yes</i>
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	✓					Has this activity been integrated into the municipality's normal operations? <i>No</i>
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	✓					<i>No</i>
1.4.2 Coordinate with PA DOH on issues related to pandemics	✓					<i>No.</i>
1.4.3 Ensure FPZ municipalities have access to Potassium Iodide (KI)	✓					<i>No.</i>
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	✓					<i>No</i>



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings		✓				yes, some
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	✓					No
2.2.1 Regularly inspect and maintain bridges and culverts			✓			Has this activity been integrated into the municipality's normal operations? yes
2.2.2 Require special use permits for hazard-prone areas				✓		yes
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies		✓				Has this activity been integrated into the municipality's normal operations? yes
2.3.1 Create and maintain a database and map of all critical facilities in the County	✓					No
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	✓					No
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	✓					Has this activity been integrated into the municipality's normal operations? No





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			✓			removed police & EMA
3.3.1 Implement the new Lancaster County radio system		✓				
3.3.2 Inventory all available equipment and technology used for emergency response			✓			yes
4.1.1 Ensure that the County's dams are structurally sound	✓					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	✓					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	✓					
5.1.1 Develop and implement source water protection plans		✓				
5.1.2 Reduce the number of miles of impaired streams in the County		✓				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains		✓				Has this activity been integrated into the municipality's normal operations? yes



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	✓					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	✓					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	✓					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	✓					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	✓					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	✓					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	✓					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	✓					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	✓					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	✓					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Vicki Eldridge Title: Township Manager

Jurisdiction: Providence Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |  |

***Human-Caused***

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**

### Capability Assessment Survey

Jurisdiction:           Providence Township           Point of Contact Name and Title:           Vicki Eldridge, Township Manager          

Phone:           717-786-7596           Email:           vicki@providencetownship.com          

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan	X	3/24/10		EMA	
Disaster Recovery Plan					
Evacuation Plan	X	3/24/10		EMA	
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	3/16/16		zoning	
Floodplain Management Plan	X	3/16/15		Zoning	
Zoning Regulations	X	12/22/14		Zoning	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	12/31/08	Zoning		
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	10/6/08	Zoning		
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	7/6/92	Zoning		
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	6/23/04	Zoning		
Fire Code					
Other					





**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)		X		
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager		X		
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X		Public Works	
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Pequea Watershed	
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach		x	



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas	X					Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)			X			
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills			X			
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response				X		
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues	X					
5.1.1 Develop and implement source water protection plans			X			
5.1.2 Reduce the number of miles of impaired streams in the County		X				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X					Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 Intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Sara Gibson

Title: Township Manager

Jurisdiction: Rapho Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	I	increasing traffic + roadways

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic                    |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**



Jurisdiction Risk - Rapho Township (Municipality)

	2.5	Drought	=
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	>
	2.5	Hailstorms	=
	3.1	Invasive Species	>
	3.1	Pandemic	=
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	>
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	>
	2.7	Winter Storms	=
	1.3	Dam Failure	<
	2.6	Environmental Hazards	>
	1.9	Nuclear Incidents	<
	2.4	Transportation Accidents	>
	3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

### Capability Assessment Survey

Jurisdiction: Rapho Township Point of Contact Name and Title: Sara Siben, Township Manager  
 Phone: (717) 665-3827 Email: manager@raphotownship.com Lori Shenk, EMC

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plans</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			County EMA	
Emergency Operations Plan	X	annual		Township EMA + County EMA	
Disaster Recovery Plan	X			County EMA	
Evacuation Plan	X	annual		Township EMA	
Continuity of Operations Plan	X	annual		Township EMA	
NFIP	X			Mastersonville FC, Manheim FD, Fire Dept. Mt. Joy	
NFIP - Community Rating System	X			Township EMA, 3 fire departments	
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X			Township Zoning	
Floodplain Management Plan	X			Township Zoning	
Zoning Regulations	X	Nov. 2013		Township Zoning	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2004	currently updating	Township Admin.	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2010		Township Admin.	Regional Plan with Neighboring Berounga Penn Township
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X	2014			
Natural Resource Protection Plan					
Capital Improvement Plan	X	12/15/16	annual		
Economic Development Plan	X	2010			part of comprehensive plan
Historic Preservation Plan					
Farmland Preservation					
Building Code	X	2015		State Uniform Construction Code	
Fire Code	X	2015		State Uniform Construction Code	commercial
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)		X		
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager	X		Administrators	
NFIP Floodplain Administrator	X		Code Enforcement	
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Code Enforcement	
Grant writers or fiscal staff to handle large/complex grants	X		Administration	
Staff with expertise or training in Benefit-Cost Analysis		X		
Other <i>Fire Advisory Council</i>	X		Admin./Emerg. Mgmt	





**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Public Works/Admin.	5 year plan
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes	X		Admin	street light
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees	X		Admin.	
General Obligation, Revenue, and/or Special Tax Bonds	X		Admin	
Partnering Arrangements or Intergovernmental Agreements	X		Admin	
Other				



**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs	X		Fire & ambulance depts.	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Admin. newsletter	
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Fire Advisory Council	
Other				



**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Financial Capability			X
Education and Outreach			X





## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Sara Gibson Title: Township Manager Jurisdiction: Raphe Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	Implemented Floodplain overlay zoning District OK 2013
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	OK
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	OK
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	OK
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	OK
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	OK



<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations? YES
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population		X				
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations? YES
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations		X				
1.4.2 Coordinate with PA DOH on issues related to pandemics	X					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	N/A					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			commercial only sprinklers not mandated in residential
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					no plans to acquire structures
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations? YES
2.2.2 Require special use permits for hazard-prone areas		?				Floodplain overlay zone identified
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations? YES & 2 programs for tracking data
2.3.1 Create and maintain a database and map of all critical facilities in the County		X				
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					no ongoing inspections of existing structures
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations? YES





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills		X				
3.3.1 Implement the new Lancaster County radio system		X				
3.3.2 Inventory all available equipment and technology used for emergency response				X		
4.1.1 Ensure that the County's dams are structurally sound	N/A					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	N/A					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans	X					
5.1.2 Reduce the number of miles of impaired streams in the County			X			
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			Has this activity been integrated into the municipality's normal operations? YES



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation		X				Has this activity been integrated into the municipality's normal operations? YES newsletter 3x/year
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	.	X				
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	N/A					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	N/A					Has this activity been integrated into the municipality's normal operations? NO no dams in Twp.



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					one workshop hosted by elected official
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes				X		Featured in recent newsletter
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.				X		<i>Culvert replaced August 2017</i>
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Jeremiah R Ely SR

Title: Emer. Mgmt. Coordinator

Jurisdiction: Sadsbury Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	D	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |  |
|--|--|
| <input type="checkbox"/> Avalanche/Glacier                     | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                       | <input checked="" type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                     |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse           | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance                        | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                           | <input type="checkbox"/> War and Criminal Activity |
| <input checked="" type="checkbox"/> Drowning - <i>manure pits</i> |  |

**Other Comments:**

Jurisdiction Risk - Sadsbury (Municipality)

2.5	Drought	>
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	<
2.5	Hailstorms	=
3.1	Invasive Species	=
3.1	Pandemic	>
2.3	Radon Exposure	=
2.1	Subsidence and Sinkholes	=
3.2	Tornado and Windstorm	<
2.2	Wildfire	=
2.7	Winter Storms	=
1.3	Dam Failure	=
2.6	Environmental Hazards	<
1.9	Nuclear Incidents	=
2.4	Transportation Accidents	>
3.1	Utility Interruption	<

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



Plan / Program	In Place	Status Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2014			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2015	2015		
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X	2015			Currently updating
Natural Resource Protection Plan					
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X				Farmland Preservation - Lancaster County
Building Code	X	since 2007			Code Administrators
Fire Code					
Other					





2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Zoning Department	One staff member - but has other responsibilities
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X		
Emergency Manager		X		
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

	Department/Agency	Comments
Capital Improvement Programming	X	
Community Development Block Grants (CDBG)	X	<i>If necessary funds could be used for hazard mitigation</i>
Special Purpose Taxes	X	
Gas / Electric Utility Fees	X	
Water / Sewer Fees	X	
Stormwater Utility Fees	X	
Development Impact Fees	X	
General Obligation, Revenue, and/or Special Tax Bonds	X	
Partnering Arrangements or Intergovernmental Agreements	X	
Other		



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		✓		
StormReady certification	✓		LEMA	
Natural disaster or safety related school programs		✓		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	✓		Township website	
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				



5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability	X		
Financial Capability		X	
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Kristen Peachy Title: Manager Jurisdiction: Salisbury Twp.

*Purpose:* To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

*Instructions:* Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.

**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	





	Existing Goals and Objectives	Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status		Review Comments
	Completed	Continuous	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas		✓	Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	✓		
1.2.2 Ensure safety buffer between industrial facilities and population		✓	
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	✓		Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	✓		
1.4.2 Coordinate with PA DOH on issues related to pandemics	✓		
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	✓		
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	✓		



Mitigation Strategy 5-Year Mitigation Plan Review

	Status			Review Comments
	Continued	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	✓	✓		implemented Statewide building code
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	✓			
2.2.1 Regularly inspect and maintain bridges and culverts	✓			Has this activity been integrated into the municipality's normal operations? <i>yes</i>
2.2.2 Require special use permits for hazard-prone areas	✓			<i>We do not have a lot of hazard prone areas</i>
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies	✓			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	✓			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	✓			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	✓			Has this activity been integrated into the municipality's normal operations?



	Status		Continuous					
3.2.1 Encourage multi-jurisdictional exercises and drills	✓							
3.3.1 Implement the new Lancaster County radio system					✓			
3.3.2 Inventory all available equipment and technology used for emergency response			✓		✓			Continue to update inventory lists
4.1.1 Ensure that the County's dams are structurally sound	N/A							
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	N/A							
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			✓					
5.1.1 Develop and implement source water protection plans			✓					
5.1.2 Reduce the number of miles of impaired streams in the County		✓	✓					Working with farmers to clean up streams
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			✓					Has this activity been integrated into the municipality's normal operations? <i>Yes</i>



<b>Existing Mitigation Action</b>							<b>Review Comments</b>
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	✓						<i>Has this activity been integrated into the municipality's normal operations?</i>
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	✓						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	✓						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	✓						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	✓						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	✓						<i>Has this activity been integrated into the municipality's normal operations?</i>





	Status		Disc		Priority
	Continuous	Disc	Disc	Disc	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	✓				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	✓				
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	✓				
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	✓				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.					



Mitigation Strategy 5-Year Mitigation Plan Review

			Continuous	Cont			Period 2010-2015
<p>Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.</p>							
<p>Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.</p>							
<p>East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.</p>							
<p>East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.</p>							



Mitigation Strategy	Priority	Status	Funding Source	Review Comments
<p>Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.</p>		Continuous		
<p>Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.</p>				
<p>Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.</p>				
<p>Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.</p>				
<p>Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.</p>				



<b>Existing Mitigation Action</b>			<b>Continuous</b>				<b>Review Comments</b>
<p>Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.</p>							
<p>Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.</p>							
<p>Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.</p>							
<p>Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.</p>							



Mitigation Strategy 5-Year Mitigation Plan Review

			Continu			Review Comments
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Kirsten Peachey

Title: Township Manager

Jurisdiction: Salisbury Twp.

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC, Increase? <small>more aware of potential</small>	We did experience a tornado in 2016 and it seems this may become more frequent w/ severe weather
Wildfire	NC	
Winter Storm	NC, Increase?	We have experienced <del>more</del> storms - weather is unpredictable
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	Increase	more traffic would likely lead to more accidents

## PART II

### Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

#### *Natural*

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

#### *Human-Caused*

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

### Other Comments:



# Hazard Identification and Risk Evaluation Worksheet

Name: F.S. ECHTERNACH / LISA BOYD Title: EMIA / BOBO MANAGER

Jurisdiction: STRASBURG BOROUGH

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	I	ANTIQUATED INFRASTRUCTURE IN HISTORIC DISTRICT, MORE DEMAND.
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	I	INCREASE VOLUME



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike            |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**

Jurisdiction Risk - STRASBURG ROBERT TWP. (Municipality)

Drought	2.5	=
Earthquake	2.2	=
Flood, Flash Flood, and Ice Jams	3.4	=
Hailstorms	2.5	=
Invasive Species	3.1	=
Pandemic	3.1	=
Radon Exposure	2.3	>
Subsidence and Sinkholes	2.1	=
Tornado and Windstorm	3.2	=
Wildfire	2.2	=
Winter Storms	2.7	=
Dam Failure	1.3	<
Environmental Hazards	2.6	=
Nuclear Incidents	1.9	=
Transportation Accidents	2.4	=
Utility Interruption	3.1	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

**Capability Assessment Survey**

Jurisdiction: STRASBURG BOROUGH

Point of Contact Name and Title: F.S. ECHTERNACHT <sup>EMA</sup> LISA BOYD BOBO MAUNERS

Phone: 717-681-7732/717-687-7128

Email: ECHTERNACHT@POLICE.CO.LANCASTER.PA.US

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status		Dept./Agency Responsible	Comments
	In Place	Adopted Date or Updated		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008	Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan			X	
Emergency Operations Plan	X	05/2003		
Disaster Recovery Plan	X	05/2003		
Evacuation Plan	X	05/2003		
Continuity of Operations Plan	X	05/2003		
NFIP	—			
NFIP – Community Rating System	—			
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	—			
Floodplain Management Plan	—			
Zoning Regulations	X	03/2016		



Capability Assessment Survey

Tool / Program	In Place	Status		Dept./Agency Responsible	Comments
		Adopted or Updated	Under Development		
Subdivision Regulations	X	68-PAS			AMENDED 2011
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	10-2006		JTBT BODTWP	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	1996			
Stormwater Management Plan / Ordinance	X	04-2014			
Natural Resource Protection Plan	—				
Capital Improvement Plan	X				ANNUAL REVIEWS
Economic Development Plan	—				
Historic Preservation Plan	X	09-2016			
Farmland Preservation	—				
Building Code	X	07-2004			
Fire Code	—				
Other	—				



Capability Assessment Survey

2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		LCPC/ STRASSBURG BORO P.C.	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		ELA GROUP	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		IL IL	
Emergency Manager	X		ECHTERMACH	
NFIP Floodplain Administrator	X		BOYD	
Land Surveyors	X		ELM	
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		LARC CO. GIS	
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		ESQUIMA STAFF	
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes	X		LCTR	
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees		X		
Development Impact Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X			
Other				





4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification	X		EMA	
Natural disaster or safety related school programs	X		P.D./EMA	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		P.D./EMA/FSOE	
Public-private partnership initiatives addressing disaster-related issues	X		P.D./EMA/FSOE	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Fire CO Red Rose K9MAR. REARER CODEX ASSOC.	
Other				



5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: LISA BOYD Title: BOB MANAGER Jurisdiction: STRASBURG TOWNSHIP  
F.S. ECATERNACCI EMA/ POLICE CHIEF

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	

<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	



<b>Existing Goals and Objectives</b>		<b>Comments</b>
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal	IMPROVE SDRM WATER MANAGEMENT IN HISTORIC DISTRICT OF STRASBURG	
Objective	USE THE ARMY CORP PLAN FOR SDRM WATER MANAGEMENT. FOR IMPROVEMENT TO HISTORIC DISTRICT SDRM MANAGEMENT.	BASED ON ARMY CORP PLAN FROM JUNE 2006
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas					<i>Has this activity been integrated into the municipality's normal operations?</i>
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space					
1.2.2 Ensure safety buffer between industrial facilities and population					
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance					<i>Has this activity been integrated into the municipality's normal operations?</i>
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations					
1.4.2 Coordinate with PA DOH on issues related to pandemics					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters					





Mitigation Strategy 5-Year Mitigation Plan Review

<i>Existing Mitigation Action</i>	<b>Status</b>					<b>Review Comments</b>
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts						<i>Has this activity been integrated into the municipality's normal operations?</i>
2.2.2 Require special use permits for hazard-prone areas						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						<i>Has this activity been integrated into the municipality's normal operations?</i>
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use						<i>Has this activity been integrated into the municipality's normal operations?</i>



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
3.2.1 Encourage multi-jurisdictional exercises and drills					
3.3.1 Implement the new Lancaster County radio system					
3.3.2 Inventory all available equipment and technology used for emergency response					
4.1.1 Ensure that the County's dams are structurally sound					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues					
5.1.1 Develop and implement source water protection plans					
5.1.2 Reduce the number of miles of impaired streams in the County					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation						Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.					



Mitigation Strategy 5-Year Mitigation Plan Review

<i>Existing Mitigation Action</i>	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.					
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.					
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.					
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>					
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>					



# Hazard Identification and Risk Evaluation Worksheet

Name: Juditha Willig

Title: Secretary

Jurisdiction: Strasburg Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	~	
Floods, Flash Floods, and Ice Jams	~	
Radon	~	
Subsidence, Sinkhole	~	
Tornado, Windstorm	~	
Wildfire	~	
Winter Storm	~	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	~	
Nuclear Incident	~	
Transportation Accident	I	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide                   |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami                     |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano                     |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Jurisdiction Risk - STRASBURG ROBERT TWP. (Municipality)

Drought	2.5	=
Earthquake	2.2	=
Flood, Flash Flood, and Ice Jams	3.4	=
Hailstorms	2.5	=
Invasive Species	3.1	=
Pandemic	3.1	=
Radon Exposure	2.3	>
Subsidence and Sinkholes	2.1	=
Tornado and Windstorm	3.2	=
Wildfire	2.2	=
Winter Storms	2.7	=
Dam Failure	1.3	<
Environmental Hazards	2.6	=
Nuclear Incidents	1.9	=
Transportation Accidents	2.4	=
Utility Interruption	3.1	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

**Capability Assessment Survey**

Jurisdiction: STPA

Point of Contact Name and Title: J. Billig

Phone: 717-687-6233

Email: Secretary@shubingtownship.com

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate its estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status		Date Adopted or Updated	Under Development	Dept./Agency Responsible	Comments
	In Place					
EXAMPLE: Hazard Mitigation Plan	X		1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy, completed one action.
Hazard Mitigation Plan				X		
Emergency Operations Plan	X		05/2003			
Disaster Recovery Plan	X					
Evacuation Plan	X				TRAC OF EDR	DRAC OF
Continuity of Operations Plan				X	ST	
NFIP						
NFIP - Community Rating System			-			
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)			-			
Floodplain Management Plan	X		3/7/11		ST	
Zoning Regulations	X		7/7/05		ST	



Capability Assessment Survey

Tool / Program	Status		Under Development	Dept./Agency Responsible	Comments
	In Place	Adopted Date or Updated			
Subdivision Regulations	X	2/2/16		ST	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	10/4/06		ST	
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	10/07/94		ST	
Stormwater Management Plan / Ordinance	X	5/5/14		ST	
Natural Resource Protection Plan		-			
Capital Improvement Plan		-			
Economic Development Plan		-			
Historic Preservation Plan	X	3/4/17		ST	
Farmland Preservation	X			Ag Pres. Board / EFT	
Building Code	X	11/9/13		ST	
Fire Code		-			
Other		-			



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		KCPD	
Planners or engineers (with natural and/or human caused hazards knowledge)		X		
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Solanco Engineering Commonwealth College	
Emergency Manager	X		S. Ed Starnes	
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		KCPD	
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				





Capability Assessment Survey

3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		Y		
Special Purpose Taxes	X		AST / LCTCB	
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X		Reform WWSRP/ST	
Stormwater Utility Fees		X		
Development Impact Fees	X		STDP	
General Obligation, Revenue, and/or Special Tax Bonds	X		STBY	
Partnering Arrangements or Intergovernmental Agreements	X		BARD SLCIMC	
Other				



4. Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification				
StormReady certification	X		SEd	
Natural disaster or safety related school programs	X		h	
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		M	
Public-private partnership initiatives addressing disaster-related issues	X		h	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Pepper Creek Park NRK9	
Other				



5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability	X		
Financial Capability	X		
Education and Outreach	X		



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Bobbi Pilly

Title: Secretary

Jurisdiction: Shrewsbury Twp

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.

**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards. (Emergency Services Measures)	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	Maintain and/or implement flood control measures in Lancaster County (Structural Projects)	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested: Add Affected Areas Section to the Plan

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		





FD

**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
3.2.1 Encourage multi-jurisdictional exercises and drills	<input checked="" type="checkbox"/>					
3.3.1 Implement the new Lancaster County radio system	<input checked="" type="checkbox"/>					
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound	<input checked="" type="checkbox"/>					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	<input checked="" type="checkbox"/>					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			<input checked="" type="checkbox"/>			
5.1.1 Develop and implement source water protection plans			<input checked="" type="checkbox"/>			
5.1.2 Reduce the number of miles of impaired streams in the County	<input checked="" type="checkbox"/>					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			<input checked="" type="checkbox"/>			Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments	
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed		Discontinued
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk				X		
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X				
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X				
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.					
von Township - Poole Forge Park Dry Install a dry hydrant at Poole Forge 1940 Main Street.					

Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.					
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.					
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.					
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.					
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.					
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with reators to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>					
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>					



# Hazard Identification and Risk Evaluation Worksheet

Name: WILLIAM SHARK

Title: EMC

Jurisdiction: EAST CARL TWP  
TOWNE HALL BLDG

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	D	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	I	
Nuclear Incident	NC	
Transportation Accident	I	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input checked="" type="checkbox"/> Invasive Species <i>RESISTANT WEEDS</i> |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide  |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input checked="" type="checkbox"/> Lightning Strike                        |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic   |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami  |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano  |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

**Human-Caused**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

**Other Comments:**

Lancaster County Planning Team  
 Risk Assessment/Capability Assessment Review Meeting

Jurisdiction Risk - TRAIL Hill District (Municipality)

	2.5	Drought
	2.2	Earthquake
<	3.4	Flood, Flash Flood, and Ice Jams
=	2.5	Hailstorms
=	3.1	Invasive Species
=	3.1	Pandemic
=	2.3	Radon Exposure
<	2.1	Subsidence and Sinkholes
=	3.2	Tornado and Windstorm
<	2.2	Wildfire
=	2.7	Winter Storms
<	1.3	Dam Failure
=	2.6	Environmental Hazards
=	1.9	Nuclear Incidents
=	2.4	Transportation Accidents
=	3.1	Utility Interruption

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

### Capability Assessment Survey

Jurisdiction: Terre Hill Borough Point of Contact Name and Title: William Shirk EMC \_\_\_\_\_

Phone: 717-3314-5496 Email: wjshirk@hotmail.com

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan		<b>2014</b>		<b>LEMA</b>	
Emergency Operations Plan		<b>2015</b>		<b>EMCx</b>	
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan					
Zoning Regulations					



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations		2001		Borough council	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)		2006		Borough council	
Open Space Management Plan (or Parks/Rec or Greenways Plan)		2008		Borough council	
Stormwater Management Plan / Ordinance		2004		Borough council	
Natural Resource Protection Plan		2006		Borough council	
Capital Improvement Plan					
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code		2011		Borough council	
Fire Code					
Other					





**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Planning commission	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Planning commission	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Zoning officer	
Emergency Manager	X		EMC	
NFIP Floodplain Administrator	X		Zoning officer	
Land Surveyors				
Scientists or staff familiar with the hazards of the community	X		Planning commission	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Secretary	
Grant writers or fiscal staff to handle large/complex grants	X		Secretary, mayor	
Staff with expertise or training in Benefit-Cost Analysis	X			
Other				

**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X			
Special Purpose Taxes	X			
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X			
Other				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		X		
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach		X	



# Mitigation Strategy 5-Year Mitigation Plan Review

+ *Traer-Hill 5200*

Name: William Shirk Title: EMC

Jurisdiction: East Earl Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?



**Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.**



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
Objective 1.1	Develop regulations limiting development in hazard-prone areas	
Objective 1.2	Direct new growth away from hazard-prone areas	
Objective 1.3	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
Objective 1.4	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
Objective 2.1	Protect existing structures from damage that can be caused by hazards	
Objective 2.2	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
Objective 2.3	Protect critical facilities from the impacts of natural and human-caused hazards	
Objective 2.4	Elevate or acquire flood prone repetitive loss structures	





Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
Objective 3.1	Improve coordination and communication between departments	
Objective 3.2	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
Objective 3.3	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
Objective 4.1	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
Objective 4.2	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
Objective 5.1	Lessen impacts on natural resources from natural and human-caused hazards	
Objective 5.2	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
Objective 6.1	Develop public education and outreach programs on hazards and hazard mitigation	
Objective 6.2	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	

Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			x			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	x					
1.2.2 Ensure safety buffer between industrial facilities and population			x			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			x			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	x					
1.4.2 Coordinate with PA DOH on issues related to pandemics	x					
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	x					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	xx					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress / Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings	X					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County	X					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills	X					
3.3.1 Implement the new Lancaster County radio system		X				
3.3.2 Inventory all available equipment and technology used for emergency response			X			
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans				X		
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains			X			

Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation	X					
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes			X			
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.		x				Pointed info to landowners
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: William J Howard

Title: Emergency Management Coordinator

Jurisdiction: Upper Leacock Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**







## Capability Assessment Survey

Jurisdiction: Upper Leacock Township Point of Contact Name and Title: William J. Howard, Emergency Management Coordinator

Phone: 717-587-9204 Email: [bhoward@ultwp.com](mailto:bhoward@ultwp.com)

**Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				
Emergency Operations Plan	X				
Disaster Recovery Plan	X				
Evacuation Plan	X				
Continuity of Operations Plan	X				
NFIP	X				
NFIP – Community Rating System	X				
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X				
Floodplain Management Plan	X				



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Zoning Regulations	X				
Subdivision Regulations	X				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X				
Natural Resource Protection Plan	X				
Capital Improvement Plan	X				
Economic Development Plan	X				
Historic Preservation Plan		X			
Farmland Preservation	X				
Building Code	X				
Fire Code	X				
Other					



**1. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			
Planners or engineers (with natural and/or human caused hazards knowledge)	X			
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager	X			
NFIP Floodplain Administrator	X			
Land Surveyors	X			
Scientists or staff familiar with the hazards of the community	X			
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program		X		
Grant writers or fiscal staff to handle large/complex grants	X			
Staff with expertise or training in Benefit-Cost Analysis	X			
Other				



**2. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X			
Community Development Block Grants (CDBG)	X			
Special Purpose Taxes	X			
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees	X			
Development Impact Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements	X			
Other				



**3. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification				UNKNOWN
StormReady certification	X		COUNTY EMA	
Natural disaster or safety related school programs	X			
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X			
Public-private partnership initiatives addressing disaster-related issues	X			
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			
Other				

**4. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability		X	
Education and Outreach		X	

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: William J Howard

Title: Emergency Management Coordinator

Jurisdiction: Upper Leacock Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2. Ensure safety buffer between industrial facilities and population			X			
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations				X		
1.4.2. Coordinate with PA DOH on issues related to pandemics			X			
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County				X		
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use		X				Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills		X				
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response				X		
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community			X			
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans				X		
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation		X				Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk				X		
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	NA					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures		X				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes			X			
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.		X				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Duane Ober

Title: EM. Mgt. Coordinator

Jurisdiction: Warwick Twp. / Lititz Boro

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	D	low risk
Floods, Flash Floods, and Ice Jams	D	Improvements made to Spedwell Lake Dam
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	I	Blizzard in 2016
<b>Human-made Hazards</b>		
Dam Failure	D	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Always a risk for hailstorms, lightning, etc., but not sure how you "prepare" extensively



## Capability Assessment Survey

Jurisdiction: Warwick Township Point of Contact Name and Title: Duane Ober  
 Phone: (717) 626-8900 Email: dober@warwicktownship.org

**1. Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X			LEMA	Under Review
Emergency Operations Plan	X	1/26/16		Warwick Twp. EMA	Under review
Disaster Recovery Plan					No plan
Evacuation Plan					No plan
Continuity of Operations Plan			X		Under review
NFIP	X	2016		FEMA	New maps developed by FEMA
NFIP – Community Rating System	X	2016		FEMA	New maps developed by FEMA
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	2016		Township Supervisors	
Floodplain Management Plan	X	2016			
Zoning Regulations	X	2016		Township Supervisors	



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2015		Township Supervisors	
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2018			5-year strategic plan ( <b>Forge the Future 2022</b> ) will be adopted in 2018
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	2010			
Stormwater Management Plan / Ordinance	X	2014			
Natural Resource Protection Plan	X	2018			Included in "Forge the Future 2022" plan
Capital Improvement Plan	X	2016	X		Creating Capital Improvement Plans for fire, police, public works, etc.
Economic Development Plan	X	2018			Included in "Forge the Future 2022" plan
Historic Preservation Plan	X	2018			Included in "Forge the Future 2022" plan
Farmland Preservation	X	2018			Included in "Forge the Future 2022" plan
Building Code	X				
Fire Code	X				
Other					
Lititz Borough & Warwick Twp. Joint Act 537 Plan – Sewage Facilities Plan Update	X	2007	X		Update Planned in 2018
Warwick Twp. Municipal Authority Wellhead Protection Plan	X	1999			Will need to update once second well in Rothsville area is completed



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Warwick Township Planner	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		ELA Group	Subcontracted
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		ELA Group, Entech	Subcontracted
Emergency Manager	X		Warwick Township EMA	
NFIP Floodplain Administrator		X		
Land Surveyors	X		Diehm and Sons	Subcontracted
Scientists or staff familiar with the hazards of the community	X		Landstudies	Subcontracted
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Assistant Township Secretary	
Grant writers or fiscal staff to handle large/complex grants	X		Assistant Township Treasurer	
Staff with expertise or training in Benefit-Cost Analysis	X		Township Manager	
Other				

**3. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State or Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Township Staff	
Community Development Block Grants (CDBG)	X		Township Staff	
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X			
Stormwater Utility Fees	X			During Plan Submission
Development Impact Fees	X			During Plan Submission
General Obligation, Revenue, and/or Special Tax Bonds		X		Could issue a bond if needed
Partnering Arrangements or Intergovernmental Agreements		X		
Other				

**4. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		N/A
StormReady certification	X		Lancaster County EMA	
Natural disaster or safety related school programs		X		Handled by school districts
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Warwick Emergency Services Commission	Community safety education
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X		Warwick Emergency Services Local fire companies & ambulances Litzitz Regional Water Authority Litzitz Run Watershed Alliance	Safety plans, Church safety plans, annual environment clean-up days
Other				

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Financial Capability			X
Education and Outreach			X

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: \_\_\_\_\_ Duane Ober \_\_\_\_\_ Title: \_\_ Emergency Management Coordinator \_ Jurisdiction: Warwick Township, Lancaster Co.

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	<b>Led / influenced by FEMA</b>
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	<b>Mission and directives of Warwick Emergency Services Commission (WESC), a regional function of Warwick Township, Lititz Borough, and Elizabeth Township.</b>
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	<b>Stormwater, floodplain, bridge, and road projects</b>
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	<b>Zoning and Subdivision and Land Development Ordinances</b>
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	<b>WESC or Emergency Management</b>
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>	<b>Warwick Township – install battery back-up for all traffic lights, where possible</b>	
<b>Objective</b>	Evaluate traffic signals that are set-up to have battery back-up	
<b>Objective</b>	Determine costs associated with updating current lights to allow for battery back-up (LED upgrades?)	
<b>Objective</b>	Seek and apply for grants to assist with funding for this project	

<b>Warwick Township – Emergency Services Review of all submitted land development plans</b>		
<b>Goal</b>		
<b>Objective</b>	Receive input from emergency services prior to approval of land development plans	
<b>Objective</b>	Reduce future issues with emergency vehicle access or emergency services needs that were overlooked	<b>Currently in place and constantly being improved</b>
<b>Objective</b>	Cooperation by developer and emergency services for partnership to keep community safe	

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2. Ensure safety buffer between industrial facilities and population			X			
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations			X			Community emergency management planning, but relying on population to provide us with the information
1.4.2. Coordinate with PA DOH on issues related to pandemics	X					
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			Following adopted building codes
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts	X					
2.2.2 Require special use permits for hazard-prone areas	X					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies		X				LCPC ?
2.3.1 Create and maintain a database and map of all critical facilities in the County			X			LEMA
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster	X					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use		X				
3.2.1 Encourage multi-jurisdictional exercises and drills			X			Warwick Emergency Services Commission / Emergency Mgt.



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
3.3.1 Implement the new Lancaster County radio system		X			
3.3.2 Inventory all available equipment and technology used for emergency response			X		
4.1.1 Ensure that the County's dams are structurally sound	X				
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community	X				
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X		
5.1.1 Develop and implement source water protection plans	X				
5.1.2 Reduce the number of miles of impaired streams in the County	X				
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	X				
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation	X				



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk	X					
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			Police and EMA serve on local school district safety committee to continuously evaluate risk
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	X					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures	X					





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					County or DEP?
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes	X					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.	X					



# Hazard Identification and Risk Evaluation Worksheet

Name: Carolyn Hildebrand Title: Manager

Jurisdiction: West Cocalico Twp

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  NC = No Change; I = Increase; D = Decrease  (Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)	Additional Comments
<b>Natural Hazards</b>		
Drought	N/C	
Earthquake	N/C	
Floods, Flash Floods, and Ice Jams	I	Floods.- Our floods rise & recede quickly but we had impact in the Lee Irene event
Radon	N/C	
Subsidence, Sinkhole	N/C	
Tornado, Windstorm	I	Had a wind shear event this spring which impacted us
Wildfire	N/C	
Winter Storm	N/C	
<b>Human-made Hazards</b>		
Dam Failure	N/C	
Environmental Hazards	N/C	
Nuclear Incident	N/C	
Transportation Accident	N/C	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input checked="" type="checkbox"/> Hailstorm                  | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Jurisdiction Risk - West Cocalico Twp (Municipality)

	Drought	2.5
	Earthquake	2.2
	Flood, Flash Flood, and Ice Jams	3.4
	Hailstorms	2.5
	Invasive Species	3.1
	Pandemic	3.1
	Radon Exposure	2.3
	Subsidence and Sinkholes	2.1
	Tornado and Windstorm	3.2
	Wildfire	2.2
	Winter Storms	2.7
	Dam Failure	1.3
	Environmental Hazards	2.6
	Nuclear Incidents	1.9
	Transportation Accidents	2.4
	Utility Interruption	3.1

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

<	=	<	<	=	=	>	<	>	>	=	<	>	=	<	=
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### Capability Assessment Survey

Jurisdiction: West Cocalico Twp Point of Contact Name and Title: Carolyn Hildebrand / Manager

Phone: 717-336-8720 Email: wcocalico@gmail.com

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				
Emergency Operations Plan	X				
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan	X				
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (Spec. NFIP Flood Damage Prevention Ordinance)	X	9/16			
Floodplain Management Plan					
Zoning Regulations	X	9/11			



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Subdivision Regulations	X	2004			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2003			
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X	2015			
Natural Resource Protection Plan					
Capital Improvement Plan	X	2011			
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X				
Building Code	X				
Fire Code					
Other					





2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Rethers	
Planners or engineers (with natural and/or human caused hazards knowledge)	X	<del>X</del>	Rethers	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X	<del>X</del>	Rethers AG 1	
Emergency Manager	X		Dennis Schmeck	
NFIP Floodplain Administrator	X		Carolyn Hildebrand	
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Rethers	
Grant writers or fiscal staff to handle large/complex grants	X		Rethers	
Staff with expertise or training in Benefit-Cost Analysis				
Other				

Lots of Rethers listed. While they generally have staff available to do these tasks, we pay a premium AND they are pricey





3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	<del>X</del>	X	<del>FED</del>	
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes		X		
Gas / Electric Utility Fees				
Water / Sewer Fees				
Stormwater Utility Fees				
Development Impact Fees				
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements				
Other				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs				Don't know
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X			
Public-private partnership initiatives addressing disaster-related issues		X		
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	X		
Administrative and Technical Capability		X	
Financial Capability		X	
Education and Outreach	X		

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Cecily Hildebrand Title: Manager Jurisdiction: W Coastal Troop

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal	
Objective	
Objective	
Objective	

Goal	
Objective	
Objective	
Objective	





**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space		X				
1.2.2 Ensure safety buffer between industrial facilities and population			X			
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations	X					
1.4.2 Coordinate with PA DOH on issues related to pandemics			X			
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding		X				
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						
3.3.1 Implement the new Lancaster County radio system		X				
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community				X		
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues				X		
5.1.1 Develop and implement source water protection plans						
5.1.2 Reduce the number of miles of impaired streams in the County				X		
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains				X		Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk			X			
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities				2/17		<del>Has this activity been integrated into the municipality's normal operations?</del>
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures				X		Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures						
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.						
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 Intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Warren Mueller Jr Title: coordinator

Jurisdiction: Elizabethtown Regional EMA

Elizabethtown Borough  
West Donegal Township  
Mt Joy Township **PART I**

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	N/C	
Earthquake	N/C	
Floods, Flash Floods, and Ice Jams	Increase	Projects in place for mitigation.
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	I increase.	
Wildfire	N/C	
Winter Storm	I increase	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	



**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

# Hazard Identification and Risk Evaluation Worksheet

Name: William J Howard

Title: Emergency Management Coordinator

Jurisdiction: West Earl Township

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County’s hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano          |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor’easter |   |

***Human-Caused***

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

Jurisdiction Risk - West Earl Township (Municipality)

	2.5	Drought	>
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	=
	2.5	Hailstorms	=
	3.1	Invasive Species	>
	3.1	Pandemic	=
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	=
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	=
	2.7	Winter Storms	=
	1.3	Dam Failure	=
	2.6	Environmental Hazards	>
	1.9	Nuclear Incidents	<
	2.4	Transportation Accidents	>
	3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole



## Capability Assessment Survey

Jurisdiction: West Earl Township

Point of Contact Name and Title: William J. Howard, Emergency Management Coordinator

Phone: 717-859-3201 Ext 110

Email: [bhoward@westearltwp.org](mailto:bhoward@westearltwp.org)

**Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
<i>EXAMPLE: Hazard Mitigation Plan</i>	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				
Emergency Operations Plan	X				
Disaster Recovery Plan	X				
Evacuation Plan	X				
Continuity of Operations Plan	X				
NFIP	X				
NFIP – Community Rating System	X				
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X	3/14/2016			
Floodplain Management Plan	X	3/14/2016			



Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
Zoning Regulations	X	11/3/1970			Originally adopted in 1970 and has been updated through the years.
Subdivision Regulations	X	8/6/1974			Originally adopted in 1974 and has been updated through the years.
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)			X		land use map under development by Becker Engineering
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	X				
Natural Resource Protection Plan		X			
Capital Improvement Plan	X				
Economic Development Plan	X				
Historic Preservation Plan		X			
Farmland Preservation	X				Lancaster County Ag preserve
Building Code	X	6/14/2004			PA UCC
Fire Code	X	6/14/2004			PA UCC
Other					



**1. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an “X” in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Becker Engineering	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Becker Engineering	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Becker Engineering	
Emergency Manager	X		Bill Howard	
NFIP Floodplain Administrator	X			
Land Surveyors	X		Becker Engineering	
Scientists or staff familiar with the hazards of the community		X		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA’s HAZUS program	X		Becker Engineering	
Grant writers or fiscal staff to handle large/complex grants	X		Becker Engineering	
Staff with expertise or training in Benefit-Cost Analysis	X			
Other				



**2. Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)	X		DCNR	
Special Purpose Taxes	X		Lancaster County Tax Collection	LST tax Funds collected are distributed equally between the West Earl & Farmersville Fire Companies
Gas / Electric Utility Fees		X		
Water / Sewer Fees	X		West Earl Sewer Authority West Earl Water Authority	
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements	X			
Other				



**3. Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification				UNKNOWN
StormReady certification	X		COUNTY EMA	
Natural disaster or safety related school programs	X			
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X			
Public-private partnership initiatives addressing disaster-related issues	X			
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			
Other				

**4. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Financial Capability		X	
Education and Outreach		X	

## Mitigation Strategy 5-Year Mitigation Plan Review

Name: William J Howard

Title: Emergency Management Coordinator

Jurisdiction: West Earl Township

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.





**Goal and Objective Review Worksheet**

*Instructions:* Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		

Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as “No Progress / Unknown,” “In Progress / Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued.” Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1. Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1. Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space	X					
1.2.2. Ensure safety buffer between industrial facilities and population			X			
1.3.1. Educate residents in flood-prone areas about the many benefits of purchasing flood insurance	X					Has this activity been integrated into the municipality's normal operations?
1.4.1. Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations				X		
1.4.2. Coordinate with PA DOH on issues related to pandemics			X			
1.4.3. Ensure EPZ municipalities have access to Potassium Iodide (KI)	X					
1.4.4. Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters	X					



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings			X			
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding	X					
2.2.1 Regularly inspect and maintain bridges and culverts			X			Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas			X			
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X			Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County				X		
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster			X			
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use		X				Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills		X				
3.3.1 Implement the new Lancaster County radio system				X		
3.3.2 Inventory all available equipment and technology used for emergency response				X		
4.1.1 Ensure that the County's dams are structurally sound	X					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community			X			
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X			
5.1.1 Develop and implement source water protection plans				X		
5.1.2 Reduce the number of miles of impaired streams in the County	X					
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation		X				Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk				X		
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation	X					
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation			X			
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities	NA					
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures			X			Has this activity been integrated into the municipality's normal operations?





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures		X				
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas	X					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes			X			
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.		X				
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p> <p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Andrew Stern

Title: Twp Manager

Jurisdiction: West Hempfield

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |  |
|--|--|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species    |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide           |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Lightning Strike    |
| <input type="checkbox"/> Expansive Soils                       | <input checked="" type="checkbox"/> Pandemic |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami             |
| <input type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano             |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse                                   | <input type="checkbox"/> Levee Failure             |
| <input checked="" type="checkbox"/> Civil Disturbance - <i>upcoming pipeline protests</i> | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation   | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning   |  |

**Other Comments:**



Lancaster County Planning Team  
 Risk Assessment/Capability Assessment Review Meeting

Jurisdiction Risk - West Hempfield Twp (Municipality)

	2.5	Drought	=
	2.2	Earthquake	=
	3.4	Flood, Flash Flood, and Ice Jams	=
	2.5	Hailstorms	=
	3.1	Invasive Species	=
	3.1	Pandemic	=
	2.3	Radon Exposure	=
	2.1	Subsidence and Sinkholes	=
	3.2	Tornado and Windstorm	=
	2.2	Wildfire	<
	2.7	Winter Storms	=
	1.3	Dam Failure	<
	2.6	Environmental Hazards	=
	1.9	Nuclear Incidents	>
	2.4	Transportation Accidents	>
	3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

Jurisdiction Risk - West-Lancaster Twp. (Municipality)

2.5	Drought	=
2.2	Earthquake	=
3.4	Flood, Flash Flood, and Ice Jams	>
2.5	Hailstorms	=
3.1	Invasive Species	=
3.1	Pandemic	=
2.3	Radon Exposure	>
2.1	Subsidence and Sinkholes	>
3.2	Tornado and Windstorm	=
2.2	Wildfire	<
2.7	Winter Storms	=
1.3	Dam Failure	<
2.6	Environmental Hazards	=
1.9	Nuclear Incidents	<
2.4	Transportation Accidents	=
3.1	Utility Interruption	=

- > Your municipality's risk from this hazard is greater than the County's risk as a whole
- < Your municipality's risk from this hazard is less than the County's risk as a whole
- = Your municipality's risk from this hazard is about the same as the County's risk as a whole

Jurisdiction Risk - West Hampden Twp. (Municipality)

	2.5	Drought
	2.2	Earthquake
	3.4	Flood, Flash Flood, and Ice Jams
	2.5	Hailstorms
	3.1	Invasive Species
	3.1	Pandemic
	2.3	Radon Exposure
	2.1	Subsidence and Sinkholes
	3.2	Tornado and Windstorm
	2.2	Wildfire
	2.7	Winter Storms
	1.3	Dam Failure
	2.6	Environmental Hazards
	1.9	Nuclear Incidents
	2.4	Transportation Accidents
	3.1	Utility Interruption
<		
>		
<		
=		

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**Capability Assessment Survey**

Jurisdiction: WEST LANCASTER TWP.

Point of Contact Name and Title: DEE DEE MCGUIRE, TWP. MANAGER

Phone: 717-464-5731

Email: deedee@westlancaster.twp.pa.gov

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate its estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan	X	12/2016		Township	Millersville Univ. assisted
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan	X	12/2016		Township	
NFIP	X				
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X			Township	
Floodplain Management Plan	X			" "	
Zoning Regulations	X			" "	



Capability Assessment Survey

Tool / Program	In Place	Status Date Adopted or Updated	Under Development	Dept./Agency Responsible	Comments
Subdivision Regulations	X				
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X				
Stormwater Management Plan / Ordinance	X				
Natural Resource Protection Plan					
Capital Improvement Plan	X				
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation	X				
Building Code	X				
Fire Code	X				
Other					



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Township staff	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		↓	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		ELA	
Emergency Manager	X		Ken Barbor	
NFIP Floodplain Administrator		X		
Land Surveyors		X		
Scientists or staff familiar with the hazards of the community	X		Township staff	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		↓	
Grant writers or fiscal staff to handle large/complex grants	X		↓	
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				



3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Administration	
Community Development Block Grants (CDBG)		X		
Special Purpose Taxes	X			
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees	X		Board of Supervisors	WLT staff recommendations
Development Impact Fees	X			
General Obligation, Revenue, and/or Special Tax Bonds	X			
Partnering Arrangements or Intergovernmental Agreements	X			
Other				





4. Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
Firewise Communities Certification		X		
StormReady certification		X		
Natural disaster or safety related school programs		X		
Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	X		Community Development	
Public-private partnership initiatives addressing disaster-related issues	X		EMC, WLT staff	
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		X		
Other				



Capability Assessment Survey

**5. Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in **Section 5**.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Financial Capability			X
Education and Outreach		X	



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: Dee Dee McGuire Title: Top Manager Jurisdiction: West-Lampeter Twp.

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
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- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

<b>Existing Goals and Objectives</b>		<b>Comments</b>
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<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



<b>Existing Goals and Objectives</b>		<b>Comments</b>
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<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
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Mitigation Strategy 5-Year Mitigation Plan Review

Suggested Additional Goals and Objectives		Comments
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas			X			Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						
1.2.2 Ensure safety buffer between industrial facilities and population						
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance			X			Has this activity been integrated into the municipality's normal operations? <b>Yes</b>
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings					
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding					
2.2.1 Regularly inspect and maintain bridges and culverts			X		Has this activity been integrated into the municipality's normal operations? <i>Yes</i>
2.2.2 Require special use permits for hazard-prone areas					
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies			X		Has this activity been integrated into the municipality's normal operations? <i>Yes</i>
2.3.1 Create and maintain a database and map of all critical facilities in the County					
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster					
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use			X		Has this activity been integrated into the municipality's normal operations? <i>Yes</i>



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
3.2.1 Encourage multi-jurisdictional exercises and drills			X		
3.3.1 Implement the new Lancaster County radio system				X	
3.3.2 Inventory all available equipment and technology used for emergency response			X		
4.1.1 Ensure that the County's dams are structurally sound					
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community					
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues			X		
5.1.1 Develop and implement source water protection plans					
5.1.2 Reduce the number of miles of impaired streams in the County		X			
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains		X			

*Has this activity been integrated into the municipality's normal operations?*  
*WLT portions only*



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation			X			Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures	X					Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status				Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures					
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas					
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes					
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.					
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.					
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.					
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.					
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.					



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Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
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East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



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Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
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Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.			X			these activities have been implemented and are ongoing.
West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.	X					



# Hazard Identification and Risk Evaluation Worksheet

Name: Todd M English BV.

Title: Fac Plant Mgr.

Jurisdiction: M.H.T.

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species    |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide           |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike    |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic |
| <input checked="" type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami             |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano             |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input checked="" type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                            | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                                  |   |

**Other Comments:**

*These Events can Impact my Facility*

### Capability Assessment Survey

Jurisdiction: Berwyn Village MHTWP Point of Contact Name and Title: Fac. Plant Mgr.

Phone: (717) 468-7222 Email: Todd@brv.org

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan	X				<i>in House</i>
Emergency Operations Plan	X				" "
Disaster Recovery Plan	X				" "
Evacuation Plan	X				" "
Continuity of Operations Plan	X				" "
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan					
Zoning Regulations	X			MHTWP	



Capability Assessment Survey

Tool / Program	Status		Under Development	Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated			
Subdivision Regulations					
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)					
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance					
Natural Resource Protection Plan					
Capital Improvement Plan	X				
Economic Development Plan	X				
Historic Preservation Plan					
Farmland Preservation					
Building Code	X				
Fire Code	X				
Other					



**2. Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X			
Planners or engineers (with natural and/or human caused hazards knowledge)	X			
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X			
Emergency Manager	X			
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program				
Grant writers or fiscal staff to handle large/complex grants				
Staff with expertise or training in Benefit-Cost Analysis				
Other				





3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for hazard mitigation purposes (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X			
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				



4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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)	X			
Public-private partnership initiatives addressing disaster-related issues	X			
Local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			
Other				

Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability		X	
Financial Capability	X		
Education and Outreach	X		



# Mitigation Strategy 5-Year Mitigation Plan Review

Name: Todd M English Title: Ec. Plan Mgr. Jurisdiction: Bethlehem Village MHTU

Purpose: To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

Instructions: Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



Suggested Additional Goals and/or Objectives		Comments
Goal		
Objective	Elevate Long Term care Fee. in the county that provide Hcc, Svcs. to Residents to Critical Level. if They are NOT Already	
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		
Goal		
Objective		
Objective		
Objective		

**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas						Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						
1.2.2 Ensure safety buffer between industrial facilities and population						
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance						Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
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1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						





Mitigation Strategy 5-Year Mitigation Plan Review

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	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts						Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						
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Mitigation Strategy 5-Year Mitigation Plan Review

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3.2.1 Encourage multi-jurisdictional exercises and drills					
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Mitigation Strategy 5-Year Mitigation Plan Review

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6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

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Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: MARK HECKLMAN

Title: DIRECTOR OF OPERATIONS & SAFETY

Jurisdiction: DONEGAL S.D

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards: ?**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |  |  |
|--|--|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Invasive Species                          |
| <input type="checkbox"/> Coastal Erosion                       | <input type="checkbox"/> Landslide                                 |
| <input type="checkbox"/> Dust, Sand Storm                      | <input checked="" type="checkbox"/> Lightning Strike <b>DAMAGE</b> |
| <input type="checkbox"/> Expansive Soils                       | <input type="checkbox"/> Pandemic                                  |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Tsunami                                   |
| <input checked="" type="checkbox"/> Hailstorm <b>DAMAGE</b>    | <input type="checkbox"/> Volcano                                   |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure             |
| <input type="checkbox"/> Civil Disturbance              | <input type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

**Capability Assessment Survey**

Jurisdiction: DAWESB S.D.

Point of Contact Name and Title: MARK HECKLAW | DIRECTOR OF OPERATIONS & SAFETY

Phone: 717.492.1210

Email: MARK.HECKLAW@DAWESB.SD.OG

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate it's estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

Tool / Program	Status			Dept./Agency Responsible	Comments
	In Place	Date Adopted or Updated	Under Development		
EXAMPLE: Hazard Mitigation Plan	X	1/1/2008		Hazard County EMA	Interim update in 2008 revised mitigation strategy; completed one action.
Hazard Mitigation Plan					
Emergency Operations Plan					
Disaster Recovery Plan					
Evacuation Plan					
Continuity of Operations Plan					
NFIP					
NFIP – Community Rating System					
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)					
Floodplain Management Plan					
Zoning Regulations					



Capability Assessment Survey

Tool / Program	Status			Dept./Agency Responsible	Comments
	In place	Date Adopted or Updated	Under Development		
Subdivision Regulations					
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)					
Open Space Management Plan (or Parks/Rec or Greenways Plan)					
Stormwater Management Plan / Ordinance	.				EAST WONEGA TWP.
Natural Resource Protection Plan					
Capital Improvement Plan	.				DSD
Economic Development Plan					
Historic Preservation Plan					
Farmland Preservation					
Building Code					
Fire Code					
Other					

*Faint handwritten notes and signatures are visible in the background of the table area.*



2. **Administrative and Technical Capability:** Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
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 (includes building inspectors)	•			
Emergency Manager				
NFIP Floodplain Administrator				
Land Surveyors	•			
Scientists or staff familiar with the hazards of the community	•			
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program				
Grant writers or fiscal staff to handle large/complex grants				
Staff with expertise or training in Benefit-Cost Analysis				
Other				

\* DID CONTRACT PROFESSIONAL SERVICE WHEN NEEDED.





3. **Financial Capability:** Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for *hazard mitigation purposes* (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming				
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				





4. **Education and Outreach:** Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

Program/Organization	Yes	No	Department/Agency	Comments
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				

\* IPM POSTINGS,  
 \* ASBESTOS NOTICE LETTER / STAFF + PARENTS,



Capability Assessment Survey

5. **Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self-Assessment Capability Matrix in Section 5.

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability	•		
Administrative and Technical Capability	•		
Financial Capability	•		
Education and Outreach	•		

?



## Mitigation Strategy 5-Year Mitigation Plan Review

Name: MARY HECKLAW

Title: DIRECTOR OF OPERATIONS & SAFETY

Jurisdiction: DOVERGA S.D.

**Purpose:** To fulfill requirement that plan maintenance from previous plan has been completed and to obtain early feedback from the local mitigation planning committee on the plan update to incorporate into the update process.

**Instructions:** Complete the *Goal and Objective Review Worksheet* and *Mitigation Action Plan Review Worksheet* on the next two pages keeping the following questions in mind:

- Do the goals, objectives, and actions address current and expected conditions?
- Go through each goal and objective to determine: Should goal be carried forward into updated plan? Should goal be changed based on current conditions in community? Should goal be discontinued and if so why?
- Progress on actions should be noted. For each action the following questions should be answered: What is status? What progress has been made? Should action be continued in updated plan? Should action be discontinued and if so why?
- Has the nature or magnitude of hazard risk changed?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazard threats?
- Are there any issues that have limited the current implementation schedule?
- Have the implementation of identified mitigation actions resulted in expected outcomes?
- Has the Mitigation Planning Committee measured the effectiveness of completed hazard mitigation projects in terms of specific dollar losses avoided?
- Did the jurisdictions, agencies and other partners participate in the plan implementation process as proposed?
- Other?

Before completing the worksheets, the group may wish to discuss the above questions in a round robin format, using a flip chart. The questions are standard questions; however it is important to check the existing hazard mitigation plan maintenance section to see if there are additional questions that need to be considered.



**Goal and Objective Review Worksheet**

**Instructions:** Write each goal and objective identified in the existing hazard mitigation plan. Use the comment boxes to provide feedback or to suggest modification of any of the proposed goals or objectives. You may suggest additional objectives below each goal, or new goals and objectives on the last page of this exercise.

Existing Goals and Objectives		Comments
<b>Goal 1</b>	<b>Mitigate the potential for injury/death and damage from natural and human-made hazards in Lancaster County (Prevention)</b>	
<b>Objective 1.1</b>	Develop regulations limiting development in hazard-prone areas	
<b>Objective 1.2</b>	Direct new growth away from hazard-prone areas	
<b>Objective 1.3</b>	Encourage property owners in the 1 percent-annual-chance floodplain to purchase flood insurance	
<b>Objective 1.4</b>	Protect the health of County residents	
<b>Goal 2</b>	<b>Protect the citizens of Lancaster County as well as public and private property from the impacts of natural and human-caused hazards (Property Protection)</b>	
<b>Objective 2.1</b>	Protect existing structures from damage that can be caused by hazards	
<b>Objective 2.2</b>	Promote management and regulatory procedures that would reduce the impacts of hazards on public and private property	
<b>Objective 2.3</b>	Protect critical facilities from the impacts of natural and human-caused hazards	
<b>Objective 2.4</b>	Elevate or acquire flood prone repetitive loss structures	



Existing Goals and Objectives		Comments
<b>Goal 3</b>	<b>Improve emergency services and capabilities in Lancaster County to protect citizens from natural and human-caused hazards (Emergency Services Measures)</b>	
<b>Objective 3.1</b>	Improve coordination and communication between departments	
<b>Objective 3.2</b>	Ensure adequate training and resources for those involved in emergency response, services, relief, or hazard mitigation	
<b>Objective 3.3</b>	Ensure adequacy of equipment and technology	
<b>Goal 4</b>	<b>Maintain and/or implement flood control measures in Lancaster County (Structural Projects)</b>	
<b>Objective 4.1</b>	Develop local structural projects to reduce the impacts of natural and human-caused hazards on public and private property	
<b>Objective 4.2</b>	Implement and/or maintain existing flood-control systems	
<b>Goal 5</b>	<b>Mitigate effects of disasters and preserve the natural resources in Lancaster County (Natural Resource Protection)</b>	
<b>Objective 5.1</b>	Lessen impacts on natural resources from natural and human-caused hazards	
<b>Objective 5.2</b>	Direct growth in designated growth areas and maintain natural hazard buffers in the County	
<b>Goal 6</b>	<b>Increase public education and awareness of existing and potential hazards in Lancaster County (Public Education/Awareness Programs)</b>	
<b>Objective 6.1</b>	Develop public education and outreach programs on hazards and hazard mitigation	
<b>Objective 6.2</b>	Educate property owners in hazard-risk areas regarding their risks and the precautions they can take	



<b>Suggested Additional Goals and/or Objectives</b>		<b>Comments</b>
<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		

<b>Goal</b>		
<b>Objective</b>		
<b>Objective</b>		
<b>Objective</b>		



**Mitigation Action Plan Review Worksheet**

**Instructions:** List each mitigation action from the existing hazard mitigation plan and identify its status as "No Progress / Unknown," "In Progress / Not Yet Complete," "Continuous," "Completed," or "Discontinued." Include review comments for each action.

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.1.1 Review planned infrastructure to ensure that it will be developed outside of hazard-prone areas						Has this activity been integrated into the municipality's normal operations?
1.2.1 Acquire properties in hazard areas, notably in the 1 percent-annual-chance floodplain, to convert them to open space						
1.2.2 Ensure safety buffer between industrial facilities and population						
1.3.1 Educate residents in flood-prone areas about the many benefits of purchasing flood insurance						Has this activity been integrated into the municipality's normal operations?
1.4.1 Create and maintain a web-based inventory of the County's access and functional needs population to strengthen emergency response and evacuation operations						
1.4.2 Coordinate with PA DOH on issues related to pandemics						
1.4.3 Ensure EPZ municipalities have access to Potassium Iodide (KI)						WE NO LONGER HAVE SALTPOAS LOCATED INSIDE THE EPZ-
1.4.4 Coordinate with County hospitals to establish and maintain a pharmaceutical cache for use during disasters						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
1.4.5 Implement a building code ordinance mandating sprinkler systems in residential and commercial buildings						
2.1.1 Acquire, demolish, and elevate structures in hazard areas prone to repetitive flooding						
2.2.1 Regularly inspect and maintain bridges and culverts						Has this activity been integrated into the municipality's normal operations?
2.2.2 Require special use permits for hazard-prone areas						
2.2.3 Encourage the department responsible for creating and storing data related to parcels, centerlines, buildings, addresses, hydrology, and hazards to develop and enforce data maintenance policies						Has this activity been integrated into the municipality's normal operations?
2.3.1 Create and maintain a database and map of all critical facilities in the County						
2.3.2 Inspect critical facilities regularly to ensure that they comply with standard codes and can withstand the impacts of a disaster						TCU BASINS
3.1.1 Encourage the development of data-sharing policies and agreements between departments and organizations responsible for data creation, management, and use						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
3.2.1 Encourage multi-jurisdictional exercises and drills						rapid response drills -- 4 local P.D's
3.3.1 Implement the new Lancaster County radio system						
3.3.2 Inventory all available equipment and technology used for emergency response						
4.1.1 Ensure that the County's dams are structurally sound						
4.1.2 Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community						
4.2.1 Continue mitigation efforts/programs already in place to address flooding issues						
5.1.1 Develop and implement source water protection plans						
5.1.2 Reduce the number of miles of impaired streams in the County						
5.2.1 Coordinate with the municipal zoning boards to stop growth in floodplains						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.1.1 Disseminate informational pamphlets for County residents that explain the risks of hazards, outline precautionary measures that can be taken to help reduce impacts of a disaster to themselves and their property, and emphasize the value of hazard mitigation						Has this activity been integrated into the municipality's normal operations?
6.1.2 Develop an informational website with information on the hazards that can affect the County, how residents can protect themselves from a disaster, and mitigation actions the County and municipalities are taking to help reduce risk						
6.1.3 Cooperate with local media to produce regular public service announcements or news releases on hazard risk, safety, and the importance of mitigation						
6.1.4 Utilize existing programs for school education programs on hazards, hazard safety, and mitigation						?
6.1.5 Develop an informational pamphlet and subsequent training for the public located within the EPZ of major nuclear power facilities						
6.2.1 Assist municipalities in developing policies and procedures related to hazard mitigation, especially for municipalities that are vulnerable to direct impacts from possible dam failures						Has this activity been integrated into the municipality's normal operations?



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
6.2.2 Disseminate informational pamphlets or mailings on hazard mitigation for property owners in the 1 percent-chance floodplain or owners of repetitive loss structures						
6.2.3 Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas						
6.2.4 Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes						
6.2.5 Encourage the development of Radon ordinances for new construction and renovations.						
Caernarvon Township - Municipality-wide Newsletter - Distribute informational pamphlets about hazards in the Township.						
Caernarvon Township - Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.						
Caernarvon Township - Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.						
Caernarvon Township - Poole Forge Park Dry Hydrant - Install a dry hydrant at Poole Forge Park, near 1940 Main Street.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Columbia Borough - Radon Hazard Testing - Perform radon testing for residents and offer education programs to inform residents of the hazards of natural radon.						
Denver Borough - Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood prone area and to another location on Main Street in Denver Borough.						
East Earl Township - Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.						
East Hempfield Township - Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church St., Snapper Dam Rd., and Nolt Rd. The three roads are subject to frequent flooding due to undersized culverts.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Ephrata Borough - Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land. This is conceptual.						
Lancaster City - Relocating Stevens Avenue Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocation of Conestoga Gardens Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Lancaster City - Relocating Susquehanna Sewage Pumping Station - Relocation of sewage pumping station from 100 year floodplain.						
Manheim Township - Outlet Structure Replacement Retention Basin #2 - Outlet structure replacement for retention basin number 2. PA DEP has declared the dam to be unsafe. This project will alleviate the unsafe determination by PA DEP.						



Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
Manheim Township - West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.						
Mount Joy Borough - Little Chiques Creek Floodplain Study - Conduct a floodplain study of the Little Chiques Creek.						
Rapho Township - Lefever Road Culvert Replacement - The Lefever Road/SR772 intersection is in need of improvement to accommodate the increased traffic from nearby housing developments. Development is continuing to grow, and improved stormwater facilities will be needed to accept the increased runoff created. Replacing the existing undersized culvert on Lefever Road will mitigate potential flooding on this busy road and intersection. The intersection is a critical pinch point between Mount Joy Borough and Rapho Township, and flooding at this site can prevent evacuation from the area. Severe flooding at this location occurred during Tropical Storm Lee in 2011.						
Sadsbury Township - Mt. Verron Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.						





Mitigation Strategy 5-Year Mitigation Plan Review

Existing Mitigation Action	Status					Review Comments
	No Progress / Unknown	In Progress/ Not Yet Complete	Continuous	Completed	Discontinued	
<p>West Lampeter Township - MS 4 Map Database Update - Update database and MS4 map to include all private stormwater facilities in the Township. Institute an annual inspection of private stormwater facilities as part of the MS4 inspection schedule, and provide education for homeowners on best management practices in order to maintain systems. Work with realtors to include the disclosure of stormwater facilities as part of Section 13 of the mandatory PA State Real Estate Commissions' disclosure form to specifically require the seller to provide details for drainage areas.</p>						
<p>West Lampeter Township - Retention Pond - Construct retention ponds to protect properties along Hollinger Road.</p>						



# Hazard Identification and Risk Evaluation Worksheet

Name: Dan Forny Title: COO

Jurisdiction: Hempfield SD

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	D	5 yrs ago doing a lot of construction with P to sinkhole
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

**Natural**

- |   |   |
|---|---|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide        |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Expansive Soils                                  | <input type="checkbox"/> Pandemic         |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano          |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |   |

**Human-Caused**

- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance              | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                       |  |

**Other Comments:**

with aging electrical grid & ↑ industry/home ⇒ higher demands on system. None of schools have ~~any~~ long term or whole building emergency generation capabilities.

# Hazard Identification and Risk Evaluation Worksheet

Name: Adam Gardner

Title: Safety Manager

Jurisdiction: Landis Homes

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	NC	
Floods, Flash Floods, and Ice Jams	NC	
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	I	increase in pop. const. of taller buildings
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	NC	
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

## PART II

### Other Hazards:

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

#### *Natural*

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species    |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide           |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike    |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami             |
| <input type="checkbox"/> Hailstorm  | <input type="checkbox"/> Volcano             |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

#### *Human-Caused*

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                   |
| <input type="checkbox"/> Civil Disturbance                         | <input checked="" type="checkbox"/> Utility Interruption |
| <input type="checkbox"/> Disorientation                            | <input type="checkbox"/> War and Criminal Activity       |
| <input type="checkbox"/> Drowning                                  |  |

#### Other Comments:

# Hazard Identification and Risk Evaluation Worksheet

Name: Dan Mortensen

Title: UP operations

Jurisdiction: Mennonite Home Communities

## PART I

Identified Hazards 2014 HMP	How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?  <i>NC = No Change; I = Increase; D = Decrease</i>  <i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i>	Additional Comments
<b>Natural Hazards</b>		
Drought	NC	
Earthquake	I	Impact of growth in fracking
Floods, Flash Floods, and Ice Jams	I	Impact of building + loss of previous space
Radon	NC	
Subsidence, Sinkhole	NC	
Tornado, Windstorm	NC	
Wildfire	NC	
Winter Storm	NC	
<b>Human-made Hazards</b>		
Dam Failure	I	Due to age of dams
Environmental Hazards	NC	
Nuclear Incident	NC	
Transportation Accident	NC	

**PART II**

**Other Hazards:**

Do any of these hazards, not previously profiled in the County's hazard mitigation plan; have the potential to affect your municipality significantly? (If so, please check the box)

***Natural***

- |   |  |
|---|--|
| <input type="checkbox"/> Avalanche/Glacier                                | <input type="checkbox"/> Invasive Species    |
| <input type="checkbox"/> Coastal Erosion                                  | <input type="checkbox"/> Landslide           |
| <input type="checkbox"/> Dust, Sand Storm                                 | <input type="checkbox"/> Lightning Strike    |
| <input type="checkbox"/> Expansive Soils                                  | <input checked="" type="checkbox"/> Pandemic |
| <input type="checkbox"/> Extreme Temperature                              | <input type="checkbox"/> Tsunami             |
| <input checked="" type="checkbox"/> Hailstorm                             | <input type="checkbox"/> Volcano             |
| <input checked="" type="checkbox"/> Hurricane, Tropical Storm, Nor'easter |  |

***Human-Caused***

- |   |   |
|---|---|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Levee Failure                        |
| <input checked="" type="checkbox"/> Civil Disturbance   | <input checked="" type="checkbox"/> Utility Interruption      |
| <input type="checkbox"/> Disorientation                 | <input checked="" type="checkbox"/> War and Criminal Activity |
| <input type="checkbox"/> Drowning                       |   |

**Other Comments:**



<b>Municipality/Agency</b>	<b>Name</b>	<b>Title</b>	<b>List</b>
Adamstown Borough	Carolyn Friesena		Municipalities
Adamstown Borough	Eric Dickson	EMC	EMCs
Adamstown Borough	Mary Burkholder		Municipalities
Akron Borough	Greg Leisey	EMC	EMCs
Akron Borough	Susan Davidson		Municipalities
Bart Township	Mike Hoover	EMC	EMCs
Bart Township	Val Keene		Municipalities
Brecknock Township	Arthur Zerbe	EMC	EMCs
Brecknock Township	Caroll Martin		Municipalities
Caernarvon Township	Jennifer Roy		Municipalities
Caernarvon Township	Terry Martin		Municipalities
Caernarvon Township	Tom Stauffer	EMC	EMCs
Caernarvon Township	Wanda Good		Municipalities
Christiana Borough	Carol Pringle		Municipalities
Christiana Borough	Laverne D. Rettew		Municipalities
Christiana Borough	Mark MacDonald		Municipalities
Clay Township	Bruce R. Leisey		Municipalities
Clay Township	Keith Martin		Municipalities
Clay Township	Mike Corcoran	EMC	EMCs
Colerain Township	Martha Kepler		Municipalities
Colerain Township	Steve Hastings	EMC	EMCs
Columbia Borough	Jeff Helm	EMC	EMCs
Columbia Borough	Norman Meiskey		Municipalities
Conestoga Township	John Michener	EMC	EMCs
Conestoga Township			Municipalities
Conoy Township	C. Pickel		Municipalities
Conoy Township	Coralee Fitzkee		Municipalities
Conoy Township	J. Shearer		Municipalities
Conoy Township	K. McKain		Municipalities
Conoy Township	Kathy Hipple		Municipalities
Conoy Township	Steve Mohr		Municipalities
Conoy Township	Ted Pavalonis		EMCs
Conoy Township	Wayne Southard		EMCs
Conoy Township			Municipalities
Conoy Township		Chair, Board of Supervisors	Municipalities
Denver Borough	Andy Boyer	EMC	EMCs
Denver Borough	Michael Hession		Municipalities
Drumore Township	Brian Bannon	EMC	EMCs
Drumore Township	Kolin McCauley		Municipalities
Drumore Township	Sharon Roth		Municipalities
Earl Township	Brenda S. Becker		Municipalities
Earl Township	John Yost	EMC	EMCs
East Cocalico Township	Mark Heister	Manager	Municipalities
East Donegal Township	Jeff Butler		Municipalities
East Donegal Township	Scott Kingsboro		EMCs
East Drumore Township	Tim Ryan		EMCs
East Drumore Township	Vickie Kreider		Municipalities
East Earl Township	Bill Shirk	EMC	EMCs
East Earl Township	Connie J. Gross		Municipalities
East Hempfield Township	Arnold Pack		EMCs
East Hempfield Township	Cindy Schweitzer		Municipalities
East Hempfield Township	Diane Garber	EMC	EMCs
East Hempfield Township	Robert Kimmel	Manager	Municipalities
East Lampeter Township	Eric Beiler	EMC	EMCs
East Lampeter Township	Ralph Hutchinson		Municipalities
East Petersburg Borough	Kim Strayer		Municipalities
East Petersburg Borough	Robin Hemperly		Municipalities
Eden Township	David Gorby		Municipalities
Elizabeth Township	Dennis Strauss	EMC	EMCs
Elizabeth Township	Rita Snavely		Municipalities
Elizabethtown Borough	Gene Galeschewski		EMCs
Elizabethtown Borough	Roni Ryan		Municipalities
Elizabethtown Borough	Warren Mueller	EMC	EMCs

<b>Municipality/Agency</b>	<b>Name</b>	<b>Title</b>	<b>List</b>
Ephrata Borough	Andy Orwig		EMCs
Ephrata Borough	Bill Harvey		EMCs
Ephrata Borough	D. Robert Thompson		Municipalities
Ephrata Borough	Jim Kiefer		EMCs
Ephrata Borough	Phil Snavelly		EMCs
Ephrata Township	Jennifer Carvelle		Municipalities
Ephrata Township	Paul Miley		EMCs
Ephrata Township	Steve Sawyer		Municipalities
Ephrata Township	Troy Beard	Deputy EMC	EMCs
Fulton Township	John Purcell		EMCs
Fulton Township	Margaret Gordon		Municipalities
Fulton Township	Mike Church		EMCs
Fulton Township	Mike Church		Municipalities
Lancaster City	Pat Brogan		Municipalities
Lancaster City	Patrick Hopkins		Municipalities
Lancaster County	Benjamin Lefever		EMCs
Lancaster County	Nathan Wolf	Volunteer	EMCs
Lancaster Township	Bill Laudien		EMCs
Lancaster Township	Tom Daniels		EMCs
Lancaster Township	William Laudien		Municipalities
Leacock Township	Frank E. Howe		Municipalities
Lititz Borough	Bob Lamb		EMCs
Lititz Borough	Duane Ober		EMCs
Lititz Borough	Sue Barry		Municipalities
Little Britain Township	Dan Risk		Municipalities
Little Britain Township	Margaret DeCarolis		Municipalities
Manheim Borough	Brad Roth	EMC	EMCs
Manheim Borough	Jim Fisher	Manager	Municipalities
Manheim Township	Adrian Borry		EMCs
Manheim Township	Joe Ghergo		EMCs
Manheim Township	Rick Kane		EMCs
Manheim Township	Troy Neville		EMCs
Manor Township	Ann Harach		EMCs
Manor Township	Duane Hagelgans		EMCs
Manor Township	Duane Hagelgans		Municipalities
Manor Township	J. Ryan Strohecker	Manager	Municipalities
Manor Township	Mark Harris		Municipalities
Marietta Borough	Angela Shearer		EMCs
Marietta Borough	Sharon Bradnick		Municipalities
Marietta Borough	Steve Bailey	EMC	EMCs
Martic Township	Karen Sellers		Municipalities
Martic Township	Tony Williams	EMC	EMCs
Millersville Borough	Ann Harach		EMCs
Millersville Borough	Duane Hagelgans		EMCs
Mount Joy Borough	Matt Kratz		EMCs
Mount Joy Borough	Rick Hamm		EMCs
Mount Joy Borough	Sam Sulkosky		Municipalities
Mount Joy Township	Gene Galeschewski		EMCs
Mount Joy Township	Justin Evans		Municipalities
Mount Joy Township	Ken Ebersole		Municipalities
Mount Joy Township	Patricia Bailey		Municipalities
Mount Joy Township	Warren Mueller		EMCs
Mountville Borough	Joe Iacono	EMC	EMCs
Mountville Borough			Municipalities
New Holland Borough	J. Richard Fulcher		Municipalities
Paradise Township	Dennis Groff	EMC	EMCs
Penn Township	Brad Roth	EMC	EMCs
Penn Township	Mark Hiester	Manager	Municipalities
Pequea Township	Bob Porterfield	Roadmaster	Municipalities
Pequea Township	Connie Kauffman	Secretary	Municipalities
Pequea Township	Robert Gregg		EMCs
Pequea Township	Tony Williams		EMCs
Pequea Township			Municipalities

<b>Municipality/Agency</b>	<b>Name</b>	<b>Title</b>	<b>List</b>
Providence Township	Vicki Eldridge		Municipalities
Providence Township		Roadmaster	Municipalities
Quarryville Borough	James Herr	EMC	EMCs
Rapho Township	Lori Shenk	EMC	EMCs
Rapho Township	Sara Gibson	Manager	Municipalities
Sadsbury Township	Jeremiah Ely	EMC	EMCs
Sadsbury Township			Municipalities
Salisbury Township	Kirsten Peachey		Municipalities
Salisbury Township	Les Houck		Municipalities
Salvation Army	Tim Sheehan		EMCs
Strasburg Borough	Lisa Boyd		Municipalities
Strasburg Borough	Steve Echternach	EMC	EMCs
Strasburg Township	Judith Willig		Municipalities
Strasburg Township	Steve Echternach	EMC	EMCs
Terre Hill Borough	Bill Shirk	EMC	EMCs
Terre Hill Borough	Robert Rissler		Municipalities
Terre Hill Borough	Valerie Gregory		Municipalities
Upper Leacock Township	Beth Hinkle		Municipalities
Upper Leacock Township	Bill Howard		EMCs
Upper Leacock Township	Cody Hufford		EMCs
Upper Leacock Township	Mike Morris		Municipalities
Warwick Township	Bob Lamb		EMCs
Warwick Township	Daniel Zimmerman		Municipalities
Warwick Township	Duane Ober		EMCs
West Cocalico Township	Carolyn Friesema		Municipalities
West Cocalico Township	Carolyn Friesema		Municipalities
West Cocalico Township	Dennis Schmeck	EMC	EMCs
West Cocalico Township	Norma Enck		Municipalities
West Cocalico Township	Tom Showalter		Municipalities
West Donegal Township	Gene Galeschewski		EMCs
West Donegal Township	Jeff Templin		Municipalities
West Donegal Township	John Yoder		Municipalities
West Donegal Township	Todd Garber		Municipalities
West Donegal Township	Warren Mueller		EMCs
West Earl Township	Candie Johnson		Municipalities
West Hempfield Township	Andrew Stern		EMCs
West Hempfield Township	Mark Pugliese		EMCs
West Hempfield Township	Ron Youtz	Manager	Municipalities
West Lampeter Township	Dee Dee McGuire		Municipalities
West Lampeter Township	Ken Barton	EMC	EMCs
	Jamie Weir		EMCs
	Kevin Fuentes		EMCs
	Scott Martin		Municipalities
Brethren Village			Senior
Calvary Fellowship Homes			Senior
Conestoga View			Senior
Elizabethtown Nursing and Rehabilitation			Senior
Ephrata Manor			Senior
Fairmount Homes			Senior
Garden Spot Village			Senior
Gardens at Lititz			Senior
Gardens at Stevens			Senior
Harrison Senior Living in Christiana			Senior
Homestead Village			Senior
Lakeside at Willow Valley			Senior
Lancashire Hall			Senior
Lancaster Care and Rehabilitation Center			Senior
Landis Homes			Senior
Manorcare Health Services: Lancaster			Senior
Maple Farm			Senior
Masonic Village at Elizabethtown			Senior
Mennonite Home			Senior
Millersville University			Senior

Municipality/Agency	Name	Title	List
Moravian Manor			Senior
Mount Hope Nazarene			Senior
Pleasant View Retirement Community			Senior
Quarryville Presbyterian Retirement Community			Senior
Susquehanna Valley Nursing and Rehabilitation			Senior
United Zion Retirement Community			Senior
Zerbe Sisters Nursing Center			Senior
Hempfield School District	Chris Adams	Superintendent	Schools
Elizabethtown Area School District	Michele Balliet	Superintendent	Schools
Lancaster-Lebanon Intermediate Unit 13	John R. Baker	Safety and Security Manager	Schools
Lancaster Country Day School	Steve Lisk	Head of School	Schools
Lancaster County Career & Technical School	Keith Yohn	Assistant Executive Director	Schools
Columbia Borough School District	Tom Strickler	Superintendent	Schools
Eastern Lancaster County School District	Dr. Robert Hollister	Superintendent	Schools
Lancaster Mennonite School	Keith Stoltzfus	Business Manager	Schools
Lancaster-Lebanon Intermediate Unit 13	Brian Barnhart	Executive Director	Schools
Eastern Lancaster County School District	Neal F Walsh	Director of Facilities	Schools
Penn Manor School District	Chris Johnston	Business Manager	Schools
Elizabethtown College	Mark Zimmerman	Director of Facilities Management	Schools
Penn Manor School District	Dr. Michael Leichter	Superintendent	Schools
Conestoga Valley School District	David Zuilkoski	Superintendent	Schools
Solanco School District	Brian Bliss	Superintendent	Schools
Pequea Valley School District	Dr. Erik Orndorff	Superintendent	Schools
Warwick School District	Dr. April Hershey	Superintendent	Schools
Lampeter-Strasburg School District	Dr. Kevin Peart	Superintendent	Schools
Cocalico School District	Dr Ella Musser	Superintendent	Schools
Adamstown Fire Department	Daniel Wieder; Derek Miller; Jim Heale; Steven		Fire
Akron Fire Department	Justin Gehman; Timothy Hoffman; Tom Murray,		Fire
Bainbridge Fire Department	David Stoner; Leonard Crater; Ted Pavalonis		Fire
Bareville Fire Department	Eddie Oberholtzer; Randall Smith		Fire
Bart Fire Department	David Farmer, David King, George Lafave		Fire
Bird-In-Hand Fire Department	Don Boyer; Lonnie Kauffman; Lyndon Beiler; Steve Petersheim; Tim Hoerner		Fire
Blue Rock Fire Department	Keith Eshleman; Chris Ditzler; Dave Wiker; Duane Hagelgans; Mike Ditzler; Rob Muschlitz		Fire
Bowmansville Fire Department	Duane Leinbach; Jeff Good; Mike Lehman; Torrey Sensenig		Fire
Brickerville Fire Department	Dennis Strauss; Jeff Strauss; Keith Rothermel; Matt Sherk		Fire
Brunnerville Fire Department	Jeff Garner; Lynn Mearig; Walter Martin		Fire
Caernarvon Fire Department	Dwayne Fisher; Dwayne Martin; Lennie Martin		Fire
Christiana Fire Department	Amos Fischer; Erik Lofgren; Randy Buckwalter		Fire
Columbia Boro Fire Department	Denny Hershey; Scott Ryno		Fire
Conestoga Fire Department	Larry Frankford; Paul Thomas; Troy Bresch		Fire
Denver Fire Department	Josh Mertz; Robert Gensemer; Shannon Hilton; Shawn Hilton; Matthew Martzall		Fire
Durlach & Mount Airy Fire Department			Fire
East Petersburg Fire Department	Donald Schoenberger; James Rohrer Jr; Mark		Fire
Eden Fire Department			Fire
Elizabethtown Fire Department	Bill Bestwick; Dave Shriner; Jeff Kinsey; Jeremy Shaffner; John Drey		Fire
Ephrata Fire Department	Kyle Hackman; Mike Kiefer; Steve Kintzler		Fire
Farmersville Fire Department	Cleason High; Earl Good; Randy Reiff		Fire
FDMJ	Barry Leber; Andy Wittle; Bill Hall; Bill Kanoff; James Johns; Jason Stiltner; Mason Brandt; Matt Gohn; Samuel Zink; Steve Daub; TJ Broome		Fire
Fivepointville Fire Department	Esra Hoover; Jared Artus; Nelson Shirk; Rodney Good; Walter Brallier		Fire
Gap Fire Department	Chris McGowan; Kevin Beiler; Troy Wenger; Rob Beiler		Fire
Garden Spot	Butch Johnson; Ray Harnish; Roy Mellinger		Fire
Gordonville Fire Department	Amos A Stoltzfus; Raymond Esh; Tony Kauffman		Fire

<b>Municipality/Agency</b>	<b>Name</b>	<b>Title</b>	<b>List</b>
GSFR	Darryl Keiser; Larry Martin; Mike Fryer; Stefan		Fire
Hempfield Fire Department	Bob Pickel; Dave Blevins		Fire
Intercourse Fire Department	Elmer Stoltzfus; Leon Yoder; Steven Diener		Fire
Keystone Wildfire Crew	Adam Enterline; Chris Shank; Dan Ditzler Sr; Mike Hall; Sheron Shank		Fire
Kinzer Fire Department	David Anderson; Doug Brubaker; Simeon King		Fire
Lafayette Fire Department			Fire
Lampeter Fire Department	Adam Ebersole; Jim Meck; John Alexander		Fire
Lanc Co Haz Mat	Ben Herskowitz; Mike Lyons; J Michael Zercher; Josh Newcomer; Ken Hudson; Kevin Koller; Tom		Fire
Lanc Co PSTC			Fire
Lancaster Airport Fire Department			Fire
Lancaster City Fire Department	Scott Little; Dave Amico		Fire
Lancaster Twp Fire Department	Glenn Usdin; Brett Fassnacht; Mike Pickard; Ron Comfort Jr; Steve Roy		Fire
LCWC	Ann Weller; Jeffrey Garner; Mike Weaver; Tim Baldwin		Fire
Lincoln Fire Department	Dale Martin; James Gehman; Lee Showalter; Richard Gehman		Fire
Lititz Fire Department	Jeff Siegrist; Mike Michael; Mike Smith; Ron Oettel; Zach Miller		Fire
Manheim Fire Department	Dan Wagner; Daniel Reif; David Johnson; Duane Ober; Eric Beiler; Ryan Olesen		Fire
Manheim Twp.	Adrian Borry; Rick Kane		Fire
Marietta Fire Department	Brandon Smith; Bryan Smith; Phil Gaus		Fire
Martindale Fire Department	Anthony Groff; Carl Brubaker; Lavern Zimmerman; Roger Stauffer		Fire
Mastersonville Fire Department	Curt Shenk; Jeff Siegrist; Jeffrey Martin; Ryan Geib; Troy Montgomery		Fire
Maytown Fire Department	Adam Kosheba; Dan Houseal; Jason Barclay; Josh Barclay; Tony Mohr		Fire
Middle Creek	Ken Bechtel; Mitch Merkel; Steve Row		Fire
MIDSAR	James Stephens; Ronald Small; Steve Kintzler; Sue Hamberger		Fire
Mount Joy Fire Department	Phil Colvin; Todd Kirkpatrick		Fire
Mountville Fire Department	Andrew M Kalbach; Bryan Duquin; Michael P Dicely; Dean Gantz		Fire
Mt Joy Twp Forest Fire Crew	Brian Rhodes; Lester Dimeler Jr		Fire
MTFR	Bill Gross; John Tshudy; Mike Roten		Fire
Neffsville Fire Department	Brian Freysz; Mike Elliot; Troy Slaymaker		Fire
New Danville Fire Department	Brad Shenk; Christian Larrick; Greg DeMascolo		Fire
New Holland Fire Department			Fire
PACSAR	Terry Wise; Chris Shirk; Jeff Winters; Sharon Wise		Fire
Paradise Fire Department	Drew Wenger; Jamie Knosp; Patrick Cosgrove; Robert Herman		Fire
Penryn Fire Department	Gerald Wolfe; Mike Martin; Shannon Martin		Fire
PSP FM	Dustin Shireman; Jeffrey Purcell; Timothy Pray; Ryan Gehman		Fire
Quarryville Fire Department	James P Herr; Jamie Welk; Jeremy Welk; Jim Herr; Joel R Neff; Mike Ross; Rick Hall; Tim Cox; William R Mankin II		Fire
Rawlinsville Fire Department	Carl Strickler		Fire
Reamstown Fire Department	Harvey Achey; Kelly Morgan; Scott Achey		Fire
Refton Fire Department	Jesse Adsitt; Rob Williams; Wesley Hicks		Fire
Reinholds Fire Department	Kent Reich; Mike Youndt; Zachary Crills		Fire
Rheems Fire Department	Charles Stanford; Jon Brandt; Kevin Kretzing; Ladd Robinson; Matt Freeman		Fire
Robert Fulton Fire Department	Dan Appel; Mark Barto; Philip Smith; Tracy		Fire
Rohrerstown Fire Department	Billy Nonnemacher; Dusty Dommel; Kenny Zimmerman		Fire
Ronks Fire Department	Brian Bowman; Brian Clark; Dave Gribble; Steve Gribble		Fire

Municipality/Agency	Name	Title	List
Rothsville Fire Department	Aaron Hoover; Claude G Young Jr; Craig A Young; Greg L Young; Jere Buchter; John G Young; Robert C Shreiner		Fire
Salisbury Twp	John Beyer; Rodney Gossert; Mervin Fisher		Fire
Schoeneck Fire Department	Jeff Hackman; John Mertz; Ryan Brown; Tim		Fire
Smokestown Fire Department	Donny Stover; Joel High		Fire
Southern Manheim Twp Fire Department			Fire
Stevens Fire Department	Chad Weaver		Fire
Strasburg Fire Department	John Stoltzfus; Justin Wright; Robert Devonshire		Fire
Susquehanna # 4	Douglas J Kemmerly; Michael D Stock		Fire
Upper Leacock Fire Department	Cory Imler; Jared Nolt; Kurt Gehman; Nelson Dagen; Sam Huber; Wes Collins		Fire
Weaverland Valley Fire Department	Alan Hurst; Shannon Eberly; Troy Weaver		Fire
West Earl Fire Department	John Nolt; Leonard Nolt; Nathan Stoltzfus; Randy Zimmerman; Wilmer Oberholtzer		Fire
West Hempfield Fire Department	Jason Sauder; Joe Ney		Fire
West Willow Fire Department	Andy Strausner; Dwight Hershey; Jason Topper		Fire
White Horse Fire Department			Fire
Willow Street Fire Department	Craig Rhineer; Dave Reese; Mike Reese		Fire
Witmer Fire Department			Fire
Akron Borough Police Department			Police
Christiana Borough Police Department			Police
Columbia Borough Police Department			Police
East Cocalico Township Police Department			Police
East Earl Township Police Department			Police
East Hempfield Township Police Department			Police
East Lampeter Township Police Department			Police
Ephrata Police Department			Police
Etown Borough Police Department			Police
Franklin And Marshall Public Safety			Police
Lanc County Parks			Police
Lanc County Sheriff			Police
Lanc Police Department			Police
Lititz Borough Police Department			Police
Manheim Borough Police Department			Police
Manheim Township Police			Police
Manheim Township Police Substation			Police
Manor Township Police Department			Police
Millersville Borough Police Department			Police
Millersville University Police Department			Police
Mount Joy Borough Police Department			Police
New Holland Police Department			Police
Northern Lancaster County Regional Police Department			Police
Northwest Regional Police Department			Police
Pennsylvania Fish Commission			Police
Pennsylvania State Police			Police
Qville Borough Police Department			Police
Southern Regional Police Department			Police
Strasburg Borough Police Department			Police
Susquehanna Regional Police Department			Police
West Earl Township Police Department			Police
West Hempfield Township Police Department			Police
West Lampeter Township Police Department			Police
Dauphin County Department of Public Safety			EMA
Lebanon County EMA			EMA
Berks County EMA			EMA
Chester County EMA			EMA
York County EMA			EMA
Cecil County, Maryland EMA			EMA
Harford County, Maryland EMA			EMA
Tri-County Regional Planning Commission			Planning
Lebanon County Planning			Planning
Berks County Planning			Planning

<b>Municipality/Agency</b>	<b>Name</b>	<b>Title</b>	<b>List</b>
Chester County Planning			Planning
York County Planning			Planning
Cecil County, Maryland Planning			Planning
Harford County, Maryland Planning			Planning
Brickerville EMS	Kurt Herzer		EMS
Christiana EMS	Jack Mariano		EMS
Christiana EMS	Bill Conrad		EMS
Columbia QRS	Frank Splain		EMS
Ephrata Comm Hospital EMS			EMS
Ephrata EMS	Les Martzall		EMS
Ephrata EMS	Kevin Wolf		EMS
Fivepointville EMS	David High		EMS
Gordonville EMS	Kenneth Esh		EMS
Gordonville EMS	Eli Ebersol		EMS
Lancaster EMS	Bob May		EMS
Leola EMS	Ted Burkart		EMS
Manheim Twp EMS			EMS
New Holland EMS	Darrell Fisher		EMS
Northwest EMS			EMS
Reamstown EMS	Shirley Achey		EMS
Reinholds EMS	Ruth Beamesderfer		EMS
Rothsville EMS	James Hoover		EMS
Rothsville EMS	Marlin Martin		EMS
Susquehanna Valley EMS	Mike Fitzgibbons		EMS
Wakefield EMS			EMS
Warwick EMS	Newt Shirker		EMS
White Horse EMS	Corey Gossert		EMS
Lancaster General Hospital-Penn Medicine	Jeff Manning		Hospital
UPMC Pinnacle Lancaster			Hospital
UPMC Pinnacle - Lititz			Hospital
WellSpan Ephrata Community Hospital			Hospital
Salvation Army			NGO
Pennsylvania Emergency Management Agency			Commonwealth





## Emergency Management Agency

P.O. Box 219  
Manheim, PA 17545-0219  
Phone: 717-664-1200  
800-808-5236  
Fax: 717-664-1235  
www.lancema.us

### County Commissioners

Dennis P. Stuckey  
Joshua G. Parsons  
Craig E. Lehman

### Coordinator

Randall S. Gockley

July 20, 2017

### RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update

Dear Lancaster County Planning Stakeholders,

The Lancaster County Hazard Mitigation Plan (HMP) was prepared in 2013 and adopted by the County Commissioners on January 29, 2014. The HMP is going to expire in early 2019, so we have begun our 5-year update of the HMP.

We will be conducting a kickoff meeting for the HMP Planning Team on August 9, 2017. The meeting will be held at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA from 1:00-3:00 p.m. At this meeting, we will be discussing the planning process, timeline, municipal participation requirements, and stakeholder outreach and participation. I would appreciate it if someone from your organization would attend the meeting and participate in the planning process.

Thank you for your support, and we look forward to seeing you at the Planning Team Kickoff Meeting. Please contact me if you have any questions.

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz



## Subbio, Tony

---

**From:** Benjamin P. Herskowitz <bherskowitz@lancema.us>  
**Sent:** Tuesday, July 25, 2017 10:20 AM  
**To:** lawenforcement@lists.lancema.us; Commissioner Office Email List (See Dave or Phil to Update); EMS List; LCFCA Mailing List; Healthcare Partnership Email List; Local EMCs (localemc@lists.lancema.us); Municipal Officials; School Contacts (See Phil or Dave to Update); Brandon Lichty: Zerbe Sisters nursing center; brian Milley: Zerbe sisters nursing center; dale kachelrics: moravian mannor; dan white: masonic village at elizabethtown; daryl rineer: quarryville Pres retirement comm. ; Dave Stoner: united zion retirement community; Dave Stott: Calvary Fellowship Homes; Elizabethtown nursing and rehab; elizabethtown nursing and rehab; Eva Bering: Landis homes; Gary: Moravian Manor; J rosales: Maple Farm; Jackie Berrios: Garden Spot Village; Jason Hallett: pleasant view retirement community; Jennifer Eslinger: conestoga view; Joe Sternako: Gardens at Lititz; Joel Clausen: Quarryville Presbyterian retirement comm.; John Becker: Fiarmount Homes; John Sauder: Mennonite Home; lancaster care and rehab center; Larry: Lancaster Care and Rehab Center; lora Gomboc: Maple Farm; Michelle Schlegelmich: Bretheren village; Michelle Tornabe: Mount Hope Nazarene; Neil Reichard: Ephrata Manor; Rebecca Glass: Homestead Village; Robert Hochstaetter: Garden Spot Village; Rodney Swords: Lancashire Hall; Sandy Delgado: Lakeside at Willow Valley; Sherry Stotltzfus: Harrison Senior Living in Christiana; Stephanie Phillips: Pleasant View; Steve Diffenderfer: Susquehanna Valley Nursing and Rehab; Steve Muller: Garden Spot Village; Susan Digiacom: Gardens at Stevens; Traci Fick: Manorcare Health Services: Lancaster  
**Cc:** Sajeski, Eugene; Duane Hagelgans; Subbio, Tony; Randy S. Gockley  
**Subject:** FW: Lancaster County Hazard Mitigation Plan 2017-2018 Update  
**Attachments:** DOC072517.pdf

July 25, 2017

### **RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Lancaster County Planning Stakeholders,

The Lancaster County Hazard Mitigation Plan (HMP) was prepared in 2013 and adopted by the County Commissioners on January 29, 2014. The HMP is going to expire in early 2019, so we have begun our 5-year update of the HMP.

We will be conducting a kickoff meeting for the HMP Planning Team on August 9, 2017. The meeting will be held at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA from 1:00-3:00 p.m. At this meeting, we will be discussing the planning process, timeline, municipal participation requirements, and stakeholder outreach and participation. I would appreciate it if someone from your organization would attend the meeting and participate in the planning process.

Please follow the link below to register and let us know you will be attending

<https://www.lancema.us/training-calendar-detail.php?MHP-Kickoff-Meeting-2017-2018-45>

Thank you for your support, and we look forward to seeing you at the Planning Team Kickoff Meeting. Please contact me if you have any questions.

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

=====  
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If you received this message in error, please contact the sender immediately by reply email.

January 15, 2018

**RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Lancaster County Planning Stakeholders,

As you know, the Lancaster County Hazard Mitigation Plan (HMP) is currently being updated. We conducted a kickoff meeting on August 9, 2017. Since that time, we have been updating the risk assessment and gathering information on our municipalities' capabilities to reduce the impact of hazards.

We will review the results of the updated risk assessment and capabilities assessment at a meeting of our HMP Planning Team. The meeting will be on Wednesday, February 6, 2018, from 1:00-3:00 p.m. at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA.

I would appreciate it if someone from your organization would attend the meeting and participate in the discussion.

Thank you for your support, and we look forward to seeing you at the Planning Team Meeting. Please contact me if you have any questions.

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

January 15, 2018

**RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Borough Council/City Council/Township Supervisors,

As you know, the Lancaster County Hazard Mitigation Plan (HMP) is currently being updated. We conducted a kickoff meeting on August 9, 2017. Since that time, we have been updating the risk assessment and gathering information on our municipalities' capabilities to reduce the impact of hazards.

We will review the results of the updated risk assessment and capabilities assessment at a meeting of our HMP Planning Team. The meeting will be on Wednesday, February 6, 2018, from 1:00-3:00 p.m. at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA.

I would appreciate it if someone from your organization would attend the meeting and participate in the discussion.

Thank you for your support, and we look forward to seeing you at the Planning Team Meeting. Please contact me if you have any questions.

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

**PROOF OF PUBLICATION NOTICE IN**

State of Pennsylvania }  
  } ss:  
County of Lancaster }

An Affiant of the County and State aforesaid, being duly sworn, deposes and says that the LNP, a daily newspaper of general circulation published at Lancaster, County and State aforesaid, was established 1794-1877 since which date said daily newspaper has been regularly issued in said county, and that a copy of the printed notice or publication is attached hereto exactly the same as was printed and published in the regular editions and issues of said daily newspaper on the following dates:

14<sup>TH</sup> DAY OF MARCH 2018

Affiant further deposes that he/she is the Clerk duly authorized by the LNP Media Group, Inc., a corporation, publisher of said LNP, a newspaper of general circulation, to verify the foregoing statement under oath, and also declares that affiant is not interested in the subject matter of the aforesaid notice or advertisement and that all allegations in the foregoing statement as to time, place and character of publication are true.

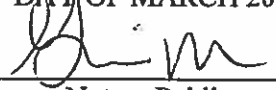
**PUBLIC NOTICE**  
Notice is hereby given that a Lancaster County Lancaster County Hazard Mitigation Plan Meeting has been scheduled for. Lancaster County and its municipalities are updating the Lancaster County Hazard Mitigation Plan (HMP). The HMP is designed to make our community more resistant to losses from natural and man-made disasters, and to enable the county and municipalities to be eligible for federal funding for qualifying mitigation projects. The updated risk assessment is available on the HMP project website, <http://hmp.lancema.us/>, under the "2018 Plan" link. All interested parties are invited to review and provide comments on the risk assessment using the "Comment Form" on the website. For more information, contact Ben Herskowitz of the Lancaster County Emergency Management Agency at 717-684-1200.

heim, Pennsylvania.  
E. WILLIAM PETERS  
CHIEF CLERK  
COUNTY OF LANCASTER

  
\_\_\_\_\_  
(Affiant's Signature)

**COPY OF NOTICE OF PUBLICATION**

Sworn and subscribed to before me this  
14<sup>TH</sup> DAY OF MARCH 2018

  
\_\_\_\_\_  
Notary Public

Commonwealth of Pennsylvania Notary Seal  
Gloria M. Measeck, Notary Public  
Lancaster County  
My commission expires October 25, 2021  
Commission number 1322462

From: localemc [<mailto:localemc-bounces@lists.lancema.us>] On Behalf Of Randy S. Gockley  
Sent: Friday, January 26, 2018 1:22 PM  
To: EMA All Employees <[EMA-All-Employees@lcwc911.us](mailto:EMA-All-Employees@lcwc911.us)>; 'Boylstein, Fred' <[fboylstein@pa.gov](mailto:fboylstein@pa.gov)>;  
'Laucks, Laura' <[lauacks@pa.gov](mailto:lauacks@pa.gov)>; 'Sajeski, Eugene' <[esajeski@pa.gov](mailto:esajeski@pa.gov)>; Joel Kissinger  
<[jkissinger@pa.gov](mailto:jkissinger@pa.gov)>; Local EMCs ([localemc@lists.lancema.us](mailto:localemc@lists.lancema.us)) <[localemc@lists.lancema.us](mailto:localemc@lists.lancema.us)>  
Subject: [Local EMC] FW: RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update

If interested, please feel free to attend.

Thank you,

Randy

RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update

Dear Lancaster County Planning Stakeholders,

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Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

=====  
\*\*\* INTERNET EMAIL CONFIDENTIALITY NOTICE \*\*\*

The information transmitted in this email is intended only for the person or entity to whom it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination, copying of this communication, or other use of, or taking of any action in reliance upon this information by persons or entities other than the intended recipient's is strictly prohibited. If you received this message in error, please contact the sender immediately by reply email.



February 22, 2018

**RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Lancaster County Planning Stakeholders,

As you know, the Lancaster County Hazard Mitigation Plan (HMP) is currently being updated. We conducted a kickoff meeting on August 9, 2017, and reviewed the results of the updated risk assessment and capabilities assessment on February 6, 2018. We have now reached the point when it is time to develop implementable mitigation actions for inclusion in the updated HMP, based on the results of the risk and capabilities assessments. If you have not had an opportunity to review the updated risk assessment, you can find the hazard profiles on the County's HMP website, <http://hmp.lancema.us>, under the "2018 Plan" link.

To help our municipalities identify mitigation actions for inclusion in the HMP, we will be conducting a Mitigation Solutions Workshop on Wednesday, March 7, 2018, from 1:00-3:00 p.m. at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA.

I would appreciate it if someone from your organization would attend the workshop and participate in the discussion.

Thank you for your support, and we look forward to seeing you at the meeting. Please contact me if you have any questions.

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

February 22, 2018

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Dear Borough Council/City Council/Township Supervisors,

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Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

April 18, 2018

**RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Borough Council/City Council/Township Supervisors,

As you know, the Lancaster County Hazard Mitigation Plan (HMP) is currently being updated. We conducted a kickoff meeting on August 9, 2017, reviewed the results of the updated risk assessment and capabilities assessment on February 6, 2018, and conducted a Mitigation Solutions Workshop on March 20, 2018. The workshop was conducted to develop implementable mitigation actions for inclusion in the updated HMP, based on the results of the risk and capabilities assessments.

To provide as much opportunity as possible for our planning partners to identify mitigation actions for inclusion in the updated HMP, we will be conducting another Mitigation Solutions Workshop on Friday, May 4, 2018, from 1:00-3:00 p.m., at the East Drumore Township Building, 925 Robert Fulton Highway, Quarryville, PA.

I would appreciate it if someone from your organization would attend the workshop and participate in the discussion.

Thank you for your support, and we look forward to seeing you at the meeting. Please contact me if you have any questions.

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

April 18, 2018

**RE: Flood Insurance and the Community Rating System (CRS) Program**

Dear Municipal Officials,

More frequent and intense storm events have led to a greater flood risk in Lancaster County. National Flood Insurance Program (NFIP) flood insurance policy holders throughout the County collectively pay over \$1.6 million in flood insurance premiums every year. Municipal officials have the opportunity to put hundreds of thousands of dollars back into their residents' and business owners' pockets.

The Federal Emergency Management Agency's (FEMA) Community Rating System (CRS) Program promotes strong floodplain management practices and provides discounts on NFIP flood insurance premiums throughout participating jurisdictions. The requirements to participate in the CRS Program may seem daunting, but the benefits of reduced vulnerability to flooding and saving our residents and business owners money on their flood insurance premiums may outweigh the administrative cost of participating in the CRS Program.

In conjunction with the update of the Lancaster County Hazard Mitigation Plan (HMP), we will be conducting a training seminar to educate our municipal partners about the CRS Program. This seminar will discuss the CRS Program, how to determine if participation is right for a municipality, municipal activities that would earn CRS Program credit, and how to enter and succeed in the CRS Program.

The seminar will be held from 1:00-4:00 p.m. on Monday, May 7, 2018 at the Lancaster County Public Safety Training Center, 101 Champ Blvd, Manheim, PA 17545. There is no cost to attend the seminar, and continuing education credits for Certified Floodplain Managers (CFM) will be awarded.

Please contact Ben Herskowitz in our office if you have any questions. We look forward to seeing you at the seminar!

Sincerely,

Randall S. Gockley  
Director, Lancaster County Emergency Management Agency

Cc: P. Colvin  
B. Herskowitz

May 15, 2018

**RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Lancaster County Planning Stakeholders,

As you know, the Lancaster County Hazard Mitigation Plan (HMP) is currently being updated. We conducted a kickoff meeting on August 9, 2017, reviewed the results of the updated risk assessment and capabilities assessment on February 6, 2018, and conducted Mitigation Solutions Workshops on March 20 and May 4, 2018. The workshops were conducted to develop implementable mitigation actions for inclusion in the updated HMP, based on the results of the risk and capabilities assessments.

We will be reviewing the mitigation goals, objectives, and actions that are being included in the updated HMP at the next meeting of the Planning Team. The meeting will be on Tuesday, May 29, 2018, from 1:00-3:00 p.m. at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA.

I would appreciate it if someone from your organization would attend the meeting and participate in the discussion.

Thank you for your support, and we look forward to seeing you at the meeting. Please contact me if you have any questions.

Sincerely,

Phil Colvin  
Acting Director, Lancaster County Emergency Management Agency

Cc: B. Herskowitz

May 15, 2018

**RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update**

Dear Borough Council/City Council/Township Supervisors,

As you know, the Lancaster County Hazard Mitigation Plan (HMP) is currently being updated. We conducted a kickoff meeting on August 9, 2017, reviewed the results of the updated risk assessment and capabilities assessment on February 6, 2018, and conducted Mitigation Solutions Workshops on March 20 and May 4, 2018. The workshops were conducted to develop implementable mitigation actions for inclusion in the updated HMP, based on the results of the risk and capabilities assessments.

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Phil Colvin  
Acting Director, Lancaster County Emergency Management Agency

Cc: B. Herskowitz





**PROOF OF PUBLICATION NOTICE IN**

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  } ss:  
County of Lancaster}

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10<sup>TH</sup> DAY OF SEPTEMBER 2018

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Lancaster County and its municipalities have completed the update of the Lancaster County Hazard Mitigation Plan (HMP). The HMP is designed to make our community more resistant to losses from natural and man-made disasters, and to enable the county and municipalities to be eligible for federal funding for qualifying mitigation projects. The HMP is currently available for public review in the "2018 Plan"


Continued  
Next Column

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(Affiant's Signature)

**COPY OF NOTICE OF PUBLICATION**

Sworn and subscribed to before me this  
10<sup>TH</sup> DAY OF SEPTEMBER 2018

  
Notary Public

COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
Jeffrey J. Hollinger, Notary Public  
City of Lancaster, Lancaster County  
My Commission Expires June 10, 2021  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

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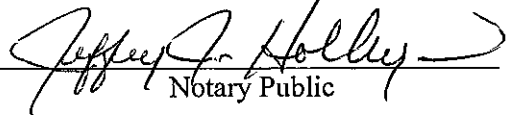
Continued  
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Notary Public

COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
Jeffrey J. Hollinger, Notary Public  
City of Lancaster, Lancaster County  
My Commission Expires June 10, 2021  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES



## Emergency Management Agency

P.O. Box 219  
Manheim, PA 17545-0219  
Phone: 717-664-1200  
800-808-5236  
Fax: 717-664-1235  
www.lancema.us

### County Commissioners

Dennis P. Stuckey  
Joshua G. Parsons  
Craig E. Lehman

### Coordinator

Philip A. Colvin

August 21, 2018

### RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update

Dear Borough Council/City Council/Township Supervisors,

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We will also be conducting a public meeting to collect comments on the draft HMP. The meeting will be on Monday, September 24, 2018, from 7:00-8:30 p.m. at the Lancaster County Public Safety Training Center, 101 Champ Boulevard, Manheim, PA.

I would appreciate it if someone from your organization would attend the meeting and participate in the discussion.

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Director, Lancaster County Emergency Management Agency

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Philip A. Colvin  
Director, Lancaster County Emergency Management Agency

Cc: B. Herskowitz



**From:** [Benjamin P. Herskowitz](#)  
**To:** ["Municipal Officials"](#)  
**Cc:** [Philip A. Colvin](#)  
**Bcc:** ["Commissioner Office Email List \(See Dave or Phil to Update\)"](#)  
**Subject:** Lancaster County Hazard Mitigation Plan 2017-2018 Update  
**Date:** Thursday, August 23, 2018 15:07:43  
**Attachments:** [HMPFinalPT.pdf](#)

---

August 21, 2018

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Director, Lancaster County Emergency Management Agency

Cc: B. Herskowitz

Benjamin Herskowitz  
Radiological Trainer/Planner  
Lancaster County Emergency Management Agency  
[bherskowitz@lancema.us](mailto:bherskowitz@lancema.us) 717-664-1206

**From:** [Benjamin P. Herskowitz](#)  
**To:** [Benjamin P. Herskowitz](#)  
**Cc:** [Philip A. Colvin](#)  
**Bcc:** ["schools@lancema.us"](#); ["healthcare@lancema.us"](#); ["lawenforcement@lancema.us"](#); ["voad@lancema.us"](#); ["ems@lancema.us"](#); ["eocstaff@lancema.us"](#); ["localemc@lancema.us"](#); [County Chiefs \(chiefs@lancofirechiefs.org\)](#); ["cowhey@co.lancaster.pa.us"](#)  
**Subject:** RE: Lancaster County Hazard Mitigation Plan 2017-2018 Update  
**Date:** Thursday, August 23, 2018 15:23:37

---

August 21, 2018

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Philip A. Colvin  
Director, Lancaster County Emergency Management Agency

Cc: B. Herskowitz



Benjamin Herskowitz  
Radiological Trainer/Planner  
Lancaster County Emergency Management Agency  
[bherskowitz@lancema.us](mailto:bherskowitz@lancema.us) 717-664-1206



# Lancaster County Pennsylvania

## Hazard Mitigation Plan Project Site



Home

2018 Plan

2014 Plan

About the Project

What is Hazard Mitigation?

Announcements

Resources / Minutes

Calendar of Events

Project Form

Comment Form

Links

### Welcome to the Lancaster County Hazard Mitigation Plan Web Site

On this site, you will find copies of the Lancaster County Hazard Mitigation Plan, information about Hazard Mitigation, and forms to submit comments and projects for the plan.

Should you have any questions, or need additional information about the Hazard Mitigation Plan, please contact our office at 717-664-1200 or 800-808-5236.

#### Announcements

[Draft HMP Available for Public Comment](#)

[Draft Review Public Meeting](#)

#### Scheduled Events

[HMP Draft Review Meeting - Mon, Sep 24th, 2018 7:00 pm](#)

[Mitigation Solutions Workshop - Fri, May 4th, 2018 1:00 pm](#)

[Risk Assessment and Capability Assessment Review Meeting - Tue, Feb 6th, 2018 1:00 pm](#)

## Mitigation Action Worksheet

<b>Municipality(ies):</b>	<b>Action</b>
<b>Action Number:</b>	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	
<i>Hazard(s) Addressed</i>	
<i>Priority (High, Medium, Low)</i>	
<i>Estimated Cost</i>	
<i>Potential Funding Streams</i>	
<i>Timeline</i>	
<i>Lead Agency/Department</i>	
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	

**Mitigation Technique Category**

- Local Plans and Regulations (LPR) – These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) – These actions involve (1) modifying existing structures and infrastructure to protect them from a hazard, or (2) removing 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 includes projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

**Costs:**

If an estimated cost is known, please provide or use the following ranges:

*Low* = < \$10,000                      *Medium* = \$10,000 to \$100,000                      *High* = > \$100,000

If costs have not been estimated, please use the following categories:

- Low*                      Possible to fund under existing budget. Project is part of, or can be part of, an existing on-going program.
- Medium*                      Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- High*                      Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

**Timeline:**

Short = 1 to 5 years

Long-Term = 5 years or greater

OG = On-going program

DOF = Depending on funding



<b>Municipality(ies):</b>		<b>Action</b>
Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township		Acquire properties in hazard areas, notably those in the 1 percent annual chance floodplain, to convert them to open space.
<b>Action Number:</b>		
LC-1		
<b>Location (address, lat/long)</b>		
<b>Mitigation Technique Category</b>		
		Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>		Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>		Medium
<b>Estimated Cost</b>		High
<b>Potential Funding Streams</b>		FEMA HMPG, PDM, FMA; PA DCED FMP
<b>Timeline</b>		Long
<b>Lead Agency/Department</b>		LEMA
<b>Support Agency(ies)/ Department(s)</b>		Municipal EMCs
<b>Project Point of Contact</b>		
<b>Name</b>		
<b>Title</b>		
<b>Agency/Department</b>		
<b>Phone</b>		
<b>E-mail</b>		



Municipality(ies):	Action	
Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Educate residents in flood-prone areas about the benefits of purchasing flood insurance.	
<b>Action Number:</b>		
LC-2		
<i>Location (address, lat/long)</i>		
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)	
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>	Low	
<i>Estimated Cost</i>	Low	
<i>Potential Funding Streams</i>	Operating Budget	
<i>Timeline</i>	Short	
<i>Lead Agency/Department</i>	LEMA	
<i>Support Agency(ies)/ Department(s)</i>	Municipal Floodplain Administrators	
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		



Municipality(ies):	Action	
Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Elevate structures at risk of flooding.	
<b>Action Number:</b>		
LC-3		
<i>Location (address, lat/long)</i>		
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>	Medium	
<i>Estimated Cost</i>	High	
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP	
<i>Timeline</i>	Short	
<i>Lead Agency/Department</i>	LEMA	
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs	
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		





Municipality(ies):	Action	
Brecknock Township; Caernarvon Township; Christiana Borough; Columbia Borough; Conestoga Township; Conoy Township; Drumore Township; Earl Township; East Donegal Township; East Drumore Township; East Hempfield Township; East Lampeter Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Mount Joy Borough; Paradise Township; Pequea Township; Rapho Township; Strasburg Township; Upper Leacock Township; West Earl Township; West Hempfield Township; West Lampeter Township	Acquire repetitive loss properties to convert them to open space.	
<b>Action Number:</b>		
LC-4		
<i>Location (address, lat/long)</i>		
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>	Medium	
<i>Estimated Cost</i>	High	
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP	
<i>Timeline</i>	Long	
<i>Lead Agency/Department</i>	LEMA	
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs	
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		



Municipality(ies):	Action
Clay Township; East Earl Township; Elizabeth Township; Elizabethtown Borough; Lancaster Township; Manheim Township; Martic Township; West Cocalico Township	Remove any dilapidated or structurally unsound dams that pose a flooding threat to the community.
Action Number:	
LC-5	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Dam Failure
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	DPW, Municipal EMCs, PA DEP Dam Safety
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Denver Borough; Earl Township; Lititz Borough; West Hempfield Township	Work with hazardous materials facilities in the floodplain to floodproof structures up to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LC-6	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Low
<b>Potential Funding Streams</b>	Operating Budget; LEPC
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	LEMA
<b>Support Agency(ies)/ Department(s)</b>	DPW, Municipal EMCs
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Earl Township; Salisbury Township	Work with the Lancaster Conservancy to provide information at the Welsh Mountain Nature Preserve regarding the potential for wildfires and how visitors can prevent them.
<b>Action Number:</b>	
LC-7	
<i>Location (address, lat/long)</i>	601 Gault Road, New Holland, PA
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)
<i>Hazard(s) Addressed</i>	Wildfire
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Low
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough; Ephrata Township	Nissley Acres Floodwater Storage Area - Create a floodwater storage area to assist in reducing flood levels in the Nissley Acres development and a downstream residential area in Ephrata Township that is also prone to flooding. The location of the storage area would be on Borough-owned property so it would not require acquisition of land.
<b>Action Number:</b>	
LC-8	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	
Mitigation Technique Category	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	LEMA
<b>Support Agency(ies)/ Department(s)</b>	DPW, Municipal EMCs
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>
Lancaster County; Christiana Borough; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Elizabethtown Borough; Ephrata Township; Fulton Township; Lancaster City; Leacock Township; Lititz Borough; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Mount Joy Township; Mountville Borough; Mt Joy Borough; New Holland Borough; Paradise Township; Penn Township; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Township; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Hempfield Township		Work with the railroad and property owners to provide a wider buffer between the tracks and vegetation.
<b>Action Number:</b>		
LC-9		
<i>Location (address, lat/long)</i>		
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)	
<i>Hazard(s) Addressed</i>	Wildfire	
<i>Priority (High, Medium, Low)</i>	Low	
<i>Estimated Cost</i>	Medium	
<i>Potential Funding Streams</i>	Operating Budget	
<i>Timeline</i>	Short	
<i>Lead Agency/Department</i>	LEMA	
<i>Support Agency(ies)/ Department(s)</i>	Railroad, Municipal EMCs	
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster County; East Donegal Township	Protect the structures in Chickie's Park to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LC-10	
<i>Location (address, lat/long)</i>	1467 Long Lane, East Donegal Township
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	Parks and Recreation
<i>Support Agency(ies)/ Department(s)</i>	DPW, Municipal EMCs, LEMA
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Lancaster County; Manor Township	Work with PPL to protect the Conestoga KV Substation to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LC-11	
<i>Location (address, lat/long)</i>	1 Powerhouse Road; 39.925915, -76.38515
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
Lancaster County; Manor Township		Work with the Safe Harbor Water Power Corporation to protect their facilities to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
LC-12			
<b>Location (address, lat/long)</b>			
		1 Powerhouse Road; 39.92507, -76.3893	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>			
		Medium	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		Operating Budget	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		LEMA	
<b>Support Agency(ies)/ Department(s)</b>			
		Municipal EMCs, Safe Harbor Water Power Corporation	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster County; Martic Township	Work with PPL to protect the Holtwood facility to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LC-13	
<i>Location (address, lat/long)</i>	482 Old Holtwood Road; 39.82693, -76.3304
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



Municipality(ies):	Action
Lancaster County; Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; New Holland Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Terre Hill Borough; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Develop a hazard information page on the County website, and link from each municipality's website.
<b>Action Number:</b>	
LC-14	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)
<i>Hazard(s) Addressed</i>	Drought; Earthquake; Flood, Flash Flood, and Ice Jam; Hailstorm; Invasive Species; Pandemic; Radon Exposure; Subsidence/Sinkhole; Tornado and Windstorm; Wildfire; Winter Storm; Dam Failure; Environmental Hazards; Nuclear Incident; Transportation Accident;
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	Low
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



Municipality(ies):	Action
Lancaster County; Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; New Holland Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Terre Hill Borough; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Develop informational workshops on hazard risks and hazard mitigation for property owners in high-risk areas.
<b>Action Number:</b>	
LC-15	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams; Subsidence/Sinkholes; Wildfire; Dam Failure; Environmental Hazards; Nuclear Incident
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	Low
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs, Floodplain Administrators
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



Municipality(ies):	Action	
Lancaster County; Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; New Holland Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Terre Hill Borough; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Encourage homeowners to install appropriate devices to alleviate radon concentrations within homes.	
<b>Action Number:</b>		
LC-16		
<i>Location (address, lat/long)</i>		
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)	
<i>Hazard(s) Addressed</i>	Radon Exposure	
<i>Priority (High, Medium, Low)</i>	Low	
<i>Estimated Cost</i>	Low	
<i>Potential Funding Streams</i>	Operating Budget	
<i>Timeline</i>	Short	
<i>Lead Agency/Department</i>	LEMA	
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs, Code Enforcement Officers	
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		



Municipality(ies):	Action
Lancaster County; Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; New Holland Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Terre Hill Borough; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Provide information to the public about the dangers of radon exposure.
<b>Action Number:</b>	
LC-17	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)
<i>Hazard(s) Addressed</i>	Radon Exposure
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Low
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	LEMA
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMCs, Code Enforcement Officers
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Paradise Township; West Earl Township	Work with the Amish community to protect their critical facilities (e.g., schools) in the floodplain.
<b>Action Number:</b>	
LC-18	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Low
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	LEMA
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMCs
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



Municipality(ies):	Action	
Lancaster County; Adamstown Borough; Akron Borough; Bart Township; Brecknock Township; Caernarvon Township; Christiana Borough; Clay Township; Colerain Township; Columbia Borough; Conestoga Township; Conoy Township; Denver Borough; Drumore Township; Earl Township; East Cocalico Township; East Donegal Township; East Drumore Township; East Earl Township; East Hempfield Township; East Lampeter Township; East Petersburg Borough; Eden Township; Elizabeth Township; Elizabethtown Borough; Ephrata Borough; Ephrata Township; Fulton Township; Lancaster City; Lancaster Township; Leacock Township; Lititz Borough; Little Britain Township; Manheim Borough; Manheim Township; Manor Township; Marietta Borough; Martic Township; Millersville Borough; Mount Joy Borough; Mount Joy Township; Mountville Borough; New Holland Borough; Paradise Township; Penn Township; Pequea Township; Providence Township; Quarryville Borough; Rapho Township; Sadsbury Township; Salisbury Township; Strasburg Borough; Strasburg Township; Terre Hill Borough; Upper Leacock Township; Warwick Township; West Cocalico Township; West Donegal Township; West Earl Township; West Hempfield Township; West Lampeter Township	Enforce building codes, floodplain management ordinances, and other local regulations to protect new structures constructed in hazard-prone areas.	
<b>Action Number:</b>		
LC-19		
<i>Location (address, lat/long)</i>	N/A	
<i>Mitigation Technique Category</i>	Local Plans and Regulations (LPR)	
<i>Hazard(s) Addressed</i>	Earthquake; Flood, Flash Flood, and Ice Jam; Hailstorm; Radon Exposure; Subsidence/ Sinkhole; Tornado and Windstorm; Wildfire; Winter Storm; Dam Failure; Environmental Hazards	
<i>Priority (High, Medium, Low)</i>	High	
<i>Estimated Cost</i>	Low	
<i>Potential Funding Streams</i>	Operating Budget	
<i>Timeline</i>	Short	
<i>Lead Agency/Department</i>	Municipal Chief Executive Officers	
<i>Support Agency(ies)/ Department(s)</i>	Municipal Code Enforcement Officers; Municipal Zoning Officers; Municipal Floodplain Administrators	
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		



<b>Municipality(ies):</b>	<b>Action</b>
Akron Borough	Protect Wastewater Pump #126 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
AkB-1	
<i>Location (address, lat/long)</i>	40.167978, -76.211526
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
Akron Borough		Upgrade sewer infrastructure in the Heritage Development to prevent stormwater infiltration.	
<b>Action Number:</b>			
AkB-2			
<b>Location (address, lat/long)</b>			
		Heritage Road, Westbrook Drive, Knollwood Drive, Ridgewood Drive	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams; Utility Interruption	
<b>Priority (High, Medium, Low)</b>			
		Medium	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees	
		<i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
Brecknock Township	Protect the Northern Lancaster County Authority facility to the 0.2% annual chance flood level.
<b>Action Number:</b>	
BrkT-1	
<b>Location (address, lat/long)</b>	
	983 Beam Rd; 40.178472, -76.059824
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	
	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	
	High
<b>Estimated Cost</b>	
	High
<b>Potential Funding Streams</b>	
	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	
	Short
<b>Lead Agency/Department</b>	
	Public Works Director
<b>Support Agency(ies)/ Department(s)</b>	
	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
Brecknock Township		Protect the Northern Lancaster County Authority WWTP to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
BrkT-2			
<b>Location (address, lat/long)</b>		40.220447, -76.067101	
<b>Mitigation Technique Category</b>		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>		High	
<b>Estimated Cost</b>		High	
<b>Potential Funding Streams</b>		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>	
<b>Timeline</b>		Short	
<b>Lead Agency/Department</b>		DPW	
<b>Support Agency(ies)/ Department(s)</b>		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
Brecknock Township	Protect Well #7 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
BrkT-3	
<b>Location (address, lat/long)</b>	40.22559, -76.066485
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Caernarvon Township	Hammertown Road Bridge - Address flood problem at the bridge at 141 Hammertown Road.
<b>Action Number:</b>	
CaeT-1	
<i>Location (address, lat/long)</i>	40.138219, -75.967055
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Caernarvon Township	Turkey Hill Road Culvert - Upgrade the culvert at 2051 Turkey Hill Road with one with a higher capacity.
<b>Action Number:</b>	
CaeT-2	
<i>Location (address, lat/long)</i>	40.154469, -75.984347
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Columbia Borough	Improve stormwater drainage at 10th Street and Ridge Avenue.
<b>Action Number:</b>	
ColB-1	
<b>Location (address, lat/long)</b>	
	40.036888, -76.490480
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Columbia Borough	Protect the Columbia Municipal Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ColB-2	
<i>Location (address, lat/long)</i>	40.025489, -76.498162
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Columbia Borough	Provide information at the overlook regarding the potential for wildfires on the hill below, and how visitors can prevent them.
<b>Action Number:</b>	
ColB-3	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Education and Awareness Programs (EAP)
<i>Hazard(s) Addressed</i>	Wildfire
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Low
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	Municipal EMC
<i>Support Agency(ies)/ Department(s)</i>	Fire Department
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Columbia Borough	Install a backup generator that can power the entire Municipal Building.
<b>Action Number:</b>	
ColB-4	
<b>Location (address, lat/long)</b>	
	40.031885, -76.502226
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Utility Interruption
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM; RACP
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Conoy Township	Protect the Bainbridge Water Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ConT-1	
<b>Location (address, lat/long)</b>	
	40.086273, -76.661939
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Denver Borough	Denver Beer Distributor Relocation - The Denver Beer Distributor is located at 4 Main Street, Denver, PA, in adjacent to the Cocalico Creek. During heavy rain and storm events, the business has faced repetitive loss due to flooding and is looking to relocate outside of this flood-prone area and to another location on Main Street in Denver Borough.
<b>Action Number:</b>	
DenB-1	
<b>Location (address, lat/long)</b>	
	40.228408, -76.132622
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	
	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	
	Low
<b>Estimated Cost</b>	
	High
<b>Potential Funding Streams</b>	
	FEMA HMPG, PDM, FMA; PA DCED FMP
<b>Timeline</b>	
	Short
<b>Lead Agency/Department</b>	
	Municipal EMC
<b>Support Agency(ies)/ Department(s)</b>	
	Denver Beer Distributor
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Denver Borough	Protect Filtration #3 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
DenB-2	
<b>Location (address, lat/long)</b>	
	40.235745, -76.142786
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Earl Township	Relocate businesses along US-322 west of Martindale Road.
<b>Action Number:</b>	
EarlT-1	
<i>Location (address, lat/long)</i>	40.154495, -76.129176
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	Board of Supervisors
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Protect the District Justice Office 1 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ECT-1	
<b>Location (address, lat/long)</b>	
2 Cardinal Dr.; 40.215337, -76.127105	
<b>Mitigation Technique Category</b>	
Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>	
Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>	
High	
<b>Estimated Cost</b>	
Medium	
<b>Potential Funding Streams</b>	
FEMA HMPG, PDM; Operating Budget	
<b>Timeline</b>	
Short	
<b>Lead Agency/Department</b>	
DPW	
<b>Support Agency(ies)/ Department(s)</b>	
FPA, Municipal EMC	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
East Cocalico Township		Protect the Reamstown EMS facility to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
ECT-2			
<b>Location (address, lat/long)</b>			
		12 W Church St; 40.212216, -76.124908	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>			
		High	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		FEMA HMPG, PDM; Operating Budget	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Protect Well #8 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ECT-3	
<i>Location (address, lat/long)</i>	40.224746, -76.104253
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Replace the Dogwood Drive bridge over Fry's Run with one with a larger opening.
<b>Action Number:</b>	
ECT-4	
<b>Location (address, lat/long)</b>	
	40.250766, -76.101033
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	
	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	
	Low
<b>Estimated Cost</b>	
	High
<b>Potential Funding Streams</b>	
	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	
	Long
<b>Lead Agency/Department</b>	
	DPW
<b>Support Agency(ies)/ Department(s)</b>	
	Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Replace the Miller Road bridge over the Little Cocalico Creek with one with a larger opening.
<b>Action Number:</b>	
ECT-5	
<b>Location (address, lat/long)</b>	
	40.244635, -76.123329
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	
	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	
	Low
<b>Estimated Cost</b>	
	High
<b>Potential Funding Streams</b>	
	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	
	Long
<b>Lead Agency/Department</b>	
	DPW
<b>Support Agency(ies)/ Department(s)</b>	
	Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Replace the Reinholds Road bridge over Fry's Run with one with a larger opening.
<b>Action Number:</b>	
ECT-6	
<b>Location (address, lat/long)</b>	
	40.242812, -76.123136
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
East Cocalico Township		Replace the Smokestown Road bridge over Fry's Run with one with a larger opening.	
<b>Action Number:</b>			
ECT-7			
<b>Location (address, lat/long)</b>			
		40.244089, -76.113576	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>			
		Low	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
		Municipal EMC	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Replace the Stony Run culvert under Hill Road with one with a larger opening.
<b>Action Number:</b>	
ECT-8	
<b>Location (address, lat/long)</b>	
	40.228640, -76.094688
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Cocalico Township	Replace the White Oak Road bridge over Fry's Run with one with a larger opening.
<b>Action Number:</b>	
ECT-9	
<i>Location (address, lat/long)</i>	40.248015, -76.109131
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Long
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>
East Donegal Township		Protect the Mount Joy Borough Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>		
EDT-1		
<b>Location (address, lat/long)</b>		
		159 S Jacob St; 40.100016, -76.494222
<b>Mitigation Technique Category</b>		
		Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>		
		Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>		
		High
<b>Estimated Cost</b>		
		High
<b>Potential Funding Streams</b>		
		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>		
		Short
<b>Lead Agency/Department</b>		
		DPW
<b>Support Agency(ies)/ Department(s)</b>		
		FPA, Municipal EMC
<b>Project Point of Contact</b>		
<b>Name</b>		
<b>Title</b>		
<b>Agency/Department</b>		
<b>Phone</b>		
<b>E-mail</b>		



<b>Municipality(ies):</b>	<b>Action</b>
East Donegal Township	Protect Wastewater Pump #50 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EDT-2	
<b>Location (address, lat/long)</b>	
40.061343, -76.531366	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
East Donegal Township	Protect Well #33 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EDT-3	
<i>Location (address, lat/long)</i>	40.110235, -76.543092
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Donegal Township	Protect Well #79 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EDT-4	
<i>Location (address, lat/long)</i>	40.110145, -76.543137
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Earl Township	Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.
<b>Action Number:</b>	
EET-1	
<b>Location (address, lat/long)</b>	
<i>Location (address, lat/long)</i>	Shirks Run Diversion - Work with landowners to reduce the possibility of flooding damage in an area east of Shirks Run at the Route 322 and Route 23 intersection.
<b>Mitigation Technique Category</b>	
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	Emergency EMC
<i>Support Agency(ies)/ Department(s)</i>	PA DEP
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
East Earl Township		Work with PENNDOT to realign and install a traffic light at the intersection of US-322 and PA-897.	
<b>Action Number:</b>			
EET-2			
<i>Location (address, lat/long)</i>		40.112890, -76.028637	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Transportation Accident	
<i>Priority (High, Medium, Low)</i>		Medium	
<i>Estimated Cost</i>		High	
<i>Potential Funding Streams</i>		Operating Budget	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		PENNDOT	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
East Earl Township	Work with PENNDOT to realign the intersection of Routes 23 and 897.
<b>Action Number:</b>	
EET-3	
<b>Location (address, lat/long)</b>	
40.121811, -76.029028	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Transportation Accident
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	PENNDOT
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>
East Hempfield Township		Culvert Replacement - Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run. Replace old and undersized culverts along the Swarr Run located at Church Street, Snapper Dam Road, and Nolt Road. The three roads are subject to frequent flooding.
<b>Action Number:</b>		
EHT-1		
<i>Location (address, lat/long)</i>		
<i>Mitigation Technique Category</i>		
		Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>		
		Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>		
		Medium
<i>Estimated Cost</i>		
		High
<i>Potential Funding Streams</i>		
		FEMA HMPG, PDM, FMA; PA DCED FMP
<i>Timeline</i>		
		Short
<i>Lead Agency/Department</i>		
		DPW
<i>Support Agency(ies)/ Department(s)</i>		
		Municipal EMC
<b>Project Point of Contact</b>		
<i>Name</i>		
<i>Title</i>		
<i>Agency/Department</i>		
<i>Phone</i>		
<i>E-mail</i>		



<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Install detention basins on the Township-owned property next to Four Seasons Golf Course to help reduce flooding through the Swarr Run.
<b>Action Number:</b>	
EHT-2	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Protect Potable Pump #37 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EHT-3	
<b>Location (address, lat/long)</b>	
	40.072927, -76.367003
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Protect Potable Pump #38 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EHT-4	
<b>Location (address, lat/long)</b>	
	40.071885, -76.357454
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Protect Well #22 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EHT-5	
<i>Location (address, lat/long)</i>	40.070425, -76.41376
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Replace old and undersized culverts along the Swarr Run located at Church Street.
<b>Action Number:</b>	
EHT-6	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Replace old and undersized culverts along the Swarr Run located at Nolt Road.
<b>Action Number:</b>	
EHT-7	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Hempfield Township	Replace old and undersized culverts along the Swarr Run located at Snapper Dam Road.
<b>Action Number:</b>	
EHT-8	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Backup generator – Purchase 10 more generators for use along Route 30 and Route 340 to make them functional emergency routes.
<b>Action Number:</b>	
ELT-1	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Transportation Accident; Utility Interruption
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM; Capital Improvements Budget; RACP
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Backup generator – Install backup generators in two fire stations that are not yet equipped with backup power.
<b>Action Number:</b>	
ELT-2	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Utility Interruption
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM; RACP
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Identify mitigation or structural projects to reduce vulnerability to stormwater flooding incidents along Millcross Road.
<b>Action Number:</b>	
ELT-3	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Low
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Improve the design of the intersections at Oakview, Rte. 462, and Millstream along Rte. 30.
<b>Action Number:</b>	
ELT-4	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Transportation Accident
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	TIP; PENNDOT
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	PENNDOT, LC MPO
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Install stormwater management infrastructure at Gibson's Park at Nolt Mill.
<b>Action Number:</b>	
ELT-5	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	Parks and Recreation
<b>Support Agency(ies)/ Department(s)</b>	DPW
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Investigate retrofitting or other flood hazard mitigation measure for Oaks 1 Pump Station.
<b>Action Number:</b>	
ELT-6	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Investigate retrofitting or other flood hazard mitigation measure for properties along Hale Drive.
<b>Action Number:</b>	
ELT-7	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Investigate retrofitting or other flood hazard mitigation measure for properties along the south side of Millstream Road between Gridley and Strasburg Pike.
<b>Action Number:</b>	
ELT-8	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Investigate the removal of dam structures at Flory Park.
<b>Action Number:</b>	
ELT-9	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Dam Failure; Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	PA DEP
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	Parks and Recreation
<b>Support Agency(ies)/ Department(s)</b>	DPW, DEP, DCED, Mill Creek Association, and Property Owners
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Investigate the removal of dam structures at Gibson's Park at Nolt Mill.
<b>Action Number:</b>	
ELT-10	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Dam Failure; Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	PA DEP
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	Parks and Recreation
<b>Support Agency(ies)/ Department(s)</b>	DPW, DEP, DCED, Mill Creek Association, and Property Owners
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
East Lampeter Township		Protect Lancaster Mennonite High School to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
ELT-11			
<b>Location (address, lat/long)</b>			
		40.028372, -76.226243	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>			
		High	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		FEMA HMPG, PDM; Operating Budget	
<b>Timeline</b>			
		Long	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Protect Wastewater Pump #97 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ELT-12	
<b>Location (address, lat/long)</b>	
	40.059222, -76.252489
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Protect Wastewater Pump #98 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ELT-13	
<b>Location (address, lat/long)</b>	
40.027535, -76.242699	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade stormwater management at Flory Park.
<b>Action Number:</b>	
ELT-14	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	Parks and Recreation
<b>Support Agency(ies)/ Department(s)</b>	DPW
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade stormwater management at Greenland near Flory Park entrance.
<b>Action Number:</b>	
ELT-15	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	Parks and Recreation
<b>Support Agency(ies)/ Department(s)</b>	DPW
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade stormwater management at North Cherry Lane.
<b>Action Number:</b>	
ELT-16	
<i>Location (address, lat/long)</i>	
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Long
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade stormwater management at Susan Avenue.
<b>Action Number:</b>	
ELT-17	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade stormwater management at the northeast side properties along Strasburg Pike.
<b>Action Number:</b>	
ELT-18	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	
Mitigation Technique Category	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Long
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade the stormwater management system along Greenfield Road at Amtrak.
<b>Action Number:</b>	
ELT-19	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Lampeter Township	Upgrade the stormwater management system at Soudersburg Road at the pump station.
<b>Action Number:</b>	
ELT-20	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
East Petersburg Borough	Protect Filtration #5 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EPB-1	
<b>Location (address, lat/long)</b>	
40.107393, -76.338146	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Elizabeth Township	Work with utility companies to clear vegetation around power and communications lines.
<b>Action Number:</b>	
ElizT-1	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	
	Local Plans and Regulations (LPR)
<b>Hazard(s) Addressed</b>	Utility Interruption
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Low
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Electric Substation #31 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-1	
<i>Location (address, lat/long)</i>	40.187812, -76.171369
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Ephrata Boro WWTP #1 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-2	
<i>Location (address, lat/long)</i>	405 S Reading Rd; 40.175001, -76.197639
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Sewer Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Ephrata EMS to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-3	
<b>Location (address, lat/long)</b>	
	528 W Main St; 40.183559, -76.185552
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
Ephrata Borough		Protect the Ephrata Borough Sewer Authority WWTP to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
EphB-4			
<b>Location (address, lat/long)</b>			
		40.174899, -76.197031	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>			
		High	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Wastewater Pump #176 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-5	
<b>Location (address, lat/long)</b>	
40.18753, -76.179874	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Wastewater Pump #177 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-6	
<b>Location (address, lat/long)</b>	
40.182358, -76.184037	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Wastewater Pump #77 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-7	
<b>Location (address, lat/long)</b>	
40.175177, -76.194808	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Borough	Protect Well #4 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphB-8	
<i>Location (address, lat/long)</i>	40.171132, -76.175207
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Township	Improve drainage system at the intersection of Frysville Road and Newswanger Road.
<b>Action Number:</b>	
EphT-1	
<b>Location (address, lat/long)</b>	
40.167505, -76.115181	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Township	Protect the Ephrata Boro WWTP #2 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphT-2	
<b>Location (address, lat/long)</b>	
	43 Springhouse Rd; 40.196946, -76.162595
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Township	Protect Wastewater Pump #120 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphT-3	
<b>Location (address, lat/long)</b>	
40.171152, -76.201827	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Township	Protect Wastewater Pump #123 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphT-4	
<b>Location (address, lat/long)</b>	
40.170309, -76.207402	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Ephrata Township	Protect Wastewater Pump #9 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
EphT-5	
<b>Location (address, lat/long)</b>	
	40.170907, -76.20551
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Improve drainage on New Holland Avenue under the railroad overpass.
<b>Action Number:</b>	
LancC-1	
<b>Location (address, lat/long)</b>	
	40.052051, -76.289270
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Railroad
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Improve drainage on North Plum Street under the railroad overpass.
<b>Action Number:</b>	
LancC-2	
<b>Location (address, lat/long)</b>	
	40.053635, -76.299621
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Railroad
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Improve drainage on Wabank Road 70 feet west of Hershey Avenue.
<b>Action Number:</b>	
LancC-3	
<b>Location (address, lat/long)</b>	
40.023875, -76.316354	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Protect Potable Pump #79 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancC-4	
<b>Location (address, lat/long)</b>	
	40.05095, -76.27583
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Protect Potable Pump #98 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancC-5	
<b>Location (address, lat/long)</b>	
	40.049761, -76.275642
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Protect Tank #7 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancC-6	
<b>Location (address, lat/long)</b>	
	40.049393, -76.274072
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Protect the Lancaster City Conestoga Filter Plant to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancC-7	
<b>Location (address, lat/long)</b>	
150 Pitney Rd; 40.049487, -76.273548	
<b>Mitigation Technique Category</b>	
Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
Lancaster City		Flood proofing Stevens Avenue Sewage Pumping Station – Provide additional flood proofing to sewage pumping station.	
<b>Action Number:</b>			
LancC-8			
<i>Location (address, lat/long)</i>		421 Broad Street, Lancaster	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>		High	
<i>Estimated Cost</i>		Medium	
<i>Potential Funding Streams</i>		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			





<b>Municipality(ies):</b>	<b>Action</b>
Lancaster City	Flood proofing of Conestoga Gardens Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.
<b>Action Number:</b>	
LancC-9	
<i>Location (address, lat/long)</i>	451 Conestoga Blvd., Lancaster
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
Lancaster City		Flood proofing Susquehanna Sewage Pumping Station - Provide additional flood proofing to sewage pumping station.	
<b>Action Number:</b>			
LancC-10			
<i>Location (address, lat/long)</i>		750 Strawberry Street, Lancaster	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>		High	
<i>Estimated Cost</i>		Medium	
<i>Potential Funding Streams</i>		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster Township	Protect the Lancaster City Advanced WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancT-1	
<b>Location (address, lat/long)</b>	
	1220 New Danville Pike; 40.017171, -76.306951
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster Township	Protect Wastewater Pump #136 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancT-2	
<b>Location (address, lat/long)</b>	40.013403, -76.330379
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster Township	Protect Wastewater Pump #148 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancT-3	
<b>Location (address, lat/long)</b>	
	40.006802, -76.32425
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster Township	Protect Wastewater Pump #168 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancT-4	
<b>Location (address, lat/long)</b>	40.004819, -76.304607
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lancaster Township	Protect Wastewater Pump #169 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LancT-5	
<b>Location (address, lat/long)</b>	
	40.025376, -76.276155
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Leacock Township	Protect Wastewater Pump #27 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LeaT-1	
<b>Location (address, lat/long)</b>	
	40.046233, -76.115938
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
Lititz Borough		Protect the Warwick EMS facility to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
LitB-1			
<i>Location (address, lat/long)</i>		151 North Ln; 40.15717, -76.302284	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>		High	
<i>Estimated Cost</i>		High	
<i>Potential Funding Streams</i>		FEMA HMPG, PDM; Operating Budget	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
Lititz Borough	Protect Wastewater Pump #72 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LitB-2	
<b>Location (address, lat/long)</b>	
	40.163471, -76.301533
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lititz Borough	Protect Well #74 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LitB-3	
<b>Location (address, lat/long)</b>	
	40.159324, -76.297353
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Lititz Borough	Protect Well #75 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
LitB-4	
<b>Location (address, lat/long)</b>	
	40.159364, -76.296343
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Borough	Protect Electric Substation #42 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhB-1	
<b>Location (address, lat/long)</b>	
	40.156481, -76.395163
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Borough	Protect Potable Pump #101 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhB-2	
<b>Location (address, lat/long)</b>	
	40.15566, -76.390785
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Manheim Borough	Protect the Manheim FD station to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhB-3	
<b>Location (address, lat/long)</b>	
	83 S Main St; 40.162194, -76.392892
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Borough	Protect Wastewater Pump #200 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhB-4	
<b>Location (address, lat/long)</b>	
	40.160134, -76.384544
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Borough	Protect Well #57 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhB-5	
<b>Location (address, lat/long)</b>	
	40.154234, -76.40551
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Borough	Protect Well #58 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhB-6	
<b>Location (address, lat/long)</b>	
	40.155395, -76.405643
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Township	Protect District Justice Office 13 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhT-1	
<b>Location (address, lat/long)</b>	
2205 Oregon Oike; 40.086082, -76.285442	
<b>Mitigation Technique Category</b>	
Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Township	Protect Wastewater Pump #143 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhT-2	
<b>Location (address, lat/long)</b>	
	40.070761, -76.26311
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Township	Protect Wastewater Pump #166 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhT-3	
<b>Location (address, lat/long)</b>	
40.048611, -76.282756	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Manheim Township	Protect Wastewater Pump #167 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManhT-4	
<b>Location (address, lat/long)</b>	
40.053589, -76.278118	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manheim Township	West Roseville Road Bridge Demolition - Demolish and remove the West Roseville Road Bridge spanning the Little Conestoga Creek. Removal of an unsafe structure and obstruction in the floodway.
<b>Action Number:</b>	
ManhT-5	
<b>Location (address, lat/long)</b>	
	40.064630, -76.343080
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
Manheim Township		Work with PENNDOT to redesign the interchange at US-30 and US-222.	
<b>Action Number:</b>			
ManhT-6			
<b>Location (address, lat/long)</b>			
		40.067299, -76.288254	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Transportation Accident	
<b>Priority (High, Medium, Low)</b>			
		Medium	
<b>Estimated Cost</b>			
		High	
<b>Potential Funding Streams</b>			
		Operating Budget	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
		PENNDOT	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect Electric Substation #6 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-1	
<i>Location (address, lat/long)</i>	39.926608, -76.385169
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect the Millersville Borough WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-2	
<b>Location (address, lat/long)</b>	
	39.98576, -76.347123
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect the Millersville WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-3	
<b>Location (address, lat/long)</b>	
	500 Murrycross Way; 39.985747, -76.347142
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect Wastewater Pump #140 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-4	
<i>Location (address, lat/long)</i>	40.005959, -76.373672
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect Wastewater Pump #141 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-5	
<b>Location (address, lat/long)</b>	
	40.004795, -76.477101
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect Wastewater Pump #150 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-6	
<b>Location (address, lat/long)</b>	
	39.99394, -76.47087
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect Wastewater Pump #162 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-7	
<b>Location (address, lat/long)</b>	
	40.022994, -76.366472
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Manor Township	Protect Wastewater Pump #165 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ManT-8	
<b>Location (address, lat/long)</b>	
	39.984613, -76.40503
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees  <i>Project is currently not eligible for FEMA mitigation funding. The municipality did not participate in the planning process.</i>
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Marietta Borough	Protect the Marietta Borough Building to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MarB-1	
<b>Location (address, lat/long)</b>	
	111 E. Market St; 40.057183, -76.551958
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Marietta Borough	Protect the Marietta Donegal Sewage Treatment Plant to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MarB-2	
<b>Location (address, lat/long)</b>	
50 Furnace Rd; 40.058267, -76.534301	
<b>Mitigation Technique Category</b>	
Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Marietta Borough	Protect the Marietta Fire Department station to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MarB-3	
<b>Location (address, lat/long)</b>	
	200 N Waterford Ave; 40.059541, -76.550953
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Marietta Borough	Protect the Marietta-East Donegal Joint Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MarB-4	
<b>Location (address, lat/long)</b>	
	40.058024, -76.534528
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Marietta Borough	Protect the Susquehanna Valley EMS facility to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MarB-5	
<b>Location (address, lat/long)</b>	
	200 N Waterford Ave; 40.059546, -76.550934
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Marietta Borough	Protect Wastewater Pump #53 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MarB-6	
<i>Location (address, lat/long)</i>	40.056666, -76.551181
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Millersville Borough	Improve drainage along Oak Ridge Drive.
<b>Action Number:</b>	
MillB-1	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Millersville Borough	Improve drainage at Barbara Street and East Cottage Avenue.
<b>Action Number:</b>	
MillB-2	
<b>Location (address, lat/long)</b>	
40.005469, -76.346815	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Millersville Borough	Protect Wastewater Pump #179 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MillB-3	
<b>Location (address, lat/long)</b>	
39.996294, -76.345776	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Borough	Conduct a detailed flood study of the Little Chiques Creek.
<b>Action Number:</b>	
MJB-1	
<b>Location (address, lat/long)</b>	
	N/A
<b>Mitigation Technique Category</b>	Local Plans and Regulations (LPR)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA RiskMap; Private Developers
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	Municipal FPA
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Borough	Improve stormwater management capacity of Stauffer Court and the outfall into the Little Chiques Creek.
<b>Action Number:</b>	
MJB-2	
<b>Location (address, lat/long)</b>	
	40.110999, -76.490976
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Borough	Improve stormwater management capacity under PA-230.
<b>Action Number:</b>	
MJB-3	
<b>Location (address, lat/long)</b>	
PA-230 through Borough	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Borough	Modifications to the Borough Stormwater Detention Basin - increasing the volume of the basin by increasing the height of the berms and/or increasing the footprint of the basin and replacing a 45' long drainage swale with a pipe to prohibit stormwater from flowing over the swale berm.
<b>Action Number:</b>	
MJB-4	
<b>Location (address, lat/long)</b>	
	40.115550, -76.529588
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	
	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	
	Low
<b>Estimated Cost</b>	
	High
<b>Potential Funding Streams</b>	
	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	
	Short
<b>Lead Agency/Department</b>	
	Borough Engineer
<b>Support Agency(ies)/ Department(s)</b>	
	DPW
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Township	Protect Wastewater Pump #84 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
MJT-1	
<b>Location (address, lat/long)</b>	
	40.138348, -76.55645
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Township	Raise Koser Road at the approach to the bridge over Conewago Creek.
<b>Action Number:</b>	
MJT-2	
<b>Location (address, lat/long)</b>	
	40.190326, -76.589536
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	\$10,000
<b>Potential Funding Streams</b>	General Fund/ Liquid Fuels
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	Township Public Works
<b>Support Agency(ies)/ Department(s)</b>	N/A
<b>Project Point of Contact</b>	
<b>Name</b>	Justin Evans
<b>Title</b>	Township Manager
<b>Agency/Department</b>	Mount Joy Township
<b>Phone</b>	717-367-8917
<b>E-mail</b>	justin@mtjoytp.org



<b>Municipality(ies):</b>	<b>Action</b>
Mount Joy Township	Raise Prospect Road at the approach to the bridge over Conewago Creek.
<b>Action Number:</b>	
MJT-3	
<b>Location (address, lat/long)</b>	40.195227, -76.567767
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	\$10,000
<b>Potential Funding Streams</b>	General Fund/ Liquid Fuels
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	Township Public Works
<b>Support Agency(ies)/ Department(s)</b>	N/A
<b>Project Point of Contact</b>	
<b>Name</b>	Justin Evans
<b>Title</b>	Township Manager
<b>Agency/Department</b>	Mount Joy Township
<b>Phone</b>	717-367-8917
<b>E-mail</b>	justin@mtjoytwp.org



<b>Municipality(ies):</b>	<b>Action</b>
Paradise Township	Protect the Paradise Township Sewer Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ParT-1	
<i>Location (address, lat/long)</i>	40.012723, -76.131771
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Paradise Township	Protect Wastewater Pump #89 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ParT-2	
<b>Location (address, lat/long)</b>	
	40.00703, -76.111326
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Paradise Township	Protect Wastewater Pump #91 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ParT-3	
<b>Location (address, lat/long)</b>	
	40.008341, -76.139383
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Clear obstructions from the stormwater management system near the intersection of Fruitville Pike/New Charlotte Street and Main Street (PA-72).
<b>Action Number:</b>	
PennT-1	
<b>Location (address, lat/long)</b>	
	40.158581, -76.389494
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	PENNDOT
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Protect the Manheim Borough Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
PennT-2	
<b>Location (address, lat/long)</b>	
	40.154886, -76.403426
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Protect Wastewater Pump #199 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
PennT-3	
<b>Location (address, lat/long)</b>	
	40.165696, -76.384766
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Protect Well #39 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
PennT-4	
<b>Location (address, lat/long)</b>	
	40.17114, -76.369311
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Update stormwater management regulations to make them more restrictive for new development.
<b>Action Number:</b>	
PennT-5	
<b>Location (address, lat/long)</b>	
N/A	
<b>Mitigation Technique Category</b>	
Local Plans and Regulations (LPR)	
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	Low
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	Board of Supervisors
<i>Support Agency(ies)/ Department(s)</i>	FPA
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Upgrade stormwater management infrastructure along White Oak Road south of Hamaker Road.
<b>Action Number:</b>	
PennT-6	
<i>Location (address, lat/long)</i>	40.174433, -76.388807
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Penn Township	Upgrade stormwater management infrastructure at the intersection of Stiegel Valley Road and White Oak Road.
<b>Action Number:</b>	
PennT-7	
<b>Location (address, lat/long)</b>	
	40.171163, -76.388247
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Providence Township	Protect the Quarryville Boro WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
ProvT-1	
<b>Location (address, lat/long)</b>	
	2350 Old Rd; 39.906079, -76.184995
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Rapho Township	Protect Wastewater Pump #55 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
RapT-1	
<b>Location (address, lat/long)</b>	
	40.110325, -76.453067
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	
	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	
	High
<b>Estimated Cost</b>	
	Medium
<b>Potential Funding Streams</b>	
	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	
	Short
<b>Lead Agency/Department</b>	
	DPW
<b>Support Agency(ies)/ Department(s)</b>	
	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Rapho Township	Regularly clear obstructions from waterways.
<b>Action Number:</b>	
RapT-2	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Natural Systems Protection (NSP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Low
<b>Potential Funding Streams</b>	Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
Reamstown Borough		Replace the Stony Run culvert under Bunker Hill Road with one with a larger opening.	
<b>Action Number:</b>			
ReamB-1			
<i>Location (address, lat/long)</i>		40.217348, -76.120974	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>		Low	
<i>Estimated Cost</i>		High	
<i>Potential Funding Streams</i>		FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
Reamstown Borough	Replace the Stony Run culvert under West Church Street with one with a larger opening.
<b>Action Number:</b>	
ReamB-2	
<b>Location (address, lat/long)</b>	
	40.212549, -76.124843
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>		<b>Action</b>	
Sadsbury Township		Mt. Vernon Road Runoff Retention Basins - Create two retention basins, redirect catch basin pipes, install a storm drain line, and extend approximately 1/3 mile to relieve runoff into the Christiana Borough watershed.	
<b>Action Number:</b>			
SadT-1			
<b>Location (address, lat/long)</b>			
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>		Low	
<b>Estimated Cost</b>		High	
<b>Potential Funding Streams</b>		FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	
<b>Timeline</b>		Short	
<b>Lead Agency/Department</b>		DPW	
<b>Support Agency(ies)/ Department(s)</b>		Municipal EMC	
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
Strasburg Borough	Improve stormwater infrastructure in the Borough's Historic District.
<b>Action Number:</b>	
StrasB-1	
<b>Location (address, lat/long)</b>	
Main, Miller, Decatur Streets (all of historic district)	
<b>Mitigation Technique Category</b>	
Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	Borough Manager
<b>Support Agency(ies)/ Department(s)</b>	USACE
<b>Project Point of Contact</b>	
<b>Name</b>	Lisa Boyd
<b>Title</b>	Borough Manager
<b>Agency/Department</b>	Strasburg Borough
<b>Phone</b>	717-687-7732
<b>E-mail</b>	lboyd@strasburgboro.org



<b>Municipality(ies):</b>	<b>Action</b>
Strasburg Township	Protect Wastewater Pump #13 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
StrasT-1	
<b>Location (address, lat/long)</b>	
	39.989648, -76.217691
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Upper Leacock Township	Install drainage ditches along Creek Hill Road at Hartman Station Road to reduce soil runoff onto the roadway.
<b>Action Number:</b>	
ULT-1	
<b>Location (address, lat/long)</b>	
	40.076245, -76.233235
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Warwick Township	Protect Wastewater Pump #67 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WarT-1	
<b>Location (address, lat/long)</b>	
40.148155, -76.271203	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
Warwick Township	Protect Well #35 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WarT-2	
<i>Location (address, lat/long)</i>	40.156868, -76.284404
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
Warwick Township	Replace the Lititz Run culvert under Lititz Run Road with one with a larger opening.
<b>Action Number:</b>	
WarT-3	
<b>Location (address, lat/long)</b>	
40.153805, -76.286345	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Expand intersection of Sandy Hill Road and Hillside Road.
<b>Action Number:</b>	
WCT-1	
<b>Location (address, lat/long)</b>	
	40.246795, -76.199238
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Environmental Hazards; Transportation Accidents
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	Capital Improvement Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>		<b>Action</b>	
West Cocalico Township		Improve drainage at the culvert at Sportsman Road east of Hickory Road.	
<b>Action Number:</b>			
WCT-2			
<b>Location (address, lat/long)</b>			
		40.273088, -76.179289	
<b>Mitigation Technique Category</b>			
		Structure and Infrastructure Project (SIP)	
<b>Hazard(s) Addressed</b>			
		Flood, Flash Flood, and Ice Jams	
<b>Priority (High, Medium, Low)</b>			
		Low	
<b>Estimated Cost</b>			
		Medium	
<b>Potential Funding Streams</b>			
		FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget	
<b>Timeline</b>			
		Short	
<b>Lead Agency/Department</b>			
		DPW	
<b>Support Agency(ies)/ Department(s)</b>			
<b>Project Point of Contact</b>			
<b>Name</b>			
<b>Title</b>			
<b>Agency/Department</b>			
<b>Phone</b>			
<b>E-mail</b>			



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Increase length of Hackman Road bridge to provide more water to flow underneath it.
<b>Action Number:</b>	
WCT-3	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Increase length of Hickory Road bridge to provide more water to flow underneath it.
<b>Action Number:</b>	
WCT-4	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Increase length of Indiantown Road bridge to provide more water to flow underneath it.
<b>Action Number:</b>	
WCT-5	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install backup power generators at two potable water wells.
<b>Action Number:</b>	
WCT-6	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	
Mitigation Technique Category	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Utility Interruption
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Water Fees; RACP
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along Blue Lake Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-7	
<b>Location (address, lat/long)</b>	
	Blue Lake Road
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along Girl Scout Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-8	
<i>Location (address, lat/long)</i>	Girl Scout Road
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along Mountain Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-9	
<b>Location (address, lat/long)</b>	
	Mountain Road
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along Netzley Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-10	
<i>Location (address, lat/long)</i>	Netzley Road
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Medium
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along Sandy Hill Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-11	
<b>Location (address, lat/long)</b>	
	Sandy Hill Road
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along Strickler Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-12	
<b>Location (address, lat/long)</b>	
	Strickler Road
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Install stormwater management infrastructure along White Hall Road to prevent downhill flooding.
<b>Action Number:</b>	
WCT-13	
<b>Location (address, lat/long)</b>	
	White Hall Road
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Relocate the Wastewater Treatment Plant to a location outside the floodplain.
<b>Action Number:</b>	
WCT-14	
<b>Location (address, lat/long)</b>	
40.263798, -76.119579	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Medium
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Renovate the stormwater management system in Reinholds.
<b>Action Number:</b>	
WCT-15	
<b>Location (address, lat/long)</b>	
	Reinholds
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Upgrade and clear obstructions in the drainage system at the Cocalico Creek at Hickory Road.
<b>Action Number:</b>	
WCT-16	
<i>Location (address, lat/long)</i>	40.274314, -76.184533
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	High
<i>Potential Funding Streams</i>	Operating Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Upgrade the bridge on Sportsman Road over the Cocalico Creek to allow more water to flow underneath it.
<b>Action Number:</b>	
WCT-17	
<b>Location (address, lat/long)</b>	
	40.275224, -76.170005
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Cocalico Township	Upgrade the drainage system at the Cocalico Creek at Pineview Drive, and elevate the bridge approach.
<b>Action Number:</b>	
WCT-18	
<b>Location (address, lat/long)</b>	
40.273088, -76.179289	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
West Donegal Township		Protect the Elizabethtown Regional Sewer Authority WWTP to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
WDT-1			
<i>Location (address, lat/long)</i>		40.129705, -76.624852	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>		High	
<i>Estimated Cost</i>		High	
<i>Potential Funding Streams</i>		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
West Donegal Township	Protect Wastewater Pump #197 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WDT-2	
<b>Location (address, lat/long)</b>	
40.113232, -76.626272	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Earl Township	Protect the West Earl Township Sewer Authority WWTP to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WET-1	
<b>Location (address, lat/long)</b>	
	40.123595, -76.203576
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	





<b>Municipality(ies):</b>	<b>Action</b>
West Earl Township	Protect the West Earl Township Water Authority facility to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WET-2	
<b>Location (address, lat/long)</b>	
40.131382, -76.19831	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Earl Township	Protect Wastewater Pump #184 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WET-3	
<b>Location (address, lat/long)</b>	
	40.121273, -76.234753
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>		<b>Action</b>	
West Hempfield Township		Protect Wastewater Pump #134 to the 0.2% annual chance flood level.	
<b>Action Number:</b>			
WHT-1			
<i>Location (address, lat/long)</i>		40.065493, -76.437108	
<i>Mitigation Technique Category</i>		Structure and Infrastructure Project (SIP)	
<i>Hazard(s) Addressed</i>		Flood, Flash Flood, and Ice Jams	
<i>Priority (High, Medium, Low)</i>		High	
<i>Estimated Cost</i>		Medium	
<i>Potential Funding Streams</i>		FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees	
<i>Timeline</i>		Short	
<i>Lead Agency/Department</i>		DPW	
<i>Support Agency(ies)/ Department(s)</i>		FPA, Municipal EMC	
<b>Project Point of Contact</b>			
<i>Name</i>			
<i>Title</i>			
<i>Agency/Department</i>			
<i>Phone</i>			
<i>E-mail</i>			



<b>Municipality(ies):</b>	<b>Action</b>
West Hempfield Township	Protect Wastewater Pump #149 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WHT-2	
<b>Location (address, lat/long)</b>	
40.066372, -76.477043	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Improve drainage along Eckman Road.
<b>Action Number:</b>	
WLT-1	
<i>Location (address, lat/long)</i>	Eckman Road
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Improve stormwater management along Gypsy Hill Road, including installing a culvert to discharge water away from homes.
<b>Action Number:</b>	
WLT-2	
<b>Location (address, lat/long)</b>	
	Gypsy Hill Road
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	\$30,000
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Improve stormwater management along Hollinger Road.
<b>Action Number:</b>	
WLT-3	
<b>Location (address, lat/long)</b>	
	Hollinger Road
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	Low
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; Capital Improvement Budget
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	





<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	McFalls Property Stormwater Management - reclaim the area as a stream.
<b>Action Number:</b>	
WLT-4	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	\$500,000
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Long
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Protect Potable Pump #100 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WLT-5	
<i>Location (address, lat/long)</i>	40.002164, -76.292968
<i>Mitigation Technique Category</i>	Structure and Infrastructure Project (SIP)
<i>Hazard(s) Addressed</i>	Flood, Flash Flood, and Ice Jams
<i>Priority (High, Medium, Low)</i>	High
<i>Estimated Cost</i>	Medium
<i>Potential Funding Streams</i>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<i>Timeline</i>	Short
<i>Lead Agency/Department</i>	DPW
<i>Support Agency(ies)/ Department(s)</i>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<i>Name</i>	
<i>Title</i>	
<i>Agency/Department</i>	
<i>Phone</i>	
<i>E-mail</i>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Protect Potable Pump #61 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WLT-6	
<b>Location (address, lat/long)</b>	
	40.025824, -76.27407
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; User Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Protect Wastewater Pump #21 to the 0.2% annual chance flood level.
<b>Action Number:</b>	
WLT-7	
<b>Location (address, lat/long)</b>	
	40.007054, -76.267924
<b>Mitigation Technique Category</b>	
	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	High
<b>Estimated Cost</b>	Medium
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP, Sewer Grant; Sewer Fees
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	FPA, Municipal EMC
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



<b>Municipality(ies):</b>	<b>Action</b>
West Lampeter Township	Retention Pond - Construct retention ponds to protect properties along Hollinger Road.
<b>Action Number:</b>	
WLT-8	
<b>Location (address, lat/long)</b>	
<b>Mitigation Technique Category</b>	Structure and Infrastructure Project (SIP)
<b>Hazard(s) Addressed</b>	Flood, Flash Flood, and Ice Jams
<b>Priority (High, Medium, Low)</b>	Low
<b>Estimated Cost</b>	High
<b>Potential Funding Streams</b>	FEMA HMPG, PDM, FMA; PA DCED FMP; Operating Budget
<b>Timeline</b>	Short
<b>Lead Agency/Department</b>	DPW
<b>Support Agency(ies)/ Department(s)</b>	
<b>Project Point of Contact</b>	
<b>Name</b>	
<b>Title</b>	
<b>Agency/Department</b>	
<b>Phone</b>	
<b>E-mail</b>	



## CRITICAL FACILITIES

This section describes critical facilities in Lancaster County, including essential facilities, transportation systems, lifeline utility systems, and high-potential loss facilities. Transportation systems include roadways, bridges, tunnels, airways, and waterways. Lifeline utility systems include potable water, wastewater, oil, natural gas, electric power facilities, and emergency communication systems.

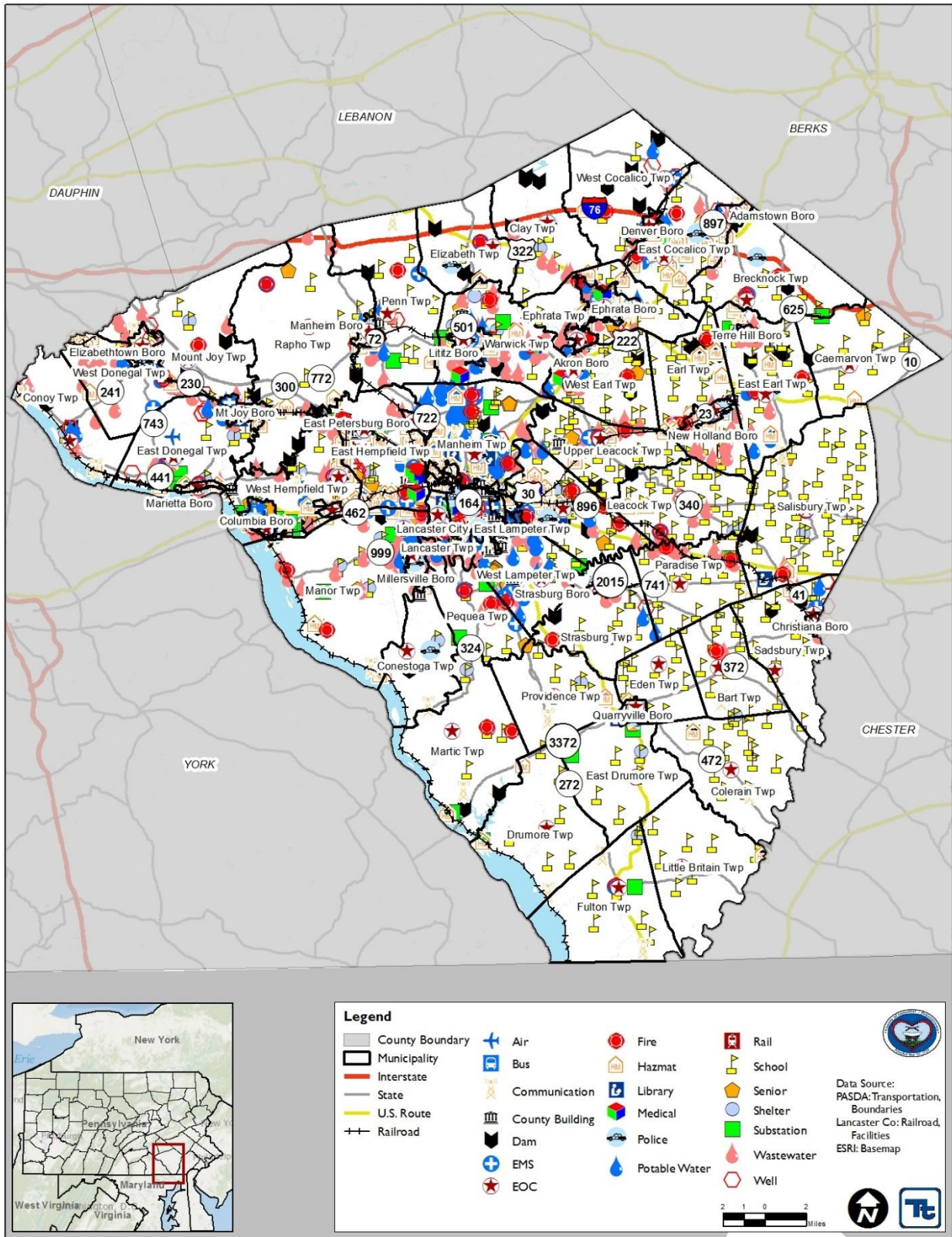
A comprehensive inventory of critical facilities in the County was developed from various sources including input from representatives of the Steering Committee, Lancaster County departments, and participating municipal departments. The inventory of critical facilities presented in this section represents the current state of the effort at the time of publication of this HMP and was used for the risk assessment presented in Section 5. Figure I-1 identifies critical facilities and their approximate locations within Lancaster County.

**Critical facilities** are those facilities considered critical to the health and welfare of the population, and that are especially important following a hazard. As defined for this HMP, critical facilities include essential facilities, transportation systems, lifeline utility systems, and high-potential loss facilities.

**Essential facilities** are a subset of critical facilities that include those facilities important to ensure full recovery following the occurrence of a hazard event. For the County risk assessment, this category was defined to include police, fire, Emergency Medical Services (EMS), schools, shelters, senior accommodations, and medical facilities.



Figure I-1. Critical Facilities in Lancaster County



Source: Lancaster County, 2017







## Essential Facilities

This section provides information on emergency facilities, hospital and medical facilities, shelters, schools, and senior care and living facilities.

## Emergency Facilities

For the purposes of this HMP update, emergency facilities include police, fire, and emergency operations centers (EOC). Table I-1 lists the emergency facilities in each municipality and whether they have access to backup power. Information on backup power was not provided during the 2019 update of the HMP but is listed as a placeholder for future updates. Figures I-2 and I-3 illustrate the EMS and fire facilities and service areas in Lancaster County. There are 34 local, regional, and state police departments, 83 fire departments, and 49 EMS facilities that service each community in Lancaster County.

**Table I-1. EMS, Fire, and Police Facilities in Lancaster County**

Name	Address	Municipality	Building Type	Backup Power?
Adamstown FD	30 South Poplar St.	Adamstown Boro.	Fire	-
Akron Boro. PD	117 South 7 <sup>th</sup> St.	Akron Boro.	Police	-
Akron FD	1229 Main St.	Akron Boro.	Fire	-
Bart FD	11 Furnace Rd.	Bart Twp.	Fire	-
Bowmansville FD	146 West Maple Grove Rd.	Brecknock Twp.	Fire	-
Fivepointville EMS	1094 Dry Tavern Rd.	Brecknock Twp.	EMS	-
Fivepointville FD	1087 Dry Tavern Rd.	Brecknock Twp.	Fire	-
PSP Bowmansville - Turnpike	443 Panorama Dr.	Brecknock Twp.	Police	-
Caernarvon FD	2145 Main St.	Caernarvon Twp.	Fire	-
Christiana Boro. PD	10 West Slokom Ave.	Christiana Boro.	Police	-
Christiana FD	214 South Bridge St.	Christiana Boro.	Fire	-
Durlach & Mount Airy FD	880 Durlach Rd.	Clay Twp.	Fire	-
Northern Lanc. Co. Regional PD	860 Durlach Rd.	Clay Twp.	Police	-
Columbia Boro. FD - Front St	137 South Front St.	Columbia Boro.	Fire	-
Columbia Boro. FD - Manor St	726 Manor St.	Columbia Boro.	Fire	-
Columbia Boro. PD	308 Locust St.	Columbia Boro.	Police	-
Columbia QRS	336 North Seventh St.	Columbia Boro.	EMS	-
Susquehanna Valley EMS	610 Poplar St.	Columbia Boro.	EMS	-
Conestoga FD	3290 Main St.	Conestoga Twp.	Fire	-
Southern Regional PD	3284 Main St.	Conestoga Twp.	Police	-
Susquehanna Valley EMS	3292 Main St.	Conestoga Twp.	EMS	-
Bainbridge FD	34 South 2 <sup>nd</sup> St.	Conoy Twp.	Fire	-
Denver FD	425 Locust St.	Denver Boro.	Fire	-
Martindale FD	542 Gristmill Rd.	Earl Twp.	Fire	-
East Cocalico Twp. PD	100 Hill Rd.	East Cocalico Twp.	Police	-
Reamstown EMS	12 West Church St.	East Cocalico Twp.	EMS	-
Reamstown FD	12 West Church St.	East Cocalico Twp.	Fire	-
Smokestown FD	860 Smokestown Rd.	East Cocalico Twp.	Fire	-
Stevens FD	91 Stevens Rd.	East Cocalico Twp.	Fire	-
Maytown FD	160 East High St.	East Donegal Twp.	Fire	-
Northwest EMS	186 Rock Point Rd.	East Donegal Twp.	EMS	-
Susquehanna Regional PD	188 Rock Point Rd.	East Donegal Twp.	Police	-
East Earl Twp. PD	128 Toddy Dr.	East Earl Twp.	Police	-



Name	Address	Municipality	Building Type	Backup Power?
New Holland FD - Blue Ball	4305 Division Hwy.	East Earl Twp.	Fire	-
Weaverland Valley FD	1606 Main St.	East Earl Twp.	Fire	-
East Hempfield Twp. PD	1700 Nissley Rd.	East Hempfield Twp.	Police	-
Hempfield FD	19 West Main St.	East Hempfield Twp.	Fire	-
Lanc. Co. HazMat	101 Champ Blvd.	East Hempfield Twp.	Fire	-
Lancaster County Public Safety Training Center	101 Champ Blvd.	East Hempfield Twp.	Fire	-
Lancaster EMS	690 Good Dr.	East Hempfield Twp.	EMS	-
Rohrerstown FD	500 Elizabeth St.	East Hempfield Twp.	Fire	-
Susquehanna Valley EMS	2103 Harrisburg Pike	East Hempfield Twp.	EMS	-
Susquehanna Valley EMS	221 Rohrerstown Rd.	East Hempfield Twp.	EMS	-
Bird-In-Hand FD	313 Enterprise Dr.	East Lampeter Twp.	Fire	-
East Lampeter Twp. PD	2250 Old Philadelphia Pike	East Lampeter Twp.	Police	-
Lafayette FD	63 Lafayette Way	East Lampeter Twp.	Fire	-
Lancaster EMS	1829 Lincoln Hwy. E	East Lampeter Twp.	EMS	-
PSP Lanc.	2099 Lincoln Hwy. E	East Lampeter Twp.	Police	-
Ronks FD	134 North Ronks Rd	East Lampeter Twp.	Fire	-
Witmer FD	455 Mount Sidney Rd.	East Lampeter Twp.	Fire	-
East Petersburg FD	6076 Pine St.	East Petersburg Boro.	Fire	-
Brickerville FD	10 Hopeland Rd.	Elizabeth Twp.	Fire	-
Northwest EMS	10 Hopeland Rd.	Elizabeth Twp.	EMS	-
Pa Fish Commission Se Office	255 West Brubaker Valley Rd.	Elizabeth Twp.	Police	-
Elizabethtown FD	171 North Mount Joy St.	Elizabethtown Boro.	Fire	-
Elizabethtown Boro. PD	600 South Hanover St.	Elizabethtown Boro.	Police	-
Northwest EMS	380 West Bainbridge St.	Elizabethtown Boro.	EMS	-
Ephrata Comm Hospital EMS	169 Martin Ave.	Ephrata Boro.	EMS	-
Ephrata EMS	528 West Main St.	Ephrata Boro.	EMS	-
Ephrata FD	135 South State St.	Ephrata Boro.	Fire	-
Ephrata PD	124 South State St.	Ephrata Boro.	Police	-
Lincoln FD	38 South Market St.	Ephrata Boro.	Fire	-
Robert Fulton FD	2271 Robert Fulton Hwy.	Fulton Twp.	Fire	-
Wakefield EMS	2272 Robert Fulton Hwy.	Fulton Twp.	EMS	-
Franklin and Marshall Public Safety	600 Race Ave.	Lancaster City	Police	-
Lanc. Co. Parks	1052 Rockford Rd.	Lancaster City	Police	-
Lanc. Co. Sheriff	50 North Duke St.	Lancaster City	Police	-
Lanc. City PD	39 West Chestnut St.	Lancaster City	Police	-
Lancaster City FD # 1	425 West King St.	Lancaster City	Fire	-
Lancaster City FD # 2	851 Fremont St.	Lancaster City	Fire	-
Lancaster City FD # 3	335 East King St.	Lancaster City	Fire	-
Lancaster EMS	125 East Frederick St.	Lancaster City	EMS	-
Lancaster EMS	250 College Ave.	Lancaster City	EMS	-
Lancaster EMS	900 East King St.	Lancaster Twp.	EMS	-
Lancaster EMS	1201 Millersville Pike	Lancaster Twp.	EMS	-
Lancaster Twp. FD - North	1250 Maple Ave.	Lancaster Twp.	Fire	-
Lancaster Twp. FD - South	125 Fairview Ave.	Lancaster Twp.	Fire	-
Manheim Twp. Police Substation	1240 Maple Ave.	Lancaster Twp.	Police	-
Gordonville EMS	3204 Vigilant St.	Leacock Twp.	EMS	-



Name	Address	Municipality	Building Type	Backup Power?
Gordonville FD	3204 Vigilant St.	Leacock Twp.	Fire	-
Intercourse FD	10 North Hollander Rd.	Leacock Twp.	Fire	-
Lititz Boro. PD	7 South Broad St.	Lititz Boro.	Police	-
Lititz FD	24 West Main St.	Lititz Boro.	Fire	-
Warwick EMS	151 North Ln.	Lititz Boro.	EMS	-
Manheim Boro. PD	4 South Wolf St.	Manheim Boro.	Police	-
Manheim FD	83 South Main St.	Manheim Boro.	Fire	-
Northwest EMS	60 West Colebrook St.	Manheim Boro.	EMS	-
Eden FD	1695 New Holland Pike	Manheim Twp.	Fire	-
Lancaster Airport FD	500 Airport Rd.	Manheim Twp.	Fire	-
Manheim Twp. EMS	1820 Municipal Dr.	Manheim Twp.	EMS	-
Manheim Twp. EMS	500 East Airport Rd.	Manheim Twp.	EMS	-
Manheim Twp. Police	1825 Municipal Dr.	Manheim Twp.	Police	-
Neffsville FD	200 East Oregon Rd.	Manheim Twp.	Fire	-
Southern Manheim Twp. FD	1396 Orchard St.	Manheim Twp.	Fire	-
Susquehanna Valley EMS	126 Keller Ave.	Manheim Twp.	EMS	-
Blue Rock FD - North	1697 Temple Ave.	Manor Twp.	Fire	-
Blue Rock FD - South	3079 River Rd.	Manor Twp.	Fire	-
Blue Rock FD - West	11 Charlestown Rd.	Manor Twp.	Fire	-
Lancaster EMS	2650 Columbia Ave.	Manor Twp.	EMS	-
Manor Twp. PD	950 West Fairway Dr.	Manor Twp.	Police	-
Marietta FD	200 North Waterford Ave.	Marietta Boro.	Fire	-
Susquehanna Valley EMS	200 North Waterford Ave.	Marietta Boro.	EMS	-
Blue Rock FD - Keystone	462 Red Hill Rd.	Martic Twp.	Fire	-
Rawlinsville FD	33 Martic Heights Dr.	Martic Twp.	Fire	-
Blue Rock FD - East	26 East Charlotte St.	Millersville Boro.	Fire	-
Lancaster EMS	100 East Charlotte St.	Millersville Boro.	EMS	-
Millersville Boro. PD	100 Municipal Dr.	Millersville Boro.	Police	-
Millersville University PD	237 North George St.	Millersville Boro.	Police	-
Mt Joy Twp. Forest Fire Crew	771 Greentree Rd.	Mount Joy Twp.	Fire	-
Northwest Regional PD	155 Merts Dr.	Mount Joy Twp.	Police	-
Mountville FD	26 North Lemon St.	Mountville Boro.	Fire	-
Mount Joy Boro. PD	21 East Main St.	Mt Joy Boro.	Police	-
Mount Joy FD	111 New Haven St.	Mt Joy Boro.	Fire	-
Susquehanna Valley EMS	820 Church St.	Mt Joy Boro.	EMS	-
Ephrata Community Hospital EMS	501 East Main St.	New Holland Boro.	EMS	-
New Holland EMS	101 East Franklin St.	New Holland Boro.	EMS	-
New Holland FD - East	339 East Main St.	New Holland Boro.	Fire	-
New Holland FD - West	620 West Main St.	New Holland Boro.	Fire	-
New Holland PD	436 East Main St.	New Holland Boro.	Police	-
Kinzer FD	3521 Lincoln Hwy. E	Paradise Twp.	Fire	-
Paradise FD	5 Hershey Ave.	Paradise Twp.	Fire	-
Northwest EMS	6565 West Newport Rd.	Penn Twp.	EMS	-
Penryn FD	1441 North Penryn Rd.	Penn Twp.	Fire	-
Lancaster EMS	43 Marticville Rd.	Pequea Twp.	EMS	-
Lancaster EMS	14 Herrville Rd.	Pequea Twp.	EMS	-
New Danville FD	43 Marticville Rd.	Pequea Twp.	Fire	-
West Willow FD	196 West Willow Rd.	Pequea Twp.	Fire	-



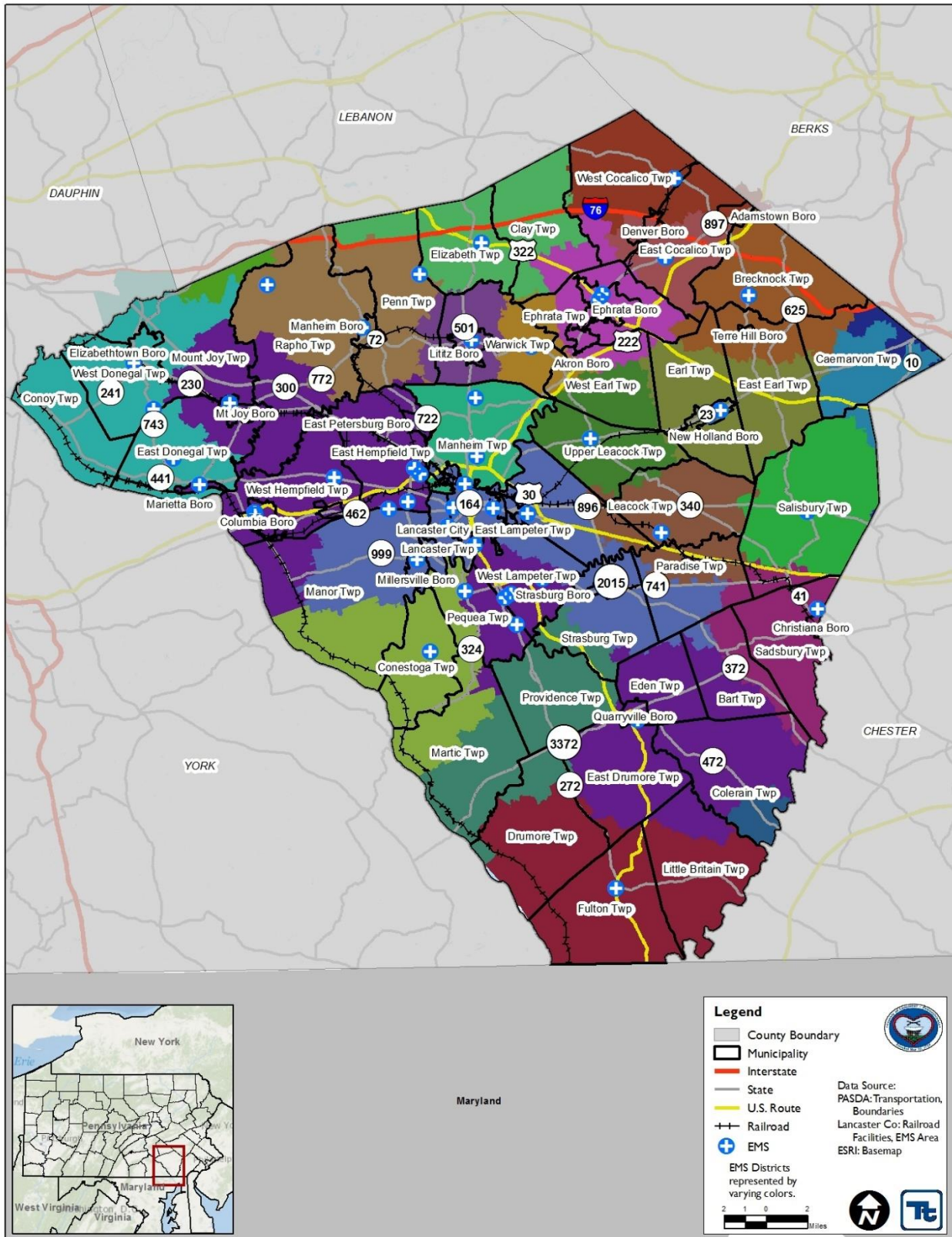
Name	Address	Municipality	Building Type	Backup Power?
Lancaster EMS	915 Lancaster Pike	Providence Twp.	EMS	-
Lancaster EMS	325 Park Ave.	Quarryville Boro.	EMS	-
Quarryville FD	217 East State St.	Quarryville Boro.	Fire	-
Quarryville Boro. PD	300 Saint Catherine St.	Quarryville Boro.	Police	-
Mastersonville FD	2166 Meadow View Rd.	Rapho Twp.	Fire	-
Northwest EMS	2166 Meadow View Rd.	Rapho Twp.	EMS	-
Christiana EMS	55 Pine Creek Dr.	Sadsbury Twp.	EMS	-
Gap FD	802 Pequea Ave.	Salisbury Twp.	Fire	-
White Horse EMS	111 White Horse Rd.	Salisbury Twp.	EMS	-
White Horse FD	111 White Horse Rd.	Salisbury Twp.	Fire	-
Lancaster EMS	20 Lancaster Ave.	Strasburg Boro.	EMS	-
Strasburg Boro. PD	145 Precision Ave.	Strasburg Boro.	Police	-
Strasburg FD	203 Franklin St.	Strasburg Boro.	Fire	-
Refton FD	99 Church St.	Strasburg Twp.	Fire	-
Weaverland Valley FD	403 North Earl St.	Terre Hill Boro.	Fire	-
Bareville FD	211 East Main St.	Upper Leacock Twp.	Fire	-
Leola EMS	143 West Main St.	Upper Leacock Twp.	EMS	-
Upper Leacock FD	50 West Main St.	Upper Leacock Twp.	Fire	-
Brunnerville FD	1302 Church St.	Warwick Twp.	Fire	-
Rothsville EMS	2071 Main St.	Warwick Twp.	EMS	-
Rothsville FD	2071 Main St.	Warwick Twp.	Fire	-
Reinholds EMS	34 East Main St.	West Cocalico Twp.	EMS	-
Reinholds FD	138 West Main St.	West Cocalico Twp.	Fire	-
Schoeneck FD	125 North King St.	West Cocalico Twp.	Fire	-
Northwest EMS	1562 Maytown Rd.	West Donegal Twp.	EMS	-
Rheems FD	350 Anchor Rd.	West Donegal Twp.	Fire	-
Farmersville FD	74 East Farmersville Rd.	West Earl Twp.	Fire	-
West Earl FD	14 School Lane Ave.	West Earl Twp.	Fire	-
West Earl Twp. PD	157 West Metzler Rd.	West Earl Twp.	Police	-
Susquehanna Valley EMS	3519 Marietta Ave.	West Hempfield Twp.	EMS	-
West Hempfield FD	3519 Marietta Ave.	West Hempfield Twp.	Fire	-
West Hempfield Twp. PD	3401 Marietta Ave.	West Hempfield Twp.	Police	-
Lampeter FD	851 Village Rd.	West Lampeter Twp.	Fire	-
Lancaster EMS	925 Willow Valley Lakes Dr.	West Lampeter Twp.	EMS	-
Lancaster EMS	60 Buchmiller Park Dr.	West Lampeter Twp.	EMS	-
Lancaster EMS	851 Village Rd.	West Lampeter Twp.	EMS	-
Susquehanna Valley EMS	2821 Willow St. Pike	West Lampeter Twp.	EMS	-
West Lampeter Twp. PD	852 Village Rd.	West Lampeter Twp.	Police	-
Willow St. FD	2901 Willow St. Pike	West Lampeter Twp.	Fire	-

Sources: Lancaster County 2017  
 - Unknown





Figure I-2. EMS Facilities and Service Area in Lancaster County

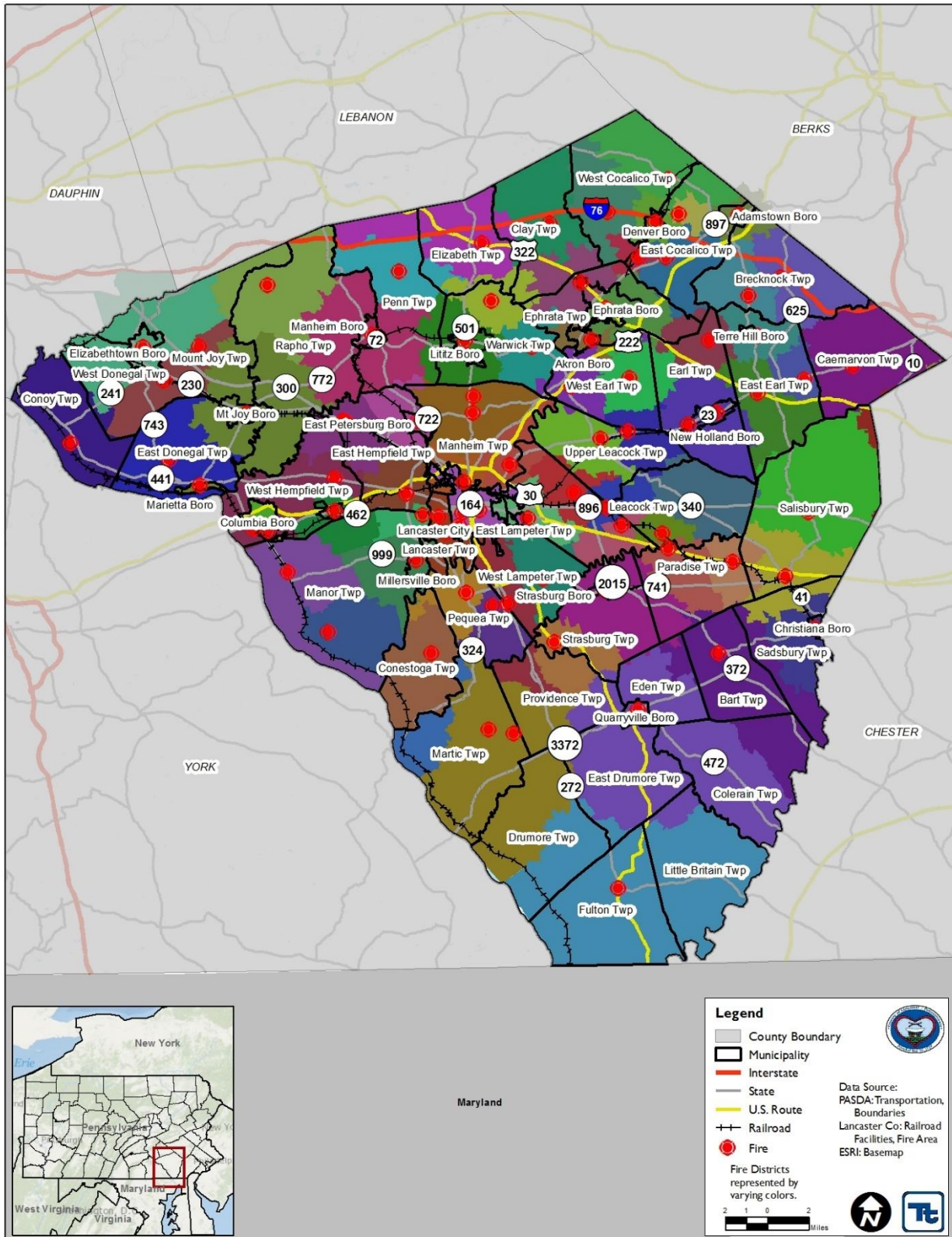


Source: Lancaster County, 2017





Figure I-3. Fire Stations and Service Area in Lancaster County



Source: Lancaster County, 2017







### Hospital and Medical Centers

Table I-2 below provides an inventory of hospitals and major medical facilities in Lancaster County.

**Table I-2. Hospitals and Medical Centers in Lancaster County**

Name	Address	Municipality	# Beds	Building Type	Backup Power
Lancaster General Health Campus	2100 Harrisburg Pike	East Hempfield Twp.	-	Medical	-
Lancaster General Women and Babies Hospital	690 Good Dr.	East Hempfield Twp.	-	Hospital	-
Lancaster Rehabilitation Hospital	675 Good Dr.	East Hempfield Twp.	-	Hospital	-
Regional Gastroenterology Associates - 1	2104 Harrisburg Pike	East Hempfield Twp.	-	Medical	-
Schreiber Pediatric Rehab Center	625 Community Way	East Hempfield Twp.	-	Medical	-
Acadia Inc	1817 Olde Homestead Ln.	East Lampeter Twp.	-	Medical	-
Ephrata Community Hospital	169 Martin Ave.	Ephrata Boro.	-	Hospital	-
Regional Gastroenterology Associates - 2	183 North Reading Rd.	Ephrata Boro.	-	Medical	-
Lancaster General Hospital	555 North Duke St.	Lancaster City	-	Hospital	-
Lancaster Regional Medical Center	250 College Ave.	Lancaster City	-	Hospital	-
Heart of Lancaster Regional Medical Center	1500 Highlands Dr.	Warwick Twp.	-	Hospital	-
Rothsville Medical Center	2320 Rothsville Rd.	Warwick Twp.	-	Medical	-
Crossroads Family Health Center	4131 Oregon Pike	West Earl Twp.	-	Medical	-

Source: Lancaster County 2017

Note: - Data not available

### Shelters

Table I-3 provides an inventory of shelters in Lancaster County. Many shelters in Lancaster County are schools, which coordinate with the American Red Cross and Lancaster County Emergency Management Agency during an activation.

**Table I-3. Shelters in Lancaster County**

Name	Address	Municipality	Building Type	Backup Power
Akron Elementary School	125 South 11 <sup>th</sup> St.	Akron Boro.	School	-
Bart-Colerain Elementary School	1336 Noble Rd.	Bart Twp.	School	-
Brecknock Elementary School	361 School Rd.	Brecknock Twp.	School	-
Clay Elementary School	250 Clay School Rd.	Clay Twp.	School	-
Columbia 1 Fire Company	137 South Front St.	Columbia Boro.	Fire	-
Columbia Consolidated Fire Department	726 Manor St.	Columbia Boro.	Fire	-
Columbia High School	901 Ironville Pike	Columbia Boro.	School	-
Park Elementary School	50 South 6 <sup>th</sup> St.	Columbia Boro.	School	-
Taylor Elementary School	45 North 9 <sup>th</sup> St.	Columbia Boro.	School	-
Conestoga Elementary School	100 Hill St.	Conestoga Twp.	School	-
Bainbridge Elementary School	416 North 2 <sup>nd</sup> St.	Conoy Twp.	School	-





Name	Address	Municipality	Building Type	Backup Power
Cocalico High School	800 South 4 <sup>th</sup> St.	Denver Boro.	School	-
Cocalico Middle School	650 South 6 <sup>th</sup> St.	Denver Boro.	School	-
Denver Elementary School	700 South 4 <sup>th</sup> St.	Denver Boro.	School	-
Summit Valley Elementary School	144 Summitville Rd.	Earl Twp.	School	-
Donegal High School	915 Anderson Ferry Rd.	East Donegal Twp.	School	-
Donegal Middle School	1177 River Rd.	East Donegal Twp.	School	-
Maytown Elementary School	105 North River St..	East Donegal Twp.	School	-
Solanco High School	585 Solanco Rd.	East Drumore Twp.	School	-
Blue Ball Elementary School	126 Ewell Rd.	East Earl Twp.	School	-
Centerville Elementary School	901 Centerville Rd	East Hempfield Twp.	School	-
Centerville Middle School	865 Centerville Rd.	East Hempfield Twp.	School	-
East Petersburg Elementary School	5700 Lemon St.	East Hempfield Twp.	School	-
Hempfield Senior High School	200 Stanley Ave.	East Hempfield Twp.	School	-
Landisville Elementary School	320 Mumma Dr.	East Hempfield Twp.	School	-
Landisville Middle School	340 Mumma Dr.	East Hempfield Twp.	School	-
Landisville Primary Center	320 Mumma Dr.	East Hempfield Twp.	School	-
Rohrerstown Elementary School	2200 Noll Dr.	East Hempfield Twp.	School	-
Conestoga Valley Middle School	500 Mount Sidney Rd	East Lampeter Twp.	School	-
Conestoga Valley Senior High School	2110 Horseshoe Rd.	East Lampeter Twp.	School	-
J. East Fritz Elementary	845 Hornig Rd.	East Lampeter Twp.	School	-
Lancaster Mennonite High School	2176 Lincoln Hwy. East	East Lampeter Twp.	School	-
Smoketown Elementary School	2426 Old Philadelphia Pike	East Lampeter Twp.	School	-
East Petersburg Mennonite Church	6279 Main St.	East Petersburg Boro.	Church	-
George A. Smith Middle School	645 Kirkwood Pike	Eden Twp.	School	-
East High St. Elementary School	800 East High St.	Elizabethtown Boro.	School	-
Elizabethtown Area High School	600 East High St.	Elizabethtown Boro.	School	-
Elizabethtown College	1 Alpha Dr.	Elizabethtown Boro.	College	-
Mill Rd. Elementary School	35 Elm Ave.	Elizabethtown Boro.	School	-
Ephrata Middle School	957 Hammon Ave.	Ephrata Boro.	School	-
Ephrata Senior High School	803 Oak Blvd.	Ephrata Boro.	School	-
Fulton Elementary School	51 East Fulton St.	Ephrata Boro.	School	-
Highland Elementary School	99 Highland Ave.	Ephrata Boro.	School	-
Lincoln Elementary School	1301 Apple St.	Ephrata Boro.	School	-
Washington Educational Center	26 Marshall St.	Ephrata Boro.	School	-
Clermont Elementary School	1866 Robert Fulton Hwy.	Fulton Twp.	School	-



<b>Name</b>	<b>Address</b>	<b>Municipality</b>	<b>Building Type</b>	<b>Backup Power</b>
Swift Middle School	1866 Robert Fulton Hwy.	Fulton Twp.	School	-
Buehrle Alternative School	426 East Clay St.	Lancaster City	School	-
Carter and Macrae Elementary School	251 South Prince St.	Lancaster City	School	-
Franklin and Marshall College - Colonel J Hall Steinman College Center	600 College Ave.	Lancaster City	College	-
George Washington Elementary School	545 South Ann St.	Lancaster City	School	-
Hamilton Elementary School	1300 Wabank Rd.	Lancaster City	School	-
J. P. McCaskey High School	445 North Reservoir St.	Lancaster City	School	-
Lafayette Elementary School	1000 St. Joseph St.	Lancaster City	School	-
Wickersham Elementary School	401 North Reservoir St.	Lancaster City	School	-
Elizabeth Martin Elementary School	2000 Wabank Rd.	Lancaster Twp.	School	-
Lancaster Country Day School	725 Hamilton Rd.	Lancaster Twp.	School	-
Pequea Valley High School	4033 East Newport Rd.	Leacock Twp.	School	-
Pequea Valley Intermediate School	166 South New Holland Rd.	Leacock Twp.	School	-
John R. Bonfield Elementary School	101 North Oak St.	Lititz Boro.	School	-
Kissel Hill Elementary School	215 Landis Valley Rd.	Lititz Boro.	School	-
Lititz Church of The Brethren	300 West Orange St.	Lititz Boro.	Church	-
Lititz Community Center	301 Maple St.	Lititz Boro.	Community Center	-
Lititz Elementary School	20 South Cedar St.	Lititz Boro.	School	-
Lititz Mennonite Church	165 Front St.	Lititz Boro.	Church	-
Warwick High School	301 West Orange St.	Lititz Boro.	School	-
Warwick Middle School	401 Maple St.	Lititz Boro.	School	-
Lancaster Catholic High School	650 Juliette Ave.	Manheim Twp.	School	-
Manheim Township High School	160 School Rd.	Manheim Twp.	School	-
Manheim Township Middle School	150 School Rd.	Manheim Twp.	School	-
Ann Letort Elementary School	561 Letort Rd.	Manor Twp.	School	-
Central Manor Elementary School	3717 Blue Rock Rd.	Manor Twp.	School	-
Hambright Elementary School	2121 Temple Ave.	Manor Twp.	School	-
Manor Middle School	2950 Charlestown Rd.	Manor Twp.	School	-
Martic Elementary School	266 Martic Heights Dr.	Martic Twp.	School	-
Martieville Middle School	356 Frogtown Rd.	Martic Twp.	School	-
Eshleman Elementary School	545 Leaman Ave.	Millersville Boro.	School	-



Name	Address	Municipality	Building Type	Backup Power
Penn Manor High School	100 East Cottage Ave.	Millersville Boro.	School	-
Fairview Elementary School	8853 Elizabethtown Rd.	Mount Joy Twp.	School	-
Garden Spot High School	669 East Main St.	New Holland Boro.	School	-
New Holland Elementary School	126 Eastern School Rd.	New Holland Boro.	School	-
Manheim Central Middle School	261 White Oak Rd.	Penn Twp.	School	-
Pequea Elementary School	802 Millwood Rd.	Pequea Twp.	School	-
Providence Elementary School	137 Truce Rd.	Providence Twp.	School	-
Quarryville Elementary School	211 South Hess St.	Quarryville Boro.	School	-
Salisbury Elementary School	422 School Lane Rd.	Salisbury Twp.	School	-
Leola Elementary School	11 School Dr.	Upper Leacock Twp.	School	-
Grace Brethren Church	501 West Lincoln Ave.	Warwick Twp.	Church	-
Jerusalem Evangelical Lutheran Church	36 Church St.	Warwick Twp.	Church	-
John Beck Elementary School	418 East Lexington Rd.	Warwick Twp.	School	-
Lancaster Evangelical Free Church	419 Pierson Rd.	Warwick Twp.	Church	-
Lititz Area Mennonite School	1050 East Newport Rd.	Warwick Twp.	School	-
Midway Mennonite Reception Center	210 East Lexington Rd.	Warwick Twp.	Church	-
Rheems Elementary School	130 Alida St.	West Donegal Twp.	School	-
Brownstown Elementary School	51 School Lane	West Earl Twp.	School	-
Farmdale Elementary School	695 Prospect Rd.	West Hempfield Twp.	School	-
Hans Herr Elementary School	1600 Book Rd.	West Lampeter Twp.	School	-
Lampeter-Strasburg High School	1007 Village Rd.	West Lampeter Twp.	School	-
Lancaster County Career Technology Center	1730 Hans Herr Dr,	West Lampeter Twp.	School	-
Martin Meylin Middle School	1007 Village Rd.	West Lampeter Twp.	School	-

Source: Lancaster County 2017

Notes:

- Data not available

### Schools and Institutions of Higher Education

Table I-4 lists schools and institutions of higher education in Lancaster County.

**Table I-4. Schools in Lancaster County**

Name	Address	Municipality	Backup Power
Adamstown Elementary School	256 West Main St	Adamstown Boro.	-
Akron Elementary School	125 South 11 <sup>th</sup> St.	Akron Boro.	-
Bart View Amish School	134 Lancaster Ave.	Bart Twp.	-





Name	Address	Municipality	Backup Power
Bartville Amish School	106 Rosedale Rd	Bart Twp.	-
Brick Amish School	1622 Georgetown Rd.	Bart Twp.	-
Georgetown Amish School	1041 Georgetown Rd.	Bart Twp.	-
Green Tree Amish School	1355 Valley Rd.	Bart Twp.	-
Morris Hill Amish School	877 Mount Pleasant Rd.	Bart Twp.	-
Mount Pleasant View School	643 Mount Pleasant Rd.	Bart Twp.	-
New Hope Parochial School	1921 A Mine Rd.	Bart Twp.	-
Nickle Mines Amish School	5495 White Oak Rd.	Bart Twp.	-
Rynear Road School	113 Rynear Rd.	Bart Twp.	-
Stoney Curve Amish School	369 Christiana Pike.	Bart Twp.	-
Black Creek School	367 East Black Creek Rd.	Brecknock Twp.	-
Black Creek School	367 East Black Creek Rd.	Brecknock Twp.	-
Brecknock Elementary School	361 School Rd.	Brecknock Twp.	-
Gehmans Mennonite School	650 Gehman School Rd.	Brecknock Twp.	-
Muddy Creek Christian School	988 Beam Rd.	Brecknock Twp.	-
Pieffer Hill School	1060 East Pieffer Hill Rd.	Brecknock Twp.	-
Red Run School	1066 East Pieffer Hill Rd.	Brecknock Twp.	-
Silver Hill School	1114 Oaklyn Dr.	Brecknock Twp.	-
White Oak Christian Day School	174 Pleasant Valley Rd.	Brecknock Twp.	-
Churchtown School	237 South Churchtown Rd.	Caernarvon Twp.	-
Conestoga Christian School	2760 Main St.	Caernarvon Twp.	-
Landis Hill Parochial School	2225 Valley View Rd.	Caernarvon Twp.	-
Mill Road School	215 Shirktown Rd.	Caernarvon Twp.	-
Mountain View School	2502 Zerbe Rd.	Caernarvon Twp.	-
Pennytown Parochial School	1877 North Churchtown Rd.	Caernarvon Twp.	-
Twin Valley Bible Academy	105 Shirktown Rd.	Caernarvon Twp.	-
Valley View School	2588 Valley View Rd.	Caernarvon Twp.	-
Cherry Grove School	275 Rock Rd.	Clay Twp.	-
Clay Elementary School	250 Clay School Rd.	Clay Twp.	-
Durlach School	675 Durlach Rd.	Clay Twp.	-
Fairview Parochial School	875 South Fairview Rd.	Clay Twp.	-
Grandview Heights Christian Academy	110 Durlach Rd.	Clay Twp.	-
Bart-Colerain Elementary School	1336 Noble Rd.	Colerain Twp.	-
Bell School	319 Bell Rd.	Colerain Twp.	-
Belmont Special Education School	286 Rosedale Rd.	Colerain Twp.	-
Country View Amish School	484 Cooper Dr.	Colerain Twp.	-
Fisher School	221 Maple Shade Rd.	Colerain Twp.	-
Hill Rd. School	36 Hill Rd.	Colerain Twp.	-
Hilltop School	230 Bartville Rd.	Colerain Twp.	-
Maple Hillside Amish School	470 Maple Shade Rd.	Colerain Twp.	-
Meadow Ridge School	152 Highland Rd.	Colerain Twp.	-



Name	Address	Municipality	Backup Power
Salem Road School	11 Salem Rd.	Colerain Twp.	-
Sproul Road Amish School	238 Sproul Rd.	Colerain Twp.	-
Union Amish School	2061 Kirkwood Pike	Colerain Twp.	-
Columbia Jr./Sr. High School	901 Ironville Pike	Columbia Boro.	-
Holy Trinity School	404 Cherry St.	Columbia Boro.	-
Our Lady of the Angels	404 Cherry St.	Columbia Boro.	-
Park Elementary School	50 South 6 <sup>th</sup> St.	Columbia Boro.	-
Taylor Elementary School	45 North Ninth St.	Columbia Boro.	-
Conestoga Elementary School	100 Hill St.	Conestoga Twp.	-
Bainbridge Elementary School	416 North 2 <sup>nd</sup> St.	Conoy Twp.	-
Cocalico High School	800 South 4 <sup>th</sup> St.	Denver Boro.	-
Cocalico Middle School	650 South 6 <sup>th</sup> St.	Denver Boro.	-
Denver Elementary School	700 South 4 <sup>th</sup> St.	Denver Boro.	-
Buckview Amish School	1069 Holtwood Rd.	Drumore Twp.	-
Chestnut Run Amish School	1327 River Rd.	Drumore Twp.	-
Fairfield Amish School	1360 Furniss Rd.	Drumore Twp.	-
Harmony Ridge Amish School	1516 Harmony Ridge Dr.	Drumore Twp.	-
Parkside Amish School	1726 Susquehannock Dr.	Drumore Twp.	-
Tanglewood Amish School	1037 Silver Spring Rd.	Drumore Twp.	-
Amsterdam Parochial School	189 Amsterdam Rd.	Earl Twp.	-
Center Grove School	226 East Huyard Rd.	Earl Twp.	-
Crossroads Mennonite Christian Day School	3030 Division Hwy.	Earl Twp.	-
Fairmount School	104 Fairmount Rd.	Earl Twp.	-
Groffdale School	179 Voganville Rd.	Earl Twp.	-
Hidden Meadows Parochial School	306 Redwell Rd.	Earl Twp.	-
Hillside Parochial School	233 Wanner Rd.	Earl Twp.	-
Hinkletown Mennonite School	2031 Division Hwy.	Earl Twp.	-
Lincoln Independent School	152 Sensenig Rd.	Earl Twp.	-
Linden Grove School	131 Linden Grove Rd.	Earl Twp.	-
Martindale Parochial School	1097 Martindale Rd.	Earl Twp.	-
Mill Creek Valley School	115 Eastern School Rd.	Earl Twp.	-
New Holland Elementary School	126 Eastern School Rd.	Earl Twp.	-
Old Order Mennonite Parochial School	149 Meadow Creek Rd.	Earl Twp.	-
Pleasant Valley School	170 Mentzer Rd.	Earl Twp.	-
Reidenbach School	131 Martin Rd.	Earl Twp.	-
Summit View Church School	144 Summitville Rd.	Earl Twp.	-
Summitview Christian School	200 Summitville Rd.	Earl Twp.	-
Walnut Hill Amish Parochial School	275 South Shirk Rd.	Earl Twp.	-
Brunners Grove School	362 Brunners Grove Rd.	East Cocalico Twp.	-
Muddy Creek School	1550 Kramer Mill Rd.	East Cocalico Twp.	-
Napierville School	537 East Church St.	East Cocalico Twp.	-



Name	Address	Municipality	Backup Power
Reamstown Elementary School	44 South Reamstown Rd.	East Cocalico Twp.	-
Reamstown Mennonite School	137 North Reamstown Rd.	East Cocalico Twp.	-
Donegal High School	915 Anderson Ferry Rd.	East Donegal Twp.	-
Donegal Intermediate School	1177 River Rd.	East Donegal Twp.	-
Donegal Springs Elementary	1055 Koser Rd.	East Donegal Twp.	-
Friedenburg Amish School	1306 Harrisburg Ave.	East Donegal Twp.	-
Lancaster Mennonite School-Kraybill Campus	598 Kraybill Church Rd.	East Donegal Twp.	-
Riverview Elementary School	1179 River Rd.	East Donegal Twp.	-
Calvary Christian Academy	1225 Robert Fulton Hwy.	East Drumore Twp.	-
Cardinal Wing School	683 Conowingo Rd.	East Drumore Twp.	-
Highfield Parochial School	471 Church Rd.	East Drumore Twp.	-
Pond View School	326 Black Bear Rd.	East Drumore Twp.	-
Solanco High School	585 Solanco Rd.	East Drumore Twp.	-
Blue Ball Elementary School	126 Ewell Rd.	East Earl Twp.	-
Bridgeville Road School	1668 Ligalaw Rd.	East Earl Twp.	-
Center Mennonite School	571 Reading Rd.	East Earl Twp.	-
Clear View Old Order Mennonite School	997 Weaverland Rd.	East Earl Twp.	-
Conestoga Parochial School	233 Good Store Rd.	East Earl Twp.	-
East Earl Mennonite School	1182 East Earl Rd.	East Earl Twp.	-
Green Bank Parochial School	678 Ranck Rd.	East Earl Twp.	-
Pequea Mennonite School	5025 Diem Rd.	East Earl Twp.	-
Shalom Mennonite School	1410 Union Grove Rd.	East Earl Twp.	-
Spring Grove School	339 Iron Bridge Rd.	East Earl Twp.	-
Terre Hill Mennonite High School	1416 Union Grove Rd.	East Earl Twp.	-
Union Grove Mennonite School	1508 Union Grove Rd.	East Earl Twp.	-
Weaverland School	509 Linden Rd.	East Earl Twp.	-
West Terre Hill Parochial School	560 Quarry Rd.	East Earl Twp.	-
Wide Hollow Parochial School	598 Red Run Rd.	East Earl Twp.	-
Centerville Elementary School	901 Centerville Rd.	East Hempfield Twp.	-
Centerville Middle School	865 Centerville Rd.	East Hempfield Twp.	-
Hempfield High School	200 Stanley Ave.	East Hempfield Twp.	-
Intermediate Unit 13 - Enterprise Rd.	1110 Enterprise Rd.	East Hempfield Twp.	-
Intermediate Unit 13 - Rohrerstown Education Center	1 Mayer Ave.	East Hempfield Twp.	-
Lancaster County Public Safety Training Center	101 Champ Blvd.	East Hempfield Twp.	-
Landisville Intermediate Center	300 Church St.	East Hempfield Twp.	-
Landisville Middle School	340 Mumma Dr.	East Hempfield Twp.	-
Landisville Primary Center	320 Mumma Dr.	East Hempfield Twp.	-
Rohrerstown Education Center	1 Mayer Ave.	East Hempfield Twp.	-
Rohrerstown Elementary School	2200 Noll Dr.	East Hempfield Twp.	-
St Leo The Great School	2427 Marietta Ave.	East Hempfield Twp.	-



Name	Address	Municipality	Backup Power
Cherry Lane School	2680 South Cherry Ln.	East Lampeter Twp.	-
Conestoga Valley Middle School	500 Mount Sidney Rd.	East Lampeter Twp.	-
Conestoga Valley Sr. High School	2110 Horseshoe Rd.	East Lampeter Twp.	-
Eastern Mennonite University - Lancaster	1846 Charter Ln.	East Lampeter Twp.	-
Fritz Elementary School	845 Hornig Rd.	East Lampeter Twp.	-
Green Land School	425 Gridley Rd.	East Lampeter Twp.	-
HACC - Lancaster Campus	1641 Old Philadelphia Pike	East Lampeter Twp.	-
Hartman Station Amish School	660 Hartman Station Rd.	East Lampeter Twp.	-
Hobson Road Amish School	2347 Hobson Rd.	East Lampeter Twp.	-
Lancaster Mennonite School-Lincoln Hwy	2176 Lincoln Hwy. East	East Lampeter Twp.	-
Lancaster Mennonite School-Locust Grove	2257 Old Philadelphia Pike	East Lampeter Twp.	-
Lynwood School	221 Lynwood Rd.	East Lampeter Twp.	-
Oak Grove School	500 Willow Rd.	East Lampeter Twp.	-
Rocky Ridge School	351 Clearview Rd.	East Lampeter Twp.	-
Siegrist Road Amish School	2527 Siegrist Rd.	East Lampeter Twp.	-
Smoketown Amish School	2347 Hobson Rd.	East Lampeter Twp.	-
Smoketown Elementary School	2426 Old Philadelphia Pike	East Lampeter Twp.	-
Witmer Amish School	424 Mount Sidney Rd.	East Lampeter Twp.	-
East Petersburg Elementary School	5700 Lemon St.	East Petersburg Boro.	-
Foggy Ridge Amish School	3574 White Oak Rd.	Eden Twp.	-
Furnace Road Amish School	600 Furnace Rd.	Eden Twp.	-
Haiti Woods Amish School	371 Haiti Rd.	Eden Twp.	-
Hawksville School	317 Camargo Rd.	Eden Twp.	-
Hess View School	152 Hess Rd.	Eden Twp.	-
Loop Road Amish School	274 Loop Rd.	Eden Twp.	-
Picadilly Ridge School	72 Stony Hill Rd.	Eden Twp.	-
Smith Middle School	645 Kirkwood Pike	Eden Twp.	-
Stony Hill Amish School	433 Springville Rd.	Eden Twp.	-
White Oak School	87 Springville Rd.	Eden Twp.	-
Brickerville Mennonite School	145 Sleepy Hollow Rd.	Elizabeth Twp.	-
New Haven Mennonite School	230 Crest Rd.	Elizabeth Twp.	-
East High St. Elementary School	800 East High St.	Elizabethtown Boro.	-
Elizabethtown Area High School	600 East High St.	Elizabethtown Boro.	-
Elizabethtown Area Middle School	600 East High St.	Elizabethtown Boro.	-
Elizabethtown College	1 Alpha Dr.	Elizabethtown Boro.	-
Mill Road. Elementary School	35 Elm Ave.	Elizabethtown Boro.	-
St Peter Parochial School	61 East Washington St.	Elizabethtown Boro.	-
Ephrata High School	803 Oak Blvd.	Ephrata Boro.	-
Ephrata Middle School	957 Hammon Ave.	Ephrata Boro.	-
Fulton Elementary School - Ephrata	51 East Fulton St.	Ephrata Boro.	-
Highland Elementary School	99 Highland Ave.	Ephrata Boro.	-





Name	Address	Municipality	Backup Power
Intermediate Unit 13 - Ephrata School to Work	55 New St.	Ephrata Boro.	-
Intermediate Unit 13 - Summit Quest Academy	1170 South State St.	Ephrata Boro.	-
Intermediate Unit 13 - Washington Education Center - Ephrata	26 Marshall St.	Ephrata Boro.	-
Our Mother of Perpetual Help School	330 Church Ave.	Ephrata Boro.	-
Washington Education Center	26 Marshall St.	Ephrata Boro.	-
Ephrata Mennonite School	598 Stevens Rd.	Ephrata Twp.	-
Hahnstown Mennonite School	255 Hahnstown Rd.	Ephrata Twp.	-
Hillside Special Education Mennonite School	1450 Diamond Station Rd.	Ephrata Twp.	-
Intermediate Unit 13 - Bergstrasse	6 Hahnstown Rd.	Ephrata Twp.	-
Intermediate Unit 13 - Community School - East	6 Hahnstown Rd.	Ephrata Twp.	-
Middle Creek School	266 Middle Creek Rd.	Ephrata Twp.	-
Springville Mennonite School	520 Springville Rd.	Ephrata Twp.	-
Woodcrest Parochial School	749 Glenwood Dr.	Ephrata Twp.	-
Bethel Mennonite School	333 Fulton View Rd.	Fulton Twp.	-
Cedar Valley Parochial School	416 Little Britain Rd. S.	Fulton Twp.	-
Clermont Elementary School	1866 Robert Fulton Hwy.	Fulton Twp.	-
Forest Ridge School	170 Rigby Rd.	Fulton Twp.	-
Hillside View Amish School	196 Peach Bottom Rd.	Fulton Twp.	-
New Texas Parochial School	323 Black Barren Rd.	Fulton Twp.	-
Oak Ridge School	196 Peach Bottom Rd.	Fulton Twp.	-
Swift Middle School	1866 Robert Fulton Hwy.	Fulton Twp.	-
Wakefield School	2297 Robert Fulton Hwy.	Fulton Twp.	-
Buehrle Alternate School	426 East Clay St.	Lancaster City	-
Calvary Baptist Christian School	530 Milton Rd.	Lancaster City	-
Carter & Macrae Elementary School	251 South Prince St.	Lancaster City	-
Day Spring Christian Academy	1008 New Holland Ave.	Lancaster City	-
Franklin and Marshall College	600 College Ave.	Lancaster City	-
Fulton Elementary School - Lancaster	225 West Orange St.	Lancaster City	-
Hamilton Elementary School	1300 Wabank Rd.	Lancaster City	-
Hand Middle School	431 South Ann St.	Lancaster City	-
Intermediate Unit 13 - Adult Enrichment Center	31 South Duke St..	Lancaster City	-
Intermediate Unit 13 - Brightside Opportunity Center	515 Hershey Ave.	Lancaster City	-
Intermediate Unit 13 - C B Winters Headstart Center	57 Laurel St.	Lancaster City	-
Intermediate Unit 13 - Community School - Southeast	1050 New Holland Ave.	Lancaster City	-
Intermediate Unit 13 - Day Treatment Center	47 South Mulberry St.	Lancaster City	-
Intermediate Unit 13 - Lancaster Careerlink	1016 North Charlotte St. Suite 308	Lancaster City	-
Intermediate Unit 13 - Mulberry Street School	47 South Mulberry St.	Lancaster City	-



Name	Address	Municipality	Backup Power
King Elementary School	466 Rockland St.	Lancaster City	-
La Academia Partnership Charter School	30 North Ann St.	Lancaster City	-
Lafayette Elementary School	1000 St. Joseph St.	Lancaster City	-
Lancaster County Academy	1202 Park City Center	Lancaster City	-
Lancaster Theological Seminary	555 West James St.	Lancaster City	-
Lincoln Middle School	1001 Lehigh Ave.	Lancaster City	-
McCaskey East High School	1051 Lehigh Ave.	Lancaster City	-
McCaskey High School	445 North Reservoir St.	Lancaster City	-
Penn State Lancaster Center	1383 Arcadia Rd.	Lancaster City	-
Pennsylvania College of Art and Design	204 North Prince St.	Lancaster City	-
Pennsylvania College of Health and Sciences	410 North Lime St.	Lancaster City	-
Phoenix Academy	630 Rockland St.	Lancaster City	-
Price Elementary School	615 Fairview Ave.	Lancaster City	-
Resurrection Catholic School	521 East Orange St.	Lancaster City	-
Reynolds Middle School	605 West Walnut St.	Lancaster City	-
Ross Elementary School	840 North Queen St.	Lancaster City	-
Sacred Heart of Jesus School	235 Nevin St.	Lancaster City	-
St Anne School	108 East Liberty St.	Lancaster City	-
Stevens State School of Technology	750 East King St.	Lancaster City	-
The New School of Lancaster	935 Columbia Ave.	Lancaster City	-
Washington Elementary School - Lancaster	545 South Ann St.	Lancaster City	-
Wharton Elementary School	705 North Mary St.	Lancaster City	-
Wickersham Elementary School	401 North Reservoir St.	Lancaster City	-
Buchanan Elementary School	340 South West End Ave.	Lancaster Twp.	-
Burrowes Elementary School	1001 East Orange St.	Lancaster Twp.	-
Martin Elementary School	1990 Wabank Rd.	Lancaster Twp.	-
Wheatland Middle School	919 Hamilton Park Dr.	Lancaster Twp.	-
Amish School	3167 West Newport Rd.	Leacock Twp.	-
Amish School	3528 West Newport Rd.	Leacock Twp.	-
Cattail School	21 Cattail Rd.	Leacock Twp.	-
Centerville School	3499 Scenic Rd.	Leacock Twp.	-
Clearview School	110 Old Leacock Rd.	Leacock Twp.	-
Colonial Parochial School	25 Colonial Rd.	Leacock Twp.	-
Country Side Amish School	397 South Groffdale Rd.	Leacock Twp.	-
Countryside School	229 South Groffdale Rd.	Leacock Twp.	-
East Gordon School	3298 East Gordon Rd.	Leacock Twp.	-
Harvest Lane School	51 North Harvest Rd.	Leacock Twp.	-
Hickory Grove School	3441 West Pequea Ln.	Leacock Twp.	-
Irishtown Road School	3103 Irishtown Rd.	Leacock Twp.	-
Leacock Elementary School	3656 Old Philadelphia Pike	Leacock Twp.	-
Meadow Brook School	3528 West Newport Rd.	Leacock Twp.	-



Name	Address	Municipality	Backup Power
Meadow Lane School	3752 Yost Rd.	Leacock Twp.	-
Meadow View School	3045 Old Philadelphia Pike	Leacock Twp.	-
Muddy Run School	2939 Church Rd.	Leacock Twp.	-
Newport School	3778 East Newport Rd.	Leacock Twp.	-
Pequea Valley High School	4033 East Newport Rd.	Leacock Twp.	-
Pequea Valley Intermediate School	166 South New Holland Rd.	Leacock Twp.	-
Red Well School	1018 Peters Rd.	Leacock Twp.	-
Ridge Road School	4001 Ridge Rd.	Leacock Twp.	-
Shady Glade School	227D Osceola Mill Rd.	Leacock Twp.	-
Weavertown Mennonite School	73 Orchard Rd.	Leacock Twp.	-
Westfield Parochial School	3747 Old Philadelphia Pike	Leacock Twp.	-
Windy Valley School	602 Peters Rd.	Leacock Twp.	-
Bonfield Elementary School	101 North Oak St.	Lititz Boro.	-
Kissel Hill Elementary School	215 Landis Valley Rd.	Lititz Boro.	-
Linden Hall School	212 East Main St.	Lititz Boro.	-
Lititz Elementary School	20 South Cedar St.	Lititz Boro.	-
Warwick Middle School	401 Maple St.	Lititz Boro.	-
Warwick Sr High School	301 West Orange St.	Lititz Boro.	-
Ashville School	270 Ashville Rd.	Little Britain Twp.	-
Fulton View Amish School	172 Fulton View Rd.	Little Britain Twp.	-
Green Lane School	525 Balance Meeting Rd.	Little Britain Twp.	-
Little Britain Mennonite School	352 Nottingham Rd.	Little Britain Twp.	-
Oak Shade School	524 King Pen Rd.	Little Britain Twp.	-
Springhill School	7 Springhill Rd.	Little Britain Twp.	-
Windy Knoll Amish School	66 Little Britain Rd. S.	Little Britain Twp.	-
Burgard Elementary School	111 South Penn St.	Manheim Boro.	-
Manheim Central High School	400 East Adele Ave.	Manheim Boro.	-
Stiegel Elementary School	3 South Hazel St.	Manheim Boro.	-
Airport View Parochial Mennonite School	750 Keens Rd.	Manheim Twp.	-
Airport View School	3167 Kissel Hill Rd.	Manheim Twp.	-
Brecht Elementary School	1250 Lititz Pike	Manheim Twp.	-
Bucher Elementary School	450 Candlewyck Rd.	Manheim Twp.	-
Jewish Day School	2120 Oregon Pike	Manheim Twp.	-
Lancaster Bible College	901 Eden Rd.	Manheim Twp.	-
Lancaster Catholic High School	650 Juliette Ave.	Manheim Twp.	-
Lancaster Country Day School	725 Hamilton Rd.	Manheim Twp.	-
Lancaster Preparatory School	1947 New Holland Pike	Manheim Twp.	-
Manheim Township High School	160 School Rd.	Manheim Twp.	-
Manheim Township Middle School	150 School Rd.	Manheim Twp.	-
Montessori Academy of Lancaster	1460 Eden Rd.	Manheim Twp.	-
Neff Elementary School	100 School Rd.	Manheim Twp.	-



Name	Address	Municipality	Backup Power
Nitrauer Elementary School	811 Ashbourne Ave	Manheim Twp.	-
Reidenbaugh Elementary School	1001 Buckwalter Rd.	Manheim Twp.	-
Schaeffer Elementary School	875 Pleasure Rd.	Manheim Twp.	-
Blue Rock Mennonite School	3453 Blue Rock Rd.	Manor Twp.	-
Central Manor Elementary School	3717 Blue Rock Rd.	Manor Twp.	-
Hambright Elementary School	2121 Temple Ave.	Manor Twp.	-
Letort Elementary School	561 Letort Rd.	Manor Twp.	-
Manor Middle School	2950 Charlestown Rd.	Manor Twp.	-
Susquehanna Waldorf School	15 West Walnut St.	Marietta Boro.	-
Hilldale Amish Parochial School	860 Hilldale Rd.	Martic Twp.	-
Martic Elementary School	266 Martic Heights Dr.	Martic Twp.	-
Marticville Middle School	356 Frogtown Rd.	Martic Twp.	-
Rawlinsville School	112 Martic Heights Dr.	Martic Twp.	-
Eshleman Elementary School	545 Leaman Ave.	Millersville Boro.	-
Millersville University	21 South George St.	Millersville Boro.	-
Penn Manor High School	100 East Cottage Ave.	Millersville Boro.	-
Bellaire Ridge School	519 Bellaire Rd.	Mount Joy Twp.	-
Fairview Elementary School	8853 Elizabethtown Rd.	Mount Joy Twp.	-
Lancaster County Career and Technology Center-Mount Joy	432 Old Market St.	Mount Joy Twp.	-
Mount Calvary Christian School	629 Holly St.	Mount Joy Twp.	-
Pa Department of Corrections Training Academy	1451 North Market St.	Mount Joy Twp.	-
Canaan Christian Academy	2 College Ave.	Mountville Boro.	-
Mountville Elementary School	200 College Ave.	Mountville Boro.	-
The Janus School	205 Lefever Rd.	Mt Joy Boro.	-
Garden Spot High School/Middle School	669 East Main St.	New Holland Boro.	-
Intermediate Unit 13 - New Holland Home Base Headstart	249 East Main St.	New Holland Boro.	-
Black Horse Amish Parochial School	130 Black Horse Rd.	Paradise Twp.	-
Calamus Run School	265 Esbenshade Rd.	Paradise Twp.	-
Cedar Hill School	364 South Belmont Rd.	Paradise Twp.	-
Ebys Curve Amish Parochial School	55 South Vintage Rd.	Paradise Twp.	-
Eshleman Run School	61 Quarry Rd.	Paradise Twp.	-
Forest View Amish School	96 Mcilvaine Rd.	Paradise Twp.	-
Harristown Amish School	398 Osceola Mill Rd.	Paradise Twp.	-
Iva School	2 Mount Pleasant Rd.	Paradise Twp.	-
Linville Hill Mennonite School	295 South Kinzer Rd.	Paradise Twp.	-
Paradise Elementary School	3293 Lincoln Hwy. East	Paradise Twp.	-
Paradise Lane School	137 Paradise Ln.	Paradise Twp.	-
Peach Lane School	93 Peach Ln.	Paradise Twp.	-
Pine Grove School	12 Esbenshade Rd.	Paradise Twp.	-
Pine Knob School	95 South Kinzer Rd.	Paradise Twp.	-



Name	Address	Municipality	Backup Power
Slaymaker Hill School	61-C Slaymaker Hill Rd.	Paradise Twp.	-
Wolf Rock Parochial School	363 K Wolf Rock Rd.	Paradise Twp.	-
Doe Run Elementary School	281 Doe Run Rd.	Penn Twp.	-
Elm School	290 Fairview Rd.	Penn Twp.	-
Fairland Amish School	115 Fairland Rd.	Penn Twp.	-
Intermediate Unit 13 - Community School - West	1713 Newport Rd.	Penn Twp.	-
Intermediate Unit 13 - Fairland Bldg.	8 Fairland Rd.	Penn Twp.	-
Lime Rock School	464 West Lexington Rd.	Penn Twp.	-
Manheim Central Middle School	261 White Oak Rd.	Penn Twp.	-
Oak Ln. Mennonite School	2004 North Penryn Rd.	Penn Twp.	-
Sporting Hill Mennonite School	800 Junction Rd.	Penn Twp.	-
Byerland School	946 Byerland Church Rd.	Pequea Twp.	-
Lancaster Mennonite School-New Danville	393 Long Ln.	Pequea Twp.	-
Linestown Amish School	241 Radcliff Rd.	Pequea Twp.	-
Pequea Elementary School	802 Millwood Rd.	Pequea Twp.	-
Deer Hollow Amish School	261 Truce Rd.	Providence Twp.	-
Hillside Amish School	33 Esh Rd.	Providence Twp.	-
New Providence School	178 Cinder Rd.	Providence Twp.	-
Providence Elementary School	137 Truce Rd.	Providence Twp.	-
Providence-Drumore Amish Parochial (Refton) School	150 Smithville Rd.	Providence Twp.	-
Quarryville Elementary School	211 South Hess St.	Quarryville Boro.	-
Clearview Mennonite School	110 North Esbenshade Rd.	Rapho Twp.	-
Iron Grove Amish School	5125 Elizabethtown Rd.	Rapho Twp.	-
Manheim Christian Day School	686 Lebanon Rd.	Rapho Twp.	-
Old Line School	1105 Old Line Rd.	Rapho Twp.	-
Amish School	441 Vintage Rd	Sadsbury Twp.	-
Buck Hill School	109 Buck Hill Rd.	Sadsbury Twp.	-
Chestnut Hill School	130 Schoolhouse Rd.	Sadsbury Twp.	-
Cooperville Amish School	118 Lower Valley Rd.	Sadsbury Twp.	-
Fairhaven Christian School	1031 Simmontown Rd.	Sadsbury Twp.	-
Honey Suckle School	2024 Smyrna Rd.	Sadsbury Twp.	-
Noble Oak School	701 Noble Rd.	Sadsbury Twp.	-
Simmontown Amish School	5605 Strasburg Rd.	Sadsbury Twp.	-
Smyrna View School	439 Quaker Church Rd.	Sadsbury Twp.	-
Sunny Slope School	59 Christiana Pike	Sadsbury Twp.	-
Valley Run School	60 Lower Valley Rd.	Sadsbury Twp.	-
Apple Grove School	770 Evans Rd.	Salisbury Twp.	-
Beaver Dam School	203 Churchtown Rd.	Salisbury Twp.	-
Buena Vista Amish School	377 Mt Vernon Rd.	Salisbury Twp.	-
Byerstown Amish School	5114 Usner Rd.	Salisbury Twp.	-



Name	Address	Municipality	Backup Power
Cambridge School	6173 Meadeville Rd.	Salisbury Twp.	-
Compass Amish School	428 Compass Rd.	Salisbury Twp.	-
Faith Mennonite High School	5085 Woodland Dr.	Salisbury Twp.	-
Friendship Baptist Academy	653 Meeting House Rd.	Salisbury Twp.	-
Gap View Amish School	724 Hoffmeier Rd.	Salisbury Twp.	-
Keystone Parochial School	445 School Lane Rd.	Salisbury Twp.	-
Lime Quarry Amish School	658 Lime Quarry Rd.	Salisbury Twp.	-
Limeville Amish School	546 Mt Vernon Rd.	Salisbury Twp.	-
Meadow Springs Amish School	615 Amish Rd.	Salisbury Twp.	-
Meeting House School	295 Meeting House Rd.	Salisbury Twp.	-
Mill Run School	6173 Meadeville Rd.	Salisbury Twp.	-
Millwood Amish Parochial School	5385 Amish Rd.	Salisbury Twp.	-
Narvon Run School	5778 Northeimer Rd.	Salisbury Twp.	-
Pequea Christian School	115 Blank Rd.	Salisbury Twp.	-
Pleasant Grove School	21 Lesal Rd.	Salisbury Twp.	-
Red Hill School	599 Red Hill Rd.	Salisbury Twp.	-
Salisbury Elementary School	422 School Lane Rd.	Salisbury Twp.	-
Salisbury Heights School	189 School Lane Rd.	Salisbury Twp.	-
Smiling Ridge Amish School	175 Spring Garden Rd.	Salisbury Twp.	-
Spottsville Amish School	490 Churchtown Rd.	Salisbury Twp.	-
Spring Garden Amish School	147 Snake Ln.	Salisbury Twp.	-
Springhead Amish School	105 Springhead Rd.	Salisbury Twp.	-
Springville Amish School	248 Springville Rd.	Salisbury Twp.	-
Stoney Lane Amish School	201 Blank Rd.	Salisbury Twp.	-
Verdant Valley Amish School	450 Jacobs Rd.	Salisbury Twp.	-
Waterloo Amish School	111 Churchtown Rd.	Salisbury Twp.	-
Welsh Mountain Amish School	5310 Hammond Rd.	Salisbury Twp.	-
White Hall Amish School	341 Kauffroth Rd.	Salisbury Twp.	-
Strasburg Elementary School	51 Franklin St.	Strasburg Boro.	-
Beaver Valley Amish Parochial School	45 Little Beaver Rd.	Strasburg Twp.	-
Beaver Valley School	510 May Post Office Rd.	Strasburg Twp.	-
Bishop Ridge School	399 Bishop Rd.	Strasburg Twp.	-
Bunker Hill Amish School	793 Deiter Rd.	Strasburg Twp.	-
Krantz Mill School	164 Krantz Mill Rd.	Strasburg Twp.	-
North Star School	240 North Star Rd.	Strasburg Twp.	-
Sides Mill School	127 Lantz Rd.	Strasburg Twp.	-
Sycamore Amish School	540 Weaver Rd.	Strasburg Twp.	-
White Oak School	2293 White Oak Rd.	Strasburg Twp.	-
Center Square Amish School	100 West Center Square Rd.	Upper Leacock Twp.	-
Country Meadow School	2620 Stumptown Rd.	Upper Leacock Twp.	-
Creek Hill Amish Parochial School	2728 Creek Hill Rd.	Upper Leacock Twp.	-



Name	Address	Municipality	Backup Power
Gibbons Amish School	524 Gibbons Rd.	Upper Leacock Twp.	-
Hess Road School	342 Hess Rd.	Upper Leacock Twp.	-
Leola Elementary School	11 School Dr.	Upper Leacock Twp.	-
Living Word Academy	2384 New Holland Pike	Upper Leacock Twp.	-
Mill Creek School	681 Mill Creek School Rd.	Upper Leacock Twp.	-
Musser Parochial School	591 Musser School Rd.	Upper Leacock Twp.	-
Myers School	276 East Eby Rd.	Upper Leacock Twp.	-
Penn Johns Parochial School	203 Forest Hill Rd.	Upper Leacock Twp.	-
Quarry Road School	190 Quarry Rd.	Upper Leacock Twp.	-
Snakehill Road Amish School	86 Snakehill Rd.	Upper Leacock Twp.	-
Stumptown Amish School	2810 Stumptown Rd.	Upper Leacock Twp.	-
Veritas Academy	26 Hillcrest Ave.	Upper Leacock Twp.	-
Victory Baptist School	12 West Main St.	Upper Leacock Twp.	-
West Eby Amish School	47 West Eby Rd.	Upper Leacock Twp.	-
Zeltenreich Parochial School	376 Peters Rd.	Upper Leacock Twp.	-
Beck Elementary School	418 East Lexington Rd.	Warwick Twp.	-
Lititz Area Mennonite School	1050 East Newport Rd.	Warwick Twp.	-
Lititz Christian School	501 West Lincoln Ave.	Warwick Twp.	-
Millport School	901 Log Cabin Rd.	Warwick Twp.	-
Schoeneck Elementary School	80 West Queen St.	West Cocalico Twp.	-
West Cocalico Mennonite School	105 Marsh Rd.	West Cocalico Twp.	-
West Stevens School	1465 Wollups Hill Rd.	West Cocalico Twp.	-
Rheems Elementary School	130 Alida St.	West Donegal Twp.	-
Brownstown Elementary School	51 School Ln.	West Earl Twp.	-
Conestoga View School	305 Peach Rd.	West Earl Twp.	-
Diamond Rd. School	114 Pool Rd.	West Earl Twp.	-
Farmersville Parochial School	477 South Farmersville Rd.	West Earl Twp.	-
Goods Amish School	165 School Rd.	West Earl Twp.	-
Goods Parochial School	188 South Farmersville Rd.	West Earl Twp.	-
Grace Christian School	219 Conestoga Creek Rd.	West Earl Twp.	-
Lancaster County Career and Technology Center-Brownstown	231 Snyder Ln.	West Earl Twp.	-
Metzlers School	535 West Metzler Rd.	West Earl Twp.	-
Peaceful View School	156 Peace Rd.	West Earl Twp.	-
Pleasant Valley Mennonite School	144 Pleasant Valley Rd.	West Earl Twp.	-
Riverview Amish School	218 South State St.	West Earl Twp.	-
Sheaffers School	160 Sheaffers School Rd.	West Earl Twp.	-
Sunnyside East School	155 Center Square Rd.	West Earl Twp.	-
Sunnyside West School	114 Locust St.	West Earl Twp.	-
Weaverland Mennonite School	65 East Farmersville Rd.	West Earl Twp.	-
Adorers of the Blood of Christ	3950 Columbia Ave.	West Hempfield Twp.	-
Eby Chiques Amish School	948 Eby Chiques Rd.	West Hempfield Twp.	-





Name	Address	Municipality	Backup Power
Farmdale Elementary School	695 Prospect Rd.	West Hempfield Twp.	-
Sonlight River Brethren School	4075 Siegrist Rd.	West Hempfield Twp.	-
Hans Herr Primary/Intermediate School	1600 Book Rd.	West Lampeter Twp.	-
Lampeter Elementary School	1600 Book Rd.	West Lampeter Twp.	-
Lampeter-Strasburg High School	1007 Village Rd.	West Lampeter Twp.	-
Lancaster Christian School	651 Lampeter Rd.	West Lampeter Twp.	-
Lancaster County Career and Technology Center-Willow Street	1730 Hans Herr Dr.	West Lampeter Twp.	-
Lancaster Seventh Day Adventist School	1721 Conard Rd.	West Lampeter Twp.	-
Martin Meylin Middle School	1007 Village Rd.	West Lampeter Twp.	-
Rockvale School	1890 Rockvale Rd.	West Lampeter Twp.	-

Source: Lancaster County 2017

### Senior Care and Senior Living Facilities

Table I-5 lists the senior facilities in Lancaster County.

**Table I-5. Senior Facilities in Lancaster County**

Name	Address	Municipality	Building Type	Backup Power?
Adult Day Living Center - Masonic Center	60 Freemason Dr.	West Donegal Twp.	Adult Daycare Facility	-
Akron Haven	1150 Main St.	Akron Boro.	Elder Care Facility	-
Audubon Villa	125 South Broad St.	Lititz Boro.	Elder Care Facility	-
Barbara Hendershott Group Daycare	2544 South Cherry Ln.	East Lampeter Twp.	Adult Daycare Facility	-
Beverly Manor of Lancaster	425 North Duke St.	Lancaster City	Elder Care Facility	-
Brereton Manor Personal Care Home	3028 Anchor Rd.	Manor Twp.	Elder Care Facility	-
Brethren Village Retirement Community	3001 Lititz Pike	Manheim Twp.	Elder Care Facility	-
Calvary Fellowship Homes	502 Elizabeth Dr.	Manheim Twp.	Elder Care Facility	-
Cambridge Lancaster	120 Rider Ave.	Lancaster Twp.	Elder Care Facility	-
Cambridge Lancaster Child Care	120 Rider Ave.	Lancaster Twp.	Elder Care Facility	-
Colonial Lodge Retirement Communities	2015 North Reading Rd.	East Cocalico Twp.	Elder Care Facility	-
Community Service Group - Mountville	320 Highland Dr.	West Hempfield Twp.	Adult Daycare Facility	-
Community Services Inc. - Leola	312 Pleasant Valley Dr.	Upper Leacock Twp.	Adult Daycare Facility	-
Community Services Inc. - Marietta	2919 Marietta Ave.	East Hempfield Twp.	Adult Daycare Facility	-
Community Services Inc. - Pinetree Way	813 Pinetree Way	East Hempfield Twp.	Adult Daycare Facility	-



Name	Address	Municipality	Building Type	Backup Power?
Conestoga View	900 East King St.	Lancaster Twp.	Elder Care Facility	-
Country Meadows of Lancaster	1380 Elm Ave.	Lancaster Twp.	Elder Care Facility	-
Country View Manor	12 Friendly Dr.	East Drumore Twp.	Elder Care Facility	-
Denver House Personal Care	240 Main St.	Denver Boro.	Elder Care Facility	-
Denver Nursing Home	400 East Lancaster Ave.	Denver Boro.	Elder Care Facility	-
Ephrata Area Rehab Services	29 Cloister Ave.	Ephrata Boro.	Adult Daycare Facility	-
Ephrata Manor Nursing Home	99 Bethany Rd.	Ephrata Twp.	Elder Care Facility	-
Essa Flory Hospice Center	685 Good Dr.	East Hempfield Twp.	Elder Care Facility	-
Evergreen Estates Retirement Community	1300 East King St.	Lancaster Twp.	Elder Care Facility	-
Fairmount Homes	333 Wheat Ridge Dr.	West Earl Twp.	Elder Care Facility	-
Faith Friendship Villa of Mountville	128 West Main St.	Mountville Boro.	Elder Care Facility	-
Garden Spot Village	433 South Kinzer Ave.	Earl Twp.	Elder Care Facility	-
Hamilton Arms Nursing and Rehab Center	336 South West End Ave.	Lancaster Twp.	Elder Care Facility	-
Harrison Senior Living	41 Newport Ave.	Christiana Boro.	Elder Care Facility	-
Hearthstone Manor	607 Hearthstone Ln.	Mt Joy Boro.	Elder Care Facility	-
Hershey Mill Home	3828 Columbia Ave.	Manor Twp.	Elder Care Facility	-
Homestead Village Inc	1800 Village Cir.	East Hempfield Twp.	Elder Care Facility	-
Hospice of Lancaster	685 Good Dr.	East Hempfield Twp.	Elder Care Facility	-
La Park Living Center	25 Leacock Rd.	Paradise Twp.	Elder Care Facility	-
Lancashire Hall	2829 Lititz Pike	Manheim Twp.	Elder Care Facility	-
Lancashire Terrace	6 Terrace Dr.	Manheim Twp.	Elder Care Facility	-
Lancashire Villa	2763 Lititz Pike	Manheim Twp.	Elder Care Facility	-
Lancaster Older Adult Intensive Day Hospital	250 College Ave.	Lancaster City	Adult Daycare Facility	-
Lancaster Regional Medical Center Adult Day Care	250 College Ave.	Lancaster City	Adult Daycare Facility	-
Landis Homes	1001 East Oregon Rd.	Manheim Twp.	Elder Care Facility	-
Landis Homes Adult Day Services	1001 East Oregon Rd.	Manheim Twp.	Adult Daycare Facility	-



Name	Address	Municipality	Building Type	Backup Power?
Longwood Manor	2760 Maytown Rd.	East Donegal Twp.	Elder Care Facility	-
Luther Acres Manor	400 St. Luke Dr.	Lititz Boro.	Elder Care Facility	-
Magnolias of Lancaster	1870 Rohrerstown Rd.	East Hempfield Twp.	Elder Care Facility	-
Manor Care Health Services - Lancaster	100 Abbeyville Rd.	Lancaster Twp.	Elder Care Facility	-
Manor Care Healthcare Services	320 South Market St.	Elizabethtown Boro.	Elder Care Facility	-
Maple Farm Nursing Center	604 Oak St.	Ephrata Twp.	Elder Care Facility	-
Masonic Health Care Center	1 Masonic Dr.	West Donegal Twp.	Elder Care Facility	-
Masonic Village Adult Daily Living Center	92 Freemason Dr.	West Donegal Twp.	Adult Daycare Facility	-
Mennonite Home Communities	1520 Harrisburg Pike	Manheim Twp.	Elder Care Facility	-
Moravian Manor	300 West Lemon St.	Lititz Boro.	Elder Care Facility	-
Mt Hope Church Home	3026 Mount Hope Home Rd.	Rapho Twp.	Elder Care Facility	-
Oak Leaf Manor North - Landisville	2901 Harrisburg Pike	East Hempfield Twp.	Elder Care Facility	-
Oak Leaf Manor South - Millersville	2101 Wabank Rd.	Millersville Boro.	Elder Care Facility	-
Personal Touch Assisted Living	232 South Reading Rd.	Ephrata Boro.	Elder Care Facility	-
Pleasant View Retirement Community	544 North Penryn Rd.	Penn Twp.	Elder Care Facility	-
Quarryville Presbyterian Home	625 Robert Fulton Hwy.	East Drumore Twp.	Elder Care Facility	-
Red Rose Manor	38 Cottage Ave.	Lancaster Twp.	Elder Care Facility	-
Rheems Nursing and Rehabilitation Center	115 Broad St.	West Donegal Twp.	Elder Care Facility	-
Rheems Nursing Center	155 Broad St.	West Donegal Twp.	Elder Care Facility	-
Specialized Assisted Living - Ephrata	25 West Locust St.	Ephrata Boro.	Elder Care Facility	-
St Anne's Retirement Community	3952 Columbia Ave.	West Hempfield Twp.	Elder Care Facility	-
St John's Herr Estate	200 Luther Ln.	Columbia Boro.	Elder Care Facility	-
Susquehanna Valley Nursing & Rehab Center	745 Old Chiques Hill Rd.	Columbia Boro.	Elder Care Facility	-
The Groves	103 West Main St.	Ephrata Boro.	Elder Care Facility	-
The Long Community	200 North West End Ave.	Lancaster City	Elder Care Facility	-
United Zion Retirement Community	722 Furnace Hills Pike	Warwick Twp.	Elder Care Facility	-



Name	Address	Municipality	Building Type	Backup Power?
Village Vista	1941 Benmar Dr.	Manor Twp.	Elder Care Facility	-
Vineyard Personal Care Home	3030 Columbia Ave.	Manor Twp.	Elder Care Facility	-
Welsh Mountain Home	567 Springville Rd.	Salisbury Twp.	Elder Care Facility	-
Willow Valley - Arbor View	675 Willow Valley Sq.	West Lampeter Twp.	Elder Care Facility	-
Willow Valley - Lakes	300 Willow Valley Lakes Dr.	West Lampeter Twp.	Elder Care Facility	-
Willow Valley - Lakeside	300 Willow Valley Lakes Dr.	West Lampeter Twp.	Elder Care Facility	-
Willow Valley - Manor	211 Willow Valley Sq.	West Lampeter Twp.	Elder Care Facility	-
Willow Valley - Manor North	600 Willow Valley Sq.	West Lampeter Twp.	Elder Care Facility	-
Willow Valley - The Glen	675 Willow Valley Sq.	West Lampeter Twp.	Elder Care Facility	-
Willow View Home - South	204 Herrville Rd.	Providence Twp.	Elder Care Facility	-
Woodcrest Villa	2001 Harrisburg Pike	East Hempfield Twp.	Elder Care Facility	-
Zerbe Sisters Nursing Center	2499 Zerbe Rd.	Caernarvon Twp.	Elder Care Facility	-

Source: Lancaster County 2017

## Transportation Systems

This section presents available inventory data regarding roadways, airports, railways, and other public transportation systems in Lancaster County.

### Highway, Roadways, and Associated Systems

Lancaster County does not have an extensive mass transit system and relies on its roads and highway system to transport residents and visitors to and from the County. The County has nearly 4,500 miles of highway and local roadways that link more urban-areas of the County with the rural communities. The major roads and highways in the County include I-76, US-30, US-222, US-322, PA-72, PA-272, PA-283, PA-372, and PA-501. All of these roads are maintained by PennDOT.

### Airports

Airports can fall into two categories: public airports and private airports. Public airports include large commercial airports for major airplane carriers that are open to the public. Private airports are often used for small charter flights and private jets and airplanes. Military airports and restricted land zones are also identified as private airports.

Lancaster County contains one commercial air facility, the Lancaster Airport, as well as a few private air strips. In addition, aircraft traveling the major air route between Harrisburg and Philadelphia travel over Lancaster County.

### Railways

Amtrak is the only passenger rail available to residents of Lancaster County. Lancaster Station in the City of Lancaster connects residents in the County to Philadelphia, Pittsburgh, and New York City via Amtrak service. The majority of rail lines in the County are freight lines and are utilized for transporting resources, including

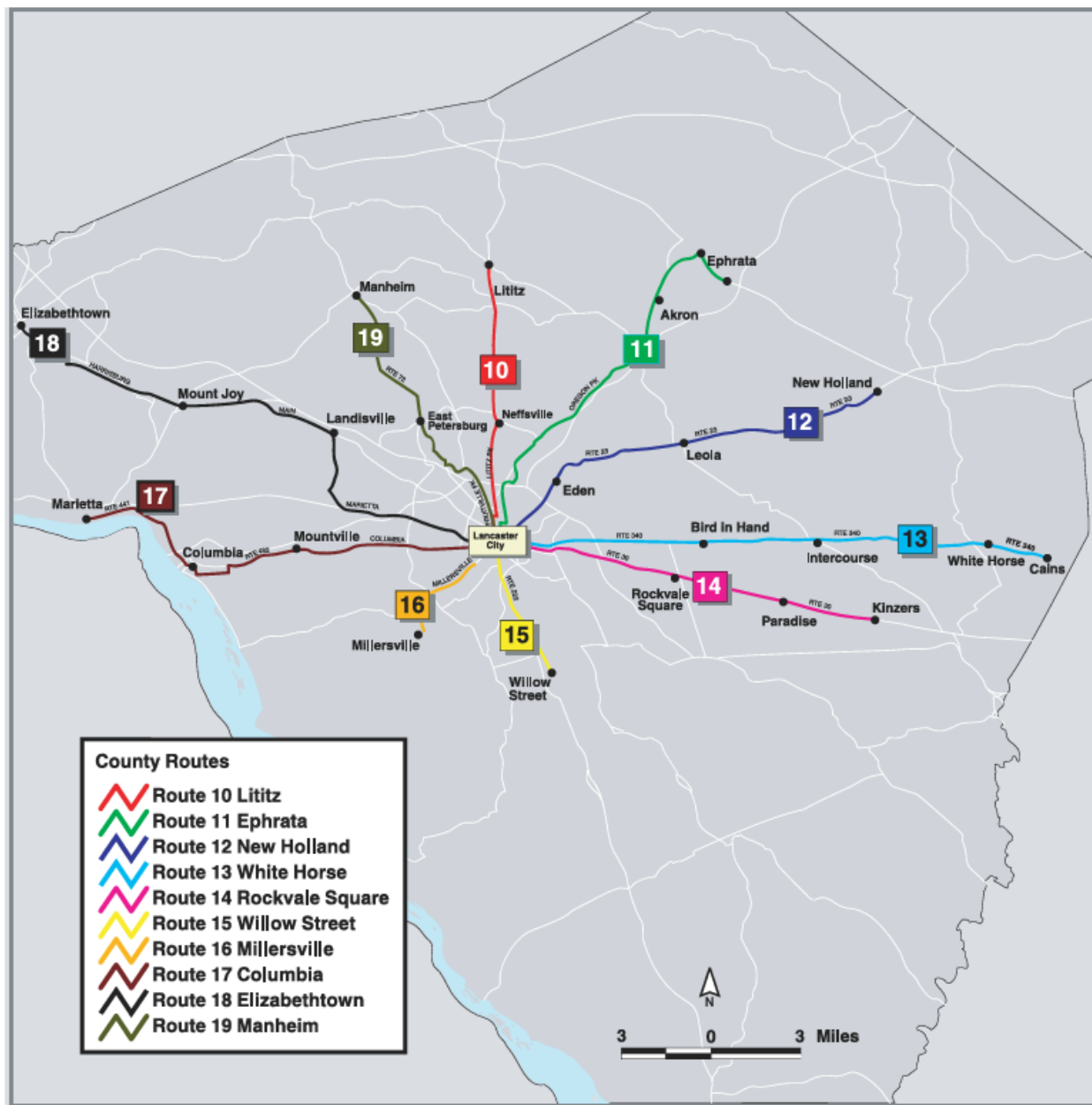


hazardous materials. Freight lines run along the Susquehanna River on the County's western border and from east to west through the center of the County.

### Public Transportation

Red Rose Transit Authority (RRTA) operates the main public transportation option for residents of the County. RRTA has 17 routes that service the City of Lancaster as well as the County; 10 of these routes connect the City to other regions of the County, while the other 7 are located within the City itself. In addition to the 17 bus routes available for residents, RRTA operates a door-to-door program for senior citizens and persons with disabilities called Red Rose Access. Figure I-4 below displays the RRTA County routes and the communities serviced by them.

Figure I-4. Red Rose Transit Authority County Routes



Source: RRTA



## Lifeline Utility Systems

This section presents potable water, wastewater, and energy resource utility system data. Because of heightened security concerns, only partial local utility lifeline data—sufficient to complete the analysis—have been obtained.

### Potable Water Supply

According to Pennsylvania Department of Environmental Protection’s (PADEP) Public Drinking Water System (2010), 57 percent of the County is serviced by municipal water providers. Table I-6 below lists the names of potable water service providers in the County, and Table I-7 lists the water service facilities. As displayed in Figure I-5, the communities in and around the northern central region of the County have access to public water services. Many other residents receive their water from domestic wells; there are approximately 15,615 domestic wells in the County (PaGWIS, 2017). There are 3 potable treatment facilities, 102 potable pump stations, 21 reservoirs, 43 storage tanks, 1 dosing tank, and 5 filtration assets.

**Table I-6. Potable Water Supplier in Lancaster County**

Water Service Provider	Water Service Provider
Adamstown Borough Water and Sewer Authority	Lititz Water Authority
Akron Borough	Manheim Borough Authority
Bainbridge Water Authority	Marietta Gravity Water Company
Blue Ball Water Authority	Masonic Homes
Borough of New Holland	Mount Joy Borough Authority
Caernarvon Township Authority	Northwestern Authority
Christiana Water and Sewer Author	Private
Christiana Water and Sewer Authority	Quarryville Borough
City of Lancaster	Rothsville Authority
Columbia Water Company	Strasburg Borough Authority
Denver Borough	Terre Hill Borough
East Cocalico Township Authority	Upper Leacock Township
East Hempfield Water Authority	Warwick Township Water and Sewer Authority
East Petersburg Water Authority	West Cocalico Township Authority
Elizabethtown Area Water Authority	West Earl Township Water Authority
Ephrata Borough Water and Sewer Authority	Western Heights Water Company

**Table I-7. Potable Water Facilities and Assets in Lancaster County**

Facility Name	Address/Location	Municipality	Type	Backup Power
Reservoir #9	40.246893, -76.05617	Adamstown Boro.	Reservoir	-
Tank #31	40.244154, -76.075179	Adamstown Boro.	Storage Tank	-
Potable Pump #78	40.156331, -76.194575	Akron Boro.	Potable Pump	-
Potable Pump #3	40.037489, -76.501229	Columbia Boro.	Potable Pump	-
Potable Pump #4	40.042174, -76.494171	Columbia Boro.	Potable Pump	-
Potable Pump #94	40.041768, -76.503678	Columbia Boro.	Potable Pump	-
Tank #19	40.04193, -76.50352	Columbia Boro.	Storage Tank	-
Tank #20	40.041568, -76.503806	Columbia Boro.	Storage Tank	-
Tank #21	40.041414, -76.503953	Columbia Boro.	Storage Tank	-
Tank #22	40.030199, -76.485403	Columbia Boro.	Storage Tank	-
Potable Pump #81	40.098541, -76.666507	Conoy Twp.	Potable Pump	-





Facility Name	Address/Location	Municipality	Type	Backup Power
Reservoir #5	40.096052, -76.661461	Conoy Twp.	Reservoir	-
Filtration #3	40.235745, -76.142786	Denver Boro.	Filtration	-
Potable Pump #2	40.094203, -76.118751	Earl Twp.	Potable Pump	-
Reservoir #3	40.094204, -76.118721	Earl Twp.	Reservoir	-
Potable Pump #102	40.238121, -76.12604	East Cocalico Twp.	Potable Pump	-
Tank #2	40.231383, -76.084454	East Cocalico Twp.	Storage Tank	-
Tank #3	40.211631, -76.111562	East Cocalico Twp.	Storage Tank	-
Tank #4	40.211457, -76.143665	East Cocalico Twp.	Storage Tank	-
Tank #42	40.236191, -76.122466	East Cocalico Twp.	Storage Tank	-
Tank #43	40.236563, -76.122081	East Cocalico Twp.	Storage Tank	-
Tank #5	40.197984, -76.113711	East Cocalico Twp.	Storage Tank	-
Filtration #1	40.112853, -76.541593	East Donegal Twp.	Filtration	-
Marietta Gravity Water Company	40.112805, -76.541818	East Donegal Twp.	Potable	-
Tank #28	40.077633, -76.581692	East Donegal Twp.	Storage Tank	-
Tank #29	40.077564, -76.58196	East Donegal Twp.	Storage Tank	-
Potable Pump #77	40.118599, -76.051765	East Earl Twp.	Potable Pump	-
Reservoir #7	40.085177, -76.03164	East Earl Twp.	Reservoir	-
Reservoir #8	40.077757, -76.046372	East Earl Twp.	Reservoir	-
Tank #1	40.118488, -76.05165	East Earl Twp.	Storage Tank	-
Potable Pump #37	40.072927, -76.367003	East Hempfield Twp.	Potable Pump	-
Potable Pump #38	40.071885, -76.357454	East Hempfield Twp.	Potable Pump	-
Potable Pump #39	40.051565, -76.375904	East Hempfield Twp.	Potable Pump	-
Potable Pump #40	40.050746, -76.399485	East Hempfield Twp.	Potable Pump	-
Potable Pump #51	40.038926, -76.344933	East Hempfield Twp.	Potable Pump	-
Potable Pump #63	40.040945, -76.397224	East Hempfield Twp.	Potable Pump	-
Potable Pump #96	40.087042, -76.387375	East Hempfield Twp.	Potable Pump	-
Tank #12	40.053113, -76.403018	East Hempfield Twp.	Storage Tank	-
Potable Pump #25	40.080892, -76.253561	East Lampeter Twp.	Potable Pump	-
Potable Pump #44	40.03893, -76.247232	East Lampeter Twp.	Potable Pump	-
Potable Pump #45	40.040462, -76.239291	East Lampeter Twp.	Potable Pump	-
Potable Pump #46	40.034719, -76.243553	East Lampeter Twp.	Potable Pump	-
Potable Pump #47	40.038707, -76.256696	East Lampeter Twp.	Potable Pump	-
Potable Pump #49	40.036591, -76.266576	East Lampeter Twp.	Potable Pump	-
Potable Pump #65	40.03219, -76.196693	East Lampeter Twp.	Potable Pump	-
Potable Pump #66	40.028476, -76.234076	East Lampeter Twp.	Potable Pump	-
Potable Pump #67	40.029575, -76.230614	East Lampeter Twp.	Potable Pump	-
Potable Pump #68	40.028805, -76.22787	East Lampeter Twp.	Potable Pump	-
Tank #36	40.033814, -76.25317	East Lampeter Twp.	Storage Tank	-
Filtration #5	40.107393, -76.338146	East Petersburg Boro.	Filtration	-
Tank #38	40.102844, -76.351602	East Petersburg Boro.	Storage Tank	-





Facility Name	Address/Location	Municipality	Type	Backup Power
Tank #39	40.103917, -76.355014	East Petersburg Boro.	Storage Tank	-
Elizabethtown Borough	40.150158, -76.611393	Elizabethtown Boro.	Potable	-
Reservoir #6	40.152752, -76.611807	Elizabethtown Boro.	Reservoir	-
Tank #9	40.145548, -76.587982	Elizabethtown Boro.	Storage Tank	-
Filtration #4	40.185737, -76.171688	Ephrata Boro.	Filtration	-
Potable Pump #97	40.182972, -76.150068	Ephrata Boro.	Potable Pump	-
Reservoir #11	40.184768, -76.179275	Ephrata Boro.	Reservoir	-
Reservoir #14	40.178831, -76.159923	Ephrata Boro.	Reservoir	-
Reservoir #15	40.17894, -76.159455	Ephrata Boro.	Reservoir	-
Reservoir #16	40.182986, -76.14999	Ephrata Boro.	Reservoir	-
Tank #34	40.195264, -76.196525	Ephrata Boro.	Storage Tank	-
Reservoir #12	40.176732, -76.165572	Ephrata Twp.	Reservoir	-
Reservoir #13	40.176704, -76.165951	Ephrata Twp.	Reservoir	-
Potable Pump #48	40.03601, -76.259587	Lancaster City	Potable Pump	-
Potable Pump #50	40.038728, -76.291919	Lancaster City	Potable Pump	-
Potable Pump #79	40.05095, -76.27583	Lancaster City	Potable Pump	-
Potable Pump #80	40.048553, -76.256821	Lancaster City	Potable Pump	-
Potable Pump #98	40.049761, -76.275642	Lancaster City	Potable Pump	-
Tank #7	40.049393, -76.274072	Lancaster City	Storage Tank	-
Potable Pump #74	40.015392, -76.328566	Lancaster Twp.	Potable Pump	-
Potable Pump #75	40.009176, -76.336198	Lancaster Twp.	Potable Pump	-
Potable Pump #76	40.010538, -76.336109	Lancaster Twp.	Potable Pump	-
Potable Pump #93	40.14018, -76.29743	Lititz Boro.	Potable Pump	-
Tank #17	40.140089, -76.297721	Lititz Boro.	Storage Tank	-
Tank #18	40.157115, -76.312725	Lititz Boro.	Storage Tank	-
Filtration #2	40.16637, -76.405608	Manheim Boro.	Filtration	-
Potable Pump #101	40.15566, -76.390785	Manheim Boro.	Potable Pump	-
Potable Pump #95	40.167762, -76.400611	Manheim Boro.	Potable Pump	-
Reservoir #20	40.169334, -76.402724	Manheim Boro.	Reservoir	-
Tank #41	40.169654, -76.402172	Manheim Boro.	Storage Tank	-
Potable Pump #10	40.118549, -76.341914	Manheim Twp.	Potable Pump	-
Potable Pump #11	40.118291, -76.329382	Manheim Twp.	Potable Pump	-
Potable Pump #12	40.123488, -76.330869	Manheim Twp.	Potable Pump	-
Potable Pump #13	40.12316, -76.3278	Manheim Twp.	Potable Pump	-
Potable Pump #14	40.125933, -76.319631	Manheim Twp.	Potable Pump	-
Potable Pump #15	40.110883, -76.316685	Manheim Twp.	Potable Pump	-
Potable Pump #16	40.106065, -76.320621	Manheim Twp.	Potable Pump	-
Potable Pump #17	40.105219, -76.317679	Manheim Twp.	Potable Pump	-
Potable Pump #18	40.102704, -76.319633	Manheim Twp.	Potable Pump	-
Potable Pump #19	40.123477, -76.312441	Manheim Twp.	Potable Pump	-



Facility Name	Address/Location	Municipality	Type	Backup Power
Potable Pump #20	40.111045, -76.307339	Manheim Twp.	Potable Pump	-
Potable Pump #21	40.104575, -76.31321	Manheim Twp.	Potable Pump	-
Potable Pump #22	40.091014, -76.308557	Manheim Twp.	Potable Pump	-
Potable Pump #23	40.081868, -76.274093	Manheim Twp.	Potable Pump	-
Potable Pump #24	40.069347, -76.282824	Manheim Twp.	Potable Pump	-
Potable Pump #26	40.101861, -76.319025	Manheim Twp.	Potable Pump	-
Potable Pump #27	40.110261, -76.312254	Manheim Twp.	Potable Pump	-
Potable Pump #28	40.085269, -76.327039	Manheim Twp.	Potable Pump	-
Potable Pump #29	40.085013, -76.335771	Manheim Twp.	Potable Pump	-
Potable Pump #30	40.084068, -76.335037	Manheim Twp.	Potable Pump	-
Potable Pump #31	40.085817, -76.292826	Manheim Twp.	Potable Pump	-
Potable Pump #33	40.073247, -76.270953	Manheim Twp.	Potable Pump	-
Potable Pump #34	40.069356, -76.279181	Manheim Twp.	Potable Pump	-
Potable Pump #35	40.066798, -76.279588	Manheim Twp.	Potable Pump	-
Potable Pump #36	40.074695, -76.298335	Manheim Twp.	Potable Pump	-
Potable Pump #41	40.06031, -76.293763	Manheim Twp.	Potable Pump	-
Potable Pump #42	40.056095, -76.293475	Manheim Twp.	Potable Pump	-
Potable Pump #43	40.057271, -76.306707	Manheim Twp.	Potable Pump	-
Potable Pump #84	40.090557, -76.281362	Manheim Twp.	Potable Pump	-
Potable Pump #86	40.07044, -76.314443	Manheim Twp.	Potable Pump	-
Potable Pump #9	40.111926, -76.348382	Manheim Twp.	Potable Pump	-
Potable Pump #90	40.079394, -76.294847	Manheim Twp.	Potable Pump	-
Potable Pump #92	40.070348, -76.314742	Manheim Twp.	Potable Pump	-
Tank #14	40.091618, -76.319231	Manheim Twp.	Storage Tank	-
Tank #33	40.107217, -76.307292	Manheim Twp.	Storage Tank	-
Potable Pump #64	40.037146, -76.41004	Manor Twp.	Potable Pump	-
Potable Pump #69	40.023316, -76.360221	Manor Twp.	Potable Pump	-
Potable Pump #70	40.018902, -76.353315	Manor Twp.	Potable Pump	-
Potable Pump #71	40.020422, -76.361084	Manor Twp.	Potable Pump	-
Potable Pump #72	40.020513, -76.357264	Manor Twp.	Potable Pump	-
Potable Pump #73	40.005812, -76.369395	Manor Twp.	Potable Pump	-
Tank #11	40.000171, -76.364177	Manor Twp.	Storage Tank	-
Tank #13	40.006721, -76.359819	Millersville Boro.	Storage Tank	-
Potable Pump #6	40.116717, -76.525038	Mt Joy Boro.	Potable Pump	-
Potable Pump #76	40.106941, -76.528618	Mt Joy Boro.	Potable Pump	-
Tank #26	40.108499, -76.510064	Mt Joy Boro.	Storage Tank	-
Tank #27	40.108728, -76.509867	Mt Joy Boro.	Storage Tank	-
Reservoir #10	39.951449, -76.138949	Paradise Twp.	Reservoir	-
Tank #32	40.181422, -76.38211	Penn Twp.	Storage Tank	-
Tank #40	40.150307, -76.380889	Penn Twp.	Storage Tank	-



Facility Name	Address/Location	Municipality	Type	Backup Power
Dosing Tank	40.109717, -76.451126	Rapho Twp.	Dosing Tank	-
Reservoir #1	39.980944, -75.989545	Sadsbury Twp.	Reservoir	-
Reservoir #2	39.980935, -75.989331	Sadsbury Twp.	Reservoir	-
Reservoir #21	39.962486, -76.149845	Strasburg Twp.	Reservoir	-
Reservoir #4	39.962396, -76.150196	Strasburg Twp.	Reservoir	-
Reservoir #18	40.161813, -76.059128	Terre Hill Boro.	Reservoir	-
Reservoir #19	40.162088, -76.058996	Terre Hill Boro.	Reservoir	-
Potable Pump #32	40.08033, -76.23821	Upper Leacock Twp.	Potable Pump	-
Potable Pump #7	40.171674, -76.30177	Warwick Twp.	Potable Pump	-
Potable Pump #8	40.166759, -76.290968	Warwick Twp.	Potable Pump	-
Tank #30	40.149492, -76.252711	Warwick Twp.	Storage Tank	-
Tank #15	40.288116, -76.133355	West Cocalico Twp.	Storage Tank	-
Tank #16	40.270842, -76.103508	West Cocalico Twp.	Storage Tank	-
Potable Pump #82	40.146659, -76.618743	West Donegal Twp.	Potable Pump	-
Tank #8	40.133917, -76.584868	West Donegal Twp.	Storage Tank	-
Potable Pump #1	40.122608, -76.232348	West Earl Twp.	Potable Pump	-
Tank #37	40.148901, -76.213265	West Earl Twp.	Storage Tank	-
West Earl Township Water Authority	40.131382, -76.19831	West Earl Twp.	Potable	-
Potable Pump #5	40.048513, -76.455677	West Hempfield Twp.	Potable Pump	-
Potable Pump #83	40.025679, -76.481358	West Hempfield Twp.	Potable Pump	-
Potable Pump #85	40.024632, -76.481416	West Hempfield Twp.	Potable Pump	-
Potable Pump #87	40.024123, -76.481371	West Hempfield Twp.	Potable Pump	-
Potable Pump #88	40.025957, -76.481345	West Hempfield Twp.	Potable Pump	-
Potable Pump #89	40.025369, -76.481363	West Hempfield Twp.	Potable Pump	-
Potable Pump #91	40.024391, -76.481397	West Hempfield Twp.	Potable Pump	-
Tank #10	40.02508, -76.483131	West Hempfield Twp.	Storage Tank	-
Tank #23	40.059158, -76.460487	West Hempfield Twp.	Storage Tank	-
Tank #24	40.0589, -76.460428	West Hempfield Twp.	Storage Tank	-
Tank #25	40.048317, -76.455121	West Hempfield Twp.	Storage Tank	-
Potable Pump #100	40.002164, -76.292968	West Lampeter Twp.	Potable Pump	-
Potable Pump #52	39.965153, -76.261923	West Lampeter Twp.	Potable Pump	-
Potable Pump #53	39.994657, -76.245331	West Lampeter Twp.	Potable Pump	-
Potable Pump #54	39.994211, -76.245143	West Lampeter Twp.	Potable Pump	-
Potable Pump #55	40.018595, -76.248392	West Lampeter Twp.	Potable Pump	-
Potable Pump #56	40.006086, -76.266867	West Lampeter Twp.	Potable Pump	-
Potable Pump #57	40.014467, -76.24467	West Lampeter Twp.	Potable Pump	-
Potable Pump #58	40.012924, -76.246208	West Lampeter Twp.	Potable Pump	-
Potable Pump #59	40.024799, -76.272682	West Lampeter Twp.	Potable Pump	-
Potable Pump #60	40.025063, -76.271561	West Lampeter Twp.	Potable Pump	-
Potable Pump #61	40.025824, -76.27407	West Lampeter Twp.	Potable Pump	-

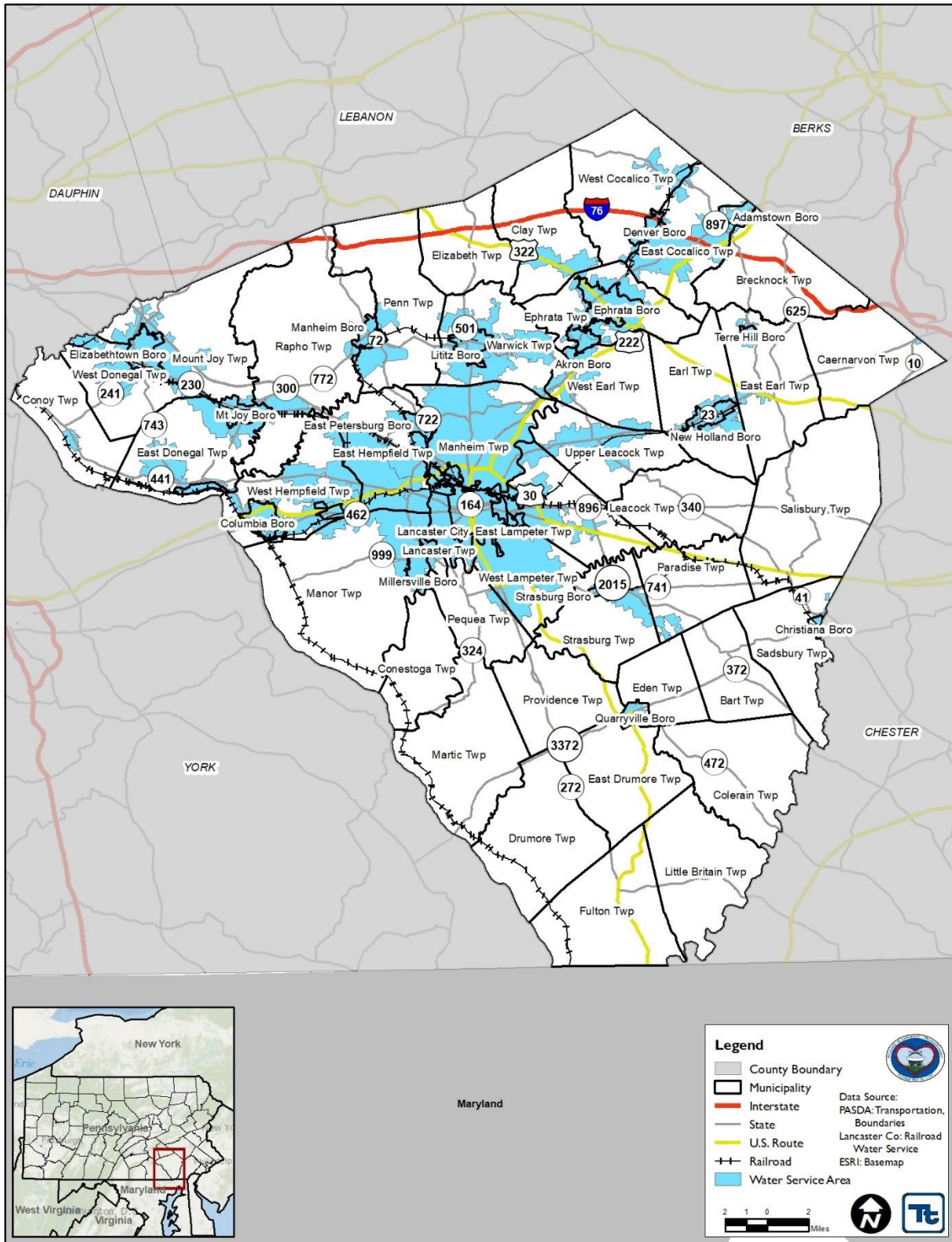


Facility Name	Address/Location	Municipality	Type	Backup Power
Potable Pump #62	40.025066, -76.274297	West Lampeter Twp.	Potable Pump	-
Potable Pump #99	40.026507, -76.267214	West Lampeter Twp.	Potable Pump	-
Reservoir #17	40.002192, -76.292958	West Lampeter Twp.	Reservoir	-
Tank #35	39.978285, -76.257529	West Lampeter Twp.	Storage Tank	-
Tank #6	39.998846, -76.234154	West Lampeter Twp.	Storage Tank	-

Source: Lancaster County 2017



Figure I-5. Lancaster County Water Service Areas



Source: Lancaster County 2017





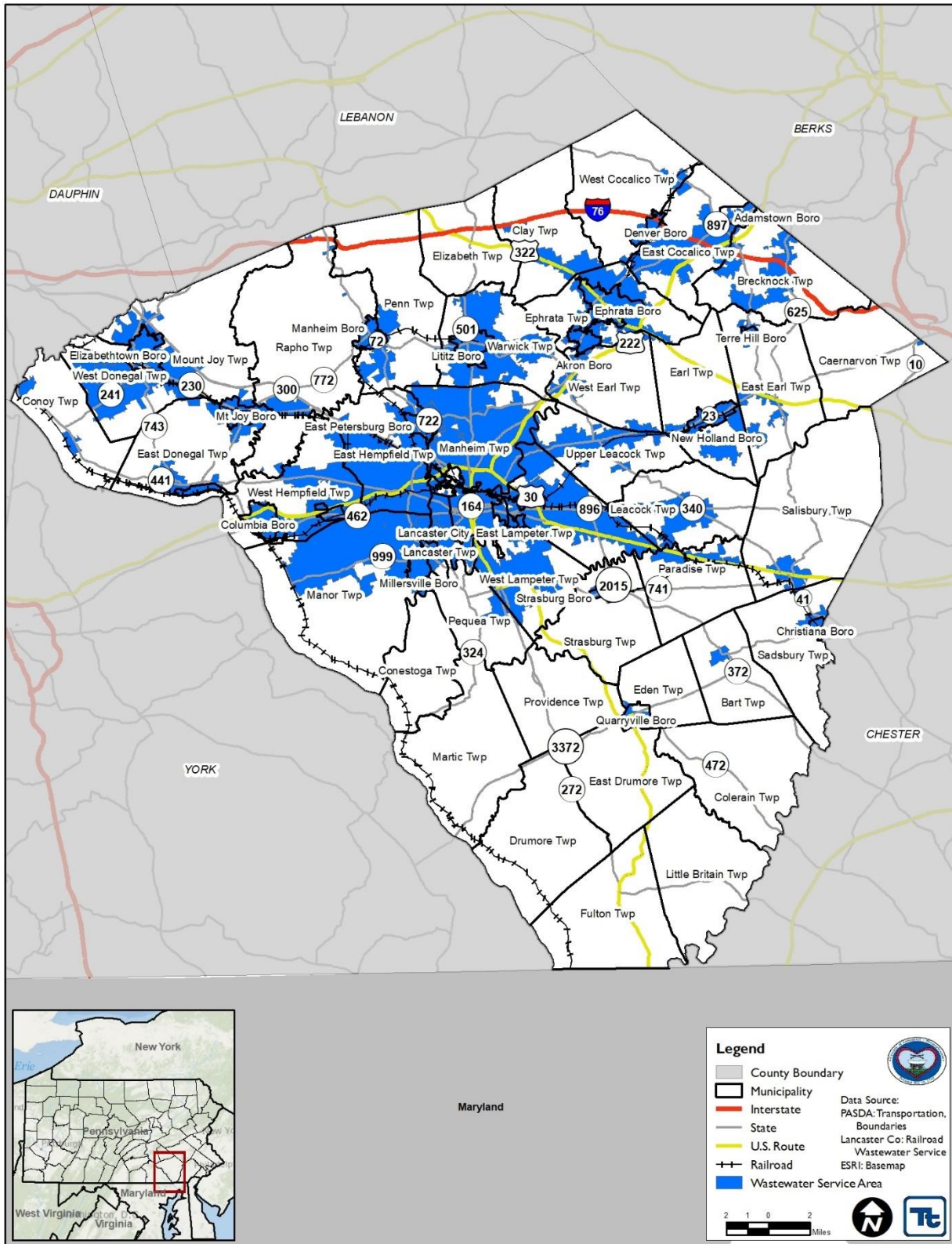
### **Wastewater Facilities**

Like with the water service areas, communities in and around the central northern region of the County have access to public wastewater services. Wastewater service areas are shown in Figure I-6. Wastewater service providers in Lancaster County are identified in Table I-8. There are 32 wastewater treatment facilities and 209 wastewater pump stations.





Figure I-6. Lancaster County Wastewater Service Areas



Source: Lancaster County 2017







Table I-8. Wastewater Facilities in Lancaster County

Facility Name	Address/Location	Municipality	Type	Backup Power?
Wastewater Pump #78	40.238528, -76.067351	Adamstown Boro.	Wastewater Pump	-
Wastewater Pump #126	40.167978, -76.211526	Akron Boro.	Wastewater Pump	-
Georgetown Area Sewer Authority WWTP	39.935993, -76.077958	Bart Twp.	Wastewater Treatment	-
Northern Lancaster County Authority WWTP	40.203171, -76.080843	Brecknock Twp.	Wastewater Treatment	-
Northern Lancaster County Authority WWTP	40.178523, -76.06015	Brecknock Twp.	Wastewater Treatment	-
Northern Lancaster County Authority WWTP	40.220447, -76.067101	Brecknock Twp.	Wastewater Treatment	-
Christiana Water and Sewer Authority WWTP	39.947963, -75.991014	Christiana Boro.	Wastewater Treatment	-
Clay Township WWTP	40.233156, -76.261126	Clay Twp.	Wastewater Treatment	-
Wastewater Pump #115	40.211923, -76.235428	Clay Twp.	Wastewater Pump	-
Wastewater Pump #116	40.209028, -76.226634	Clay Twp.	Wastewater Pump	-
Wastewater Pump #117	40.202274, -76.213481	Clay Twp.	Wastewater Pump	-
Wastewater Pump #128	40.233458, -76.260734	Clay Twp.	Wastewater Pump	-
Wastewater Pump #173	40.217796, -76.252041	Clay Twp.	Wastewater Pump	-
Wastewater Pump #174	40.203261, -76.210457	Clay Twp.	Wastewater Pump	-
Columbia Municipal Authority WWTP	40.025489, -76.498162	Columbia Boro.	Wastewater Treatment	-
Bainbridge Water Authority WWTP	40.086273, -76.661939	Conoy Twp.	Wastewater Treatment	-
Conoy Township WWTP	40.122458, -76.711729	Conoy Twp.	Wastewater Treatment	-
Wastewater Pump #190	40.105574, -76.643683	Conoy Twp.	Wastewater Pump	-
Wastewater Pump #39	40.131632, -76.714039	Conoy Twp.	Wastewater Pump	-
Wastewater Pump #40	40.12956, -76.70415	Conoy Twp.	Wastewater Pump	-
Wastewater Pump #35	40.225108, -76.151428	Denver Boro.	Wastewater Pump	-
Earl Township Sewer Authority WWTP	40.078123, -76.099812	Earl Twp.	Wastewater Treatment	-
Wastewater Pump #186	40.092342, -76.066475	Earl Twp.	Wastewater Pump	-
Wastewater Pump #187	40.10269, -76.061582	Earl Twp.	Wastewater Pump	-
Wastewater Pump #188	40.094559, -76.120478	Earl Twp.	Wastewater Pump	-
Wastewater Pump #30	40.075982, -76.096231	Earl Twp.	Wastewater Pump	-
Wastewater Pump #31	40.079659, -76.072388	Earl Twp.	Wastewater Pump	-
Wastewater Pump #32	40.072227, -76.084294	Earl Twp.	Wastewater Pump	-
Wastewater Pump #87	40.083708, -76.070756	Earl Twp.	Wastewater Pump	-
Wastewater Pump #88	40.072895, -76.071039	Earl Twp.	Wastewater Pump	-
Wastewater Treatment Plant #2	40.092123, -76.08431	Earl Twp.	Wastewater Treatment	-
Adamstown Borough Water and Sewer Authority WWTP	40.226795, -76.067917	East Cocalico Twp.	Wastewater Treatment	-
Wastewater Pump #122	40.234816, -76.089222	East Cocalico Twp.	Wastewater Pump	-
Wastewater Pump #129	40.219688, -76.069897	East Cocalico Twp.	Wastewater Pump	-



Facility Name	Address/Location	Municipality	Type	Backup Power?
Wastewater Pump #198	40.248432, -76.091122	East Cocalico Twp.	Wastewater Pump	-
Wastewater Pump #33	40.213098, -76.074321	East Cocalico Twp.	Wastewater Pump	-
Wastewater Pump #34	40.212962, -76.159044	East Cocalico Twp.	Wastewater Pump	-
Mount Joy Borough Authority WWTP	40.100276, -76.494476	East Donegal Twp.	Wastewater Treatment	-
Wastewater Pump #49	40.072859, -76.591543	East Donegal Twp.	Wastewater Pump	-
Wastewater Pump #50	40.061343, -76.531366	East Donegal Twp.	Wastewater Pump	-
Wastewater Pump #51	40.080953, -76.58686	East Donegal Twp.	Wastewater Pump	-
Wastewater Pump #52	40.075509, -76.574663	East Donegal Twp.	Wastewater Pump	-
Wastewater Pump #59	40.114183, -76.537741	East Donegal Twp.	Wastewater Pump	-
Wastewater Pump #60	40.112805, -76.541825	East Donegal Twp.	Wastewater Pump	-
Terre Hill Borough WWTP	40.164944, -76.044235	East Earl Twp.	Wastewater Treatment	-
Wastewater Pump #110	40.155057, -76.041475	East Earl Twp.	Wastewater Pump	-
Wastewater Pump #28	40.104689, -76.031612	East Earl Twp.	Wastewater Pump	-
Wastewater Pump #29	40.089346, -76.048423	East Earl Twp.	Wastewater Pump	-
Wastewater Pump #130	40.100449, -76.421623	East Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #142	40.071626, -76.361008	East Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #152	40.111234, -76.37396	East Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #159	40.096866, -76.407305	East Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #100	40.035754, -76.241504	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #101	40.04212, -76.217599	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #102	40.024643, -76.193507	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #103	40.01613, -76.154645	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #95	40.08377, -76.250526	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #96	40.080132, -76.240851	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #97	40.059222, -76.252489	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #98	40.027535, -76.242699	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #99	40.031934, -76.236134	East Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #133	40.10804, -76.364846	East Petersburg Boro.	Wastewater Pump	-
Wastewater Pump #46	40.13998, -76.587853	Elizabethtown Boro.	Wastewater Pump	-
Ephrata Borough Water and Sewer Authority WWTP	40.174899, -76.197031	Ephrata Boro.	Wastewater Treatment	-
Wastewater Pump #119	40.175345, -76.176365	Ephrata Boro.	Wastewater Pump	-
Wastewater Pump #121	40.186837, -76.196072	Ephrata Boro.	Wastewater Pump	-
Wastewater Pump #176	40.18753, -76.179874	Ephrata Boro.	Wastewater Pump	-
Wastewater Pump #177	40.182358, -76.184037	Ephrata Boro.	Wastewater Pump	-
Wastewater Pump #77	40.175177, -76.194808	Ephrata Boro.	Wastewater Pump	-
Ephrata Borough Water and Sewer Authority WWTP	40.197613, -76.162399	Ephrata Twp.	Wastewater Treatment	-
Wastewater Pump #118	40.196065, -76.187429	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #120	40.171152, -76.201827	Ephrata Twp.	Wastewater Pump	-



Facility Name	Address/Location	Municipality	Type	Backup Power?
Wastewater Pump #123	40.170309, -76.207402	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #127	40.155413, -76.220593	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #175	40.168609, -76.18515	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #178	40.163363, -76.153553	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #37	40.160065, -76.217299	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #38	40.17073, -76.207316	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #9	40.170907, -76.20551	Ephrata Twp.	Wastewater Pump	-
Wastewater Pump #208	40.063584, -76.314502	Lancaster City	Wastewater Pump	-
City of Lancaster WWTP	40.01851, -76.307899	Lancaster Twp.	Wastewater Treatment	-
Wastewater Pump #135	40.01939, -76.340976	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #136	40.013403, -76.330379	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #148	40.006802, -76.32425	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #168	40.004819, -76.304607	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #169	40.025376, -76.276155	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #19	40.01147, -76.316671	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #209	40.007138, -76.335893	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #79	40.009868, -76.340049	Lancaster Twp.	Wastewater Pump	-
Wastewater Pump #104	40.039776, -76.14286	Leacock Twp.	Wastewater Pump	-
Wastewater Pump #105	40.01532, -76.132495	Leacock Twp.	Wastewater Pump	-
Wastewater Pump #106	40.0197, -76.133186	Leacock Twp.	Wastewater Pump	-
Wastewater Pump #107	40.036343, -76.090122	Leacock Twp.	Wastewater Pump	-
Wastewater Pump #26	40.030605, -76.102688	Leacock Twp.	Wastewater Pump	-
Wastewater Pump #27	40.046233, -76.115938	Leacock Twp.	Wastewater Pump	-
Wastewater Pump #72	40.163471, -76.301533	Lititz Boro.	Wastewater Pump	-
Wastewater Pump #200	40.160134, -76.384544	Manheim Boro.	Wastewater Pump	-
Wastewater Pump #143	40.070761, -76.26311	Manheim Twp.	Wastewater Pump	-
Wastewater Pump #144	40.093648, -76.25294	Manheim Twp.	Wastewater Pump	-
Wastewater Pump #145	40.095446, -76.257233	Manheim Twp.	Wastewater Pump	-
Wastewater Pump #166	40.048611, -76.282756	Manheim Twp.	Wastewater Pump	-
Wastewater Pump #167	40.053589, -76.278118	Manheim Twp.	Wastewater Pump	-
Lancaster Area Sewer Authority WWTP	39.987352, -76.458757	Manor Twp.	Wastewater Treatment	-
Millersville Borough WWTP	39.98576, -76.347123	Manor Twp.	Wastewater Treatment	-
Wastewater Pump #131	40.006742, -76.364984	Manor Twp.	Wastewater Pump	-
Wastewater Pump #132	40.031003, -76.401982	Manor Twp.	Wastewater Pump	-
Wastewater Pump #137	40.005412, -76.378428	Manor Twp.	Wastewater Pump	-
Wastewater Pump #139	39.994111, -76.374239	Manor Twp.	Wastewater Pump	-
Wastewater Pump #140	40.005959, -76.373672	Manor Twp.	Wastewater Pump	-
Wastewater Pump #141	40.004795, -76.477101	Manor Twp.	Wastewater Pump	-
Wastewater Pump #146	40.006999, -76.402228	Manor Twp.	Wastewater Pump	-



Facility Name	Address/Location	Municipality	Type	Backup Power?
Wastewater Pump #147	40.007812, -76.381209	Manor Twp.	Wastewater Pump	-
Wastewater Pump #150	39.99394, -76.47087	Manor Twp.	Wastewater Pump	-
Wastewater Pump #155	40.01539, -76.372352	Manor Twp.	Wastewater Pump	-
Wastewater Pump #162	40.022994, -76.366472	Manor Twp.	Wastewater Pump	-
Wastewater Pump #163	40.017894, -76.369972	Manor Twp.	Wastewater Pump	-
Wastewater Pump #164	39.997236, -76.428044	Manor Twp.	Wastewater Pump	-
Wastewater Pump #165	39.984613, -76.40503	Manor Twp.	Wastewater Pump	-
Wastewater Pump #172	40.036306, -76.349809	Manor Twp.	Wastewater Pump	-
Wastewater Pump #180	39.985855, -76.356556	Manor Twp.	Wastewater Pump	-
Wastewater Pump #205	40.036306, -76.349809	Manor Twp.	Wastewater Pump	-
Wastewater Pump #48	40.036394, -76.363057	Manor Twp.	Wastewater Pump	-
Marietta-East Donegal Joint Authority WWTP	40.058024, -76.534528	Marietta Boro.	Wastewater Treatment	-
Wastewater Pump #53	40.056666, -76.551181	Marietta Boro.	Wastewater Pump	-
Wastewater Pump #179	39.996294, -76.345776	Millersville Boro.	Wastewater Pump	-
Wastewater Pump #80	40.022368, -76.352844	Millersville Boro.	Wastewater Pump	-
Wastewater Pump #191	40.170663, -76.523262	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #192	40.162989, -76.615041	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #193	40.177593, -76.623816	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #56	40.121635, -76.515848	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #82	40.172694, -76.620148	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #83	40.179262, -76.59997	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #84	40.138348, -76.55645	Mount Joy Twp.	Wastewater Pump	-
Wastewater Pump #54	40.114014, -76.531407	Mount Joy Boro.	Wastewater Pump	-
Wastewater Pump #57	40.103035, -76.518348	Mount Joy Boro.	Wastewater Pump	-
Wastewater Pump #58	40.107002, -76.528451	Mount Joy Boro.	Wastewater Pump	-
Wastewater Pump #61	40.109568, -76.491813	Mount Joy Boro.	Wastewater Pump	-
Wastewater Pump #182	40.096299, -76.107591	New Holland Boro.	Wastewater Pump	-
Wastewater Pump #183	40.109858, -76.083653	New Holland Boro.	Wastewater Pump	-
Wastewater Pump #185	40.090532, -76.097133	New Holland Boro.	Wastewater Pump	-
Paradise Township Sewer Authority WWTP	40.012723, -76.131771	Paradise Twp.	Wastewater Treatment	-
Wastewater Pump #181	39.999201, -76.066335	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #25	40.007839, -76.084179	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #89	40.00703, -76.111326	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #90	40.008372, -76.118232	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #91	40.008341, -76.139383	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #92	40.010176, -76.122036	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #93	40.000773, -76.076754	Paradise Twp.	Wastewater Pump	-
Wastewater Pump #94	39.999981, -76.068298	Paradise Twp.	Wastewater Pump	-



Facility Name	Address/Location	Municipality	Type	Backup Power?
Manheim Borough Authority WWTP	40.154886, -76.403426	Penn Twp.	Wastewater Treatment	-
Northwestern Lancaster County Authority WWTP	40.165113, -76.38401	Penn Twp.	Wastewater Treatment	-
Wastewater Pump #199	40.165696, -76.384766	Penn Twp.	Wastewater Pump	-
Wastewater Pump #201	40.17647, -76.373118	Penn Twp.	Wastewater Pump	-
Wastewater Pump #203	40.149882, -76.388816	Penn Twp.	Wastewater Pump	-
Wastewater Pump #204	40.146971, -76.393042	Penn Twp.	Wastewater Pump	-
Wastewater Pump #47	40.130974, -76.381071	Penn Twp.	Wastewater Pump	-
Wastewater Pump #17	39.966121, -76.296501	Pequea Twp.	Wastewater Pump	-
Wastewater Pump #207	39.969459, -76.283203	Pequea Twp.	Wastewater Pump	-
Quarryville Borough and Sewer Authority WWTP	39.906021, -76.184548	Providence Twp.	Wastewater Treatment	-
PA Renaissance Faire Package WWTP WWTP	40.223998, -76.427074	Rapho Twp.	Wastewater Treatment	-
Pinch Pond Package WWTP WWTP	40.231922, -76.44877	Rapho Twp.	Wastewater Treatment	-
Rolling Hills Package WWTP WWTP	40.070951, -76.498615	Rapho Twp.	Wastewater Treatment	-
Wastewater Pump #202	40.165783, -76.40602	Rapho Twp.	Wastewater Pump	-
Wastewater Pump #55	40.110325, -76.453067	Rapho Twp.	Wastewater Pump	-
Wastewater Pump #10	39.976889, -76.014587	Sadsbury Twp.	Wastewater Pump	-
Wastewater Pump #11	39.961653, -75.99808	Sadsbury Twp.	Wastewater Pump	-
Wastewater Pump #189	39.98043, -76.009778	Sadsbury Twp.	Wastewater Pump	-
Sadsbury Township Sewer Authority WWTP	39.995715, -76.020996	Salisbury Twp.	Wastewater Treatment	-
Wastewater Pump #12	39.987091, -76.184944	Strasburg Boro.	Wastewater Pump	-
Wastewater Pump #62	39.979416, -76.174446	Strasburg Boro.	Wastewater Pump	-
Wastewater Pump #81	39.975852, -76.182775	Strasburg Boro.	Wastewater Pump	-
Wastewater Pump #13	39.989648, -76.217691	Strasburg Twp.	Wastewater Pump	-
Wastewater Pump #108	40.155313, -76.056573	Terre Hill Boro.	Wastewater Pump	-
Wastewater Pump #109	40.155661, -76.048712	Terre Hill Boro.	Wastewater Pump	-
Wastewater Pump #124	40.157066, -76.043728	Terre Hill Boro.	Wastewater Pump	-
Wastewater Pump #125	40.158544, -76.044611	Terre Hill Boro.	Wastewater Pump	-
Wastewater Pump #3	40.094563, -76.173052	Upper Leacock Twp.	Wastewater Pump	-
Wastewater Pump #4	40.091167, -76.170546	Upper Leacock Twp.	Wastewater Pump	-
Wastewater Pump #5	40.07965, -76.186038	Upper Leacock Twp.	Wastewater Pump	-
Wastewater Pump #6	40.092407, -76.187559	Upper Leacock Twp.	Wastewater Pump	-
Wastewater Pump #7	40.084164, -76.199628	Upper Leacock Twp.	Wastewater Pump	-
Wastewater Pump #8	40.089573, -76.195674	Upper Leacock Twp.	Wastewater Pump	-
Lititz Sewer Authority WWTP	40.152628, -76.284942	Warwick Twp.	Wastewater Treatment	-
Wastewater Pump #111	40.15413, -76.328313	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #112	40.144948, -76.28109	Warwick Twp.	Wastewater Pump	-





Facility Name	Address/Location	Municipality	Type	Backup Power?
Wastewater Pump #113	40.149583, -76.236841	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #114	40.15642, -76.249518	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #151	40.126524, -76.317889	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #67	40.148155, -76.271203	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #68	40.142461, -76.318592	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #69	40.146388, -76.31075	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #70	40.186466, -76.308704	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #71	40.165729, -76.295009	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #73	40.190173, -76.280499	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #74	40.182167, -76.281123	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #75	40.158701, -76.233699	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #76	40.146513, -76.243116	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #85	40.13361, -76.25908	Warwick Twp.	Wastewater Pump	-
Wastewater Pump #86	40.135036, -76.269561	Warwick Twp.	Wastewater Pump	-
Wastewater Treatment Plant #1	40.263798, -76.119579	West Cocalico Twp.	Wastewater Treatment	-
Elizabethtown Regional Sewer Authority WWTP	40.129705, -76.624852	West Donegal Twp.	Wastewater Treatment	-
Wastewater Pump #194	40.146998, -76.624373	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #195	40.146716, -76.653747	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #196	40.130778, -76.655027	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #197	40.113232, -76.626272	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #206	40.148294, -76.638596	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #41	40.121047, -76.555591	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #42	40.129189, -76.574411	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #43	40.129189, -76.574411	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #44	40.127732, -76.564418	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #45	40.143893, -76.644229	West Donegal Twp.	Wastewater Pump	-
Wastewater Pump #1	40.099697, -76.163339	West Earl Twp.	Wastewater Pump	-
Wastewater Pump #184	40.121273, -76.234753	West Earl Twp.	Wastewater Pump	-
Wastewater Pump #2	40.095224, -76.149705	West Earl Twp.	Wastewater Pump	-
Wastewater Pump #23	40.135539, -76.21933	West Earl Twp.	Wastewater Pump	-
Wastewater Pump #24	40.131316, -76.212555	West Earl Twp.	Wastewater Pump	-
Wastewater Pump #36	40.145131, -76.203272	West Earl Twp.	Wastewater Pump	-
Wastewater Pump #66	40.146465, -76.200368	West Earl Twp.	Wastewater Pump	-
West Earl Township Sewer Authority WWTP	40.123595, -76.203576	West Earl Twp.	Wastewater Treatment	-
Wastewater Pump #134	40.065493, -76.437108	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #138	40.068785, -76.432137	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #149	40.066372, -76.477043	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #153	40.025578, -76.480535	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #154	40.031779, -76.450017	West Hempfield Twp.	Wastewater Pump	-



Facility Name	Address/Location	Municipality	Type	Backup Power?
Wastewater Pump #156	40.095383, -76.427978	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #157	40.087857, -76.424274	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #158	40.100684, -76.437742	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #160	40.082307, -76.422986	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #161	40.027578, -76.473334	West Hempfield Twp.	Wastewater Pump	-
Wastewater Pump #14	39.983063, -76.265728	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #15	40.003932, -76.245761	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #16	39.965704, -76.262608	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #170	40.026024, -76.252215	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #171	40.021768, -76.257406	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #18	39.977087, -76.262363	West Lampeter Twp..	Wastewater Pump	-
Wastewater Pump #20	40.010212, -76.300718	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #21	40.007054, -76.267924	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #22	40.019179, -76.262445	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #63	39.996952, -76.299786	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #64	40.016257, -76.250916	West Lampeter Twp.	Wastewater Pump	-
Wastewater Pump #65	40.019454, -76.246044	West Lampeter Twp.	Wastewater Pump	-

Source: Lancaster County 2017

### Energy Resources

The main electric power service provided in Lancaster County is PPL Electric Utilities (refer to Table I-9). There are 56 substations in Lancaster County.

**Table I-9. Electric Service Providers in Lancaster County**

Provider Name	Municipalities Served
PPL Electric Utilities	City of Lancaster  Boroughs of Adamstown, (part), Akron, Christiana, Columbia, Denver, East Petersburg, Elizabethtown, Ephrata (part), Lititz, Manheim, Marietta, Millersville, Mount Joy, Mountville, New Holland, Quarryville, Strasburg, and Terre Hill
	Townships of Bart, Brecknock, Caernarvon, Clay, Colerain, Conestoga, Conoy, Drumore, Earl, East Cocalico, East Donegal, East Drumore, East Earl, East Hempfield, East Lampeter, Eden, Elizabeth, Ephrata, Fulton, Lancaster, Leacock, Little Britain, Manheim, Manor, Martick, Mount Joy, Paradise, Penn, Pequea, Providence, Rapho, Sadsbury, Salisbury, Strasburg, Upper Leacock, Warwick, West Cocalico, West Donegal, West Earl, West Hempfield, and West Lampeter
PECO	Borough of Christiana  Townships of Sadsbury and Salisbury

### Communication Resources

Residents in Lancaster County may choose to use Comcast, Verizon, Windstream Communications, Blue Ridge Communications, or Frontier Communications for their phone, television, and data needs. Otherwise satellite service is available to Lancaster County residents through a variety of providers.





## High-Potential Loss Facilities

High-potential loss facilities include military installations, dams, levees, nuclear power plants, and hazardous materials (HAZMAT) facilities. There are no nuclear facilities or military installations located in the County. HAZMAT facilities. Dams are described below.

### HAZMAT Facilities

Lancaster County is home to 214 identified facilities that utilize, ship, or house chemicals considered hazardous. These facilities have been identified under the Superfund Amendments and Reauthorization Act (SARA) as exceeding the quantity threshold for reporting. These facilities are required to comply with regulations set forth by the federal SARA and comply with reporting requirements specified in the Pennsylvania Hazardous Materials Emergency Planning and Response Act (Act 165). The County monitors these reporting requirements, as necessary, to ensure facility safety.

### Dams

According to the PADEP, Lancaster County has 147 dams. A dam is included in the NID if (1) it is a “high” or “significant” hazard potential class dam, (2) it is a “low” hazard potential class dam that exceeds 25 feet in height and 15 acre-feet of storage, or (3) it is a “low” hazard potential class dam that exceeds 50 acre-feet of storage and 6 feet in height. PADEP also tracks dams that may not fall into these categories.

Table I-10 defines the hazard potential classifications, as accepted by the NID Interagency Committee on Dam Safety. PA DEP also designates dams based on potential risk level. This classification is slightly more detailed than that of the NID and is presented in Table I-11.

**Table I-10. NID Dam Hazard Potential Classifications**

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, and Lifeline Losses
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. one or more expected	Yes (but not necessary for this classification)

**Table I-11. Pennsylvania Dam Classification Definitions**

Size Category		
Category	Impoundment Storage (Acre-feet)	Dam Height
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



Hazard Potential Category		
Category	Population at Risk	Economic Loss
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

### Other Critical Facilities

Table I-12 lists other facilities identified by the County Steering Committee as critical to operations during a hazard event.

**Table I-12. Other Facilities in Lancaster County**

Name	Municipality	Building Type	Building Type	Backup Power
911/EMA	28 South Charlotte St.	Manheim Boro.	County Building	-
District Justice Office 12	341 Chestnut St.	Columbia Boro.	County Building	-
District Justice Office 8	841 Stehman Rd.	Conestoga Twp.	County Building	-
District Justice Office 2	745 B East Main St.	Earl Twp.	County Building	-
District Justice Office 1	2 Cardinal Dr.	East Cocalico Twp.	County Building	-
Chickies Park Building Complex 1	1467 Long Ln.	East Donegal Twp.	County Building	-
Chickies Park Building Complex 2	1467 Long Ln.	East Donegal Twp.	County Building	-
Chickies Park Building Complex 3	1467 Long Ln.	East Donegal Twp.	County Building	-
Chickies Park Building Complex 4	1467 Long Ln.	East Donegal Twp.	County Building	-
Chickies Park Building Complex 5	1467 Long Ln.	East Donegal Twp.	County Building	-
Public Safety Training Center 1	101 Champ Blvd.	East Hempfield Twp.	County Building	-
Public Safety Training Center 2	101 Champ Blvd.	East Hempfield Twp.	County Building	-
Public Safety Training Center 3	101 Champ Blvd.	East Hempfield Twp.	County Building	-
Public Safety Training Center 4	101 Champ Blvd.	East Hempfield Twp.	County Building	-
Public Safety Training Center 5	101 Champ Blvd.	East Hempfield Twp.	County Building	-
Public Safety Training Center 6	101 Champ Blvd.	East Hempfield Twp.	County Building	-
Public Safety Training Center 7	101 Champ Blvd.	East Hempfield Twp.	County Building	-
District Justice Office 6	399 Camp Meeting Rd.	East Hempfield Twp.	County Building	-
Erin Court 1	2250 Erin Ct.	East Hempfield Twp.	County Building	-
Erin Court 2	2260 Erin Ct.	East Hempfield Twp.	County Building	-
Erin Court 3	2270 Erin Ct.	East Hempfield Twp.	County Building	-
Forensic Center	2080 Spring Valley Rd.	East Hempfield Twp.	County Building	-
County Warehouse	135 Independence Ct.	East Lampeter Twp.	County Building	-
District Justice Office 7	920 South Spruce St.	Elizabethtown Boro.	County Building	-
District Justice Office 16	609 East Main St.	Ephrata Boro.	County Building	-
Youth Intervention Center	235 Circle Ave.	Lancaster City	County Building	-
County Prison	625 East King St.	Lancaster City	County Building	-
County Swimming Pool Office	40 Pontz Dr.	Lancaster City	County Building	-



Name	Municipality	Building Type	Building Type	Backup Power
District Justice Office 10	641 Union St.	Lancaster City	County Building	-
District Justice Office 11	123 Locust St.	Lancaster City	County Building	-
District Justice Office 20	150 North Queen St. Suite 120	Lancaster City	County Building	-
Lancaster County Courthouse Complex	50 North Duke St.	Lancaster City	County Building	-
Lancaster County Government Center	150 North Queen St.	Lancaster City	County Building	-
Lancaster County Offices 1	40 East King St.	Lancaster City	County Building	-
Lancaster County Offices 2	225 West King St.	Lancaster City	County Building	-
LETA	1016 Charlotte St.	Lancaster City	County Building	-
Park Office (Ranger Office)	1052 Rockford Rd.	Lancaster City	County Building	-
Parks Office	1050 Rockford Rd.	Lancaster City	County Building	-
Children and Youth	900 East King St.	Lancaster Twp.	County Building	-
District Justice Office 17	1351 Elm Ave.	Lancaster Twp.	County Building	-
District Justice Office 18	14 Center St.	Leacock Twp.	County Building	-
District Justice Office 13	2205 Oregon Pike	Manheim Twp.	County Building	-
District Justice Office 19	796A New Holland Ave.	Manheim Twp.	County Building	-
MH/MR	1120 Francis Ave.	Manheim Twp.	County Building	-
District Justice Office 14	424 South Angle St.	Mt Joy Boro.	County Building	-
District Justice Office 15	40 Doe Run Rd.	Penn Twp.	County Building	-
District Justice Office 4	25 East State St.	Quarryville Boro.	County Building	-
District Justice Office 3	15 Geist Rd.	Upper Leacock Twp.	County Building	-
District Justice Office 5	690 Furnace Hills Pike	Warwick Twp.	County Building	-
Buchmiller Park Barn	20 Buchmiller Dr.	West Lampeter Twp.	County Building	-
Buchmiller Park Office	10 Buchmiller Dr.	West Lampeter Twp.	County Building	-
District Justice Office 9	324 Beaver Valley Pike	West Lampeter Twp.	County Building	-
Exhibit Farm	1 Exhibit Farm Rd.	West Lampeter Twp.	County Building	-
Park Office	3 Nature Way	West Lampeter Twp.	County Building	-
Parks Maintenance	950 Eshelman Mill Rd.	West Lampeter Twp.	County Building	-
Shuts Environmental Center	1 Nature Way	West Lampeter Twp.	County Building	-
Adamstown Area Library	3000 North Reading Rd.	Adamstown Boro.	Library	-
Moore's Memorial Library	9 West Slokom Ave.	Christiana Boro.	Library	-
Columbia Public Library	24 South 6 <sup>th</sup> St.	Columbia Boro.	Library	-
Eastern Lancaster County Library	11 Chestnut Dr.	Earl Twp.	Library	-
Milanof-Shock Library	1184 Anderson Ferry Rd.	East Donegal Twp.	Library	-
Quarryville Library	357 Buck Rd.	East Drumore Twp.	Library	-
Christian Library of Lancaster	1873 Lincoln Hwy. East	East Lampeter Twp.	Library	-
HACC Lancaster Campus D and East Library	1641 Old Philadelphia Pike	East Lampeter Twp.	Library	-
Lancaster Mennonite Historical Society	2215 Millstream Rd.	East Lampeter Twp.	Library	-



Name	Municipality	Building Type	Building Type	Backup Power
Elizabethtown Public Library	10 South Market St.	Elizabethtown Boro.	Library	-
The High Library Elizabethtown College	1 Alpha Dr.	Elizabethtown Boro.	Library	-
Ephrata Public Library	550 South Reading Rd.	Ephrata Boro.	Library	-
Duke St. Library	125 North Duke St.	Lancaster City	Library	-
Lancaster County Law Library	50 North Duke St.	Lancaster City	Library	-
Lancaster General Health Science Library	518 North Lime St.	Lancaster City	Library	-
Martin Library of the Science F and M	600 College Ave.	Lancaster City	Library	-
Philip Schaff Library	555 West James St.	Lancaster City	Library	-
Shadek Fackenthal Library F and M	400 College Ave.	Lancaster City	Library	-
Thaddeus Stevens College of Technology	750 East King St.	Lancaster City	Library	-
Lancaster County Historical Society	230 North President Ave.	Lancaster Twp.	Library	-
Pequea Valley Public Library	31 Center St.	Leacock Twp.	Library	-
Manheim Community Library	15 East High St.	Manheim Boro.	Library	-
Lancaster Bible College Library	901 Eden Rd.	Manheim Twp.	Library	-
Manheim Township Public Library	595 Granite Run Dr.	Manheim Twp.	Library	-
Helen A Ganser Library Millersville University	1 North George St.	Millersville Boro.	Library	-
Mountville Library	2 College Ave.	Mountville Boro.	Library	-
Pequea Valley Public Library - Gap Branch	875 Brackbill Rd.	Salisbury Twp.	Library	-
Strasburg-Heisler Library	143 Precision Ave.	Strasburg Boro.	Library	-
Leola Library	46 Hillcrest Ave.	Upper Leacock Twp.	Library	-
Lititz Public Library	651 Kissel Hill Rd.	Warwick Twp.	Library	-
Shuts Environmental Library	3 Nature Way	West Lampeter Twp.	Library	-

Source: Lancaster 2017