



Flood Risk Report

*Chester County, Brandywine-Christina Watershed,
02040205*

*Chester County**

Pennsylvania

**Spans more than one watershed. This report only covers the area within the studied watershed.*

Report Number 01

8/1/2017



FEMA

RiskMAP
Increasing Resilience Together

Project Area Community List

Community Name
Borough Of Atglen
Borough Of Avondale
Township Of Birmingham*
Township Of Caln
Township Of Charlestown*
City Of Coatesville
Borough Of Downingtown
Township Of East Bradford
Township Of East Brandywine
Township Of East Caln
Township Of East Coventry
Township Of East Fallowfield
Township Of East Goshen
Township Of East Marlborough
Township Of East Nantmeal*
Township Of East Nottingham*
Township Of East Pikeland
Township Of East Vincent
Township Of East Whiteland*
Township Of Easttown*
Township Of Elk
Borough Of Elverson*
Township Of Franklin*

Community Name
French Creek State Park
Township Of Highland*
Borough Of Honey Brook
Township Of Honey Brook*
Hopewell Furnace National Historic Site
Township Of Kennett
Borough Of Kennett Square
Township Of London Britain
Township Of London Grove
Township Of Londonderry*
Township Of Lower Oxford*
Borough Of Malvern*
Marsh Creek State Park
Borough Of Modena
Township Of New Garden
Township Of New London*
Township Of Newlin
Township Of North Coventry
Borough Of Oxford*
Borough Of Parkesburg*
Township Of Penn*
Township Of Pennsbury
Borough Of Phoenixville

Community Name
Township Of Pocopson
Township Of Sadsbury*
Township Of Schuylkill
Borough Of South Coatesville
Township Of South Coventry
Borough Of Spring City
Springlawn Corridor
State Game Lands 43*
Township Of Thornbury*
Township Of Tredyffrin*
Township Of Upper Oxford*
Township Of Upper Uwchlan*
Township Of Uwchlan*
Township Of Valley
Valley Forge National Historical Park
Township Of Wallace
Township Of Warwick

Community Name
Township Of West Bradford
Township Of West Brandywine
Township Of West Caln*
Borough Of West Chester*
Township Of West Fallowfield*
Township Of West Goshen*
Borough Of West Grove
Township Of West Marlborough
Township Of West Nantmeal*
Township Of West Nottingham*
Township Of West Pikeland
Township Of West Sadsbury*
Township Of West Vincent*
Township Of West Whiteland*
Township Of Westtown*
White Clay Creek State Park
Township Of Willistown*

*Spans more than one watershed. This report only covers the area within the studied watershed.

Preface

The Department of Homeland Security (DHS), Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program provides states, tribes, and local communities with flood risk information and tools that they can use to increase their resilience to flooding and better protect their citizens. By pairing accurate floodplain maps with risk assessment tools and planning and outreach support, Risk MAP has transformed traditional flood mapping efforts into an integrated process of identifying, assessing, communicating, planning for, and mitigating flood-related risks.

This Flood Risk Report (FRR) provides non-regulatory information to help local or tribal officials, floodplain managers, planners, emergency managers, and others better understand their flood risk, take steps to mitigate those risks, and communicate those risks to their citizens and local businesses.

Because flood risk often extends beyond community limits, the FRR provides flood risk data for the entire Flood Risk Project as well as for each individual community. This also emphasizes that flood risk reduction activities may impact areas beyond jurisdictional boundaries.

Flood risk is always changing, and there may be other studies, reports, or sources of information available that provide more comprehensive information. The FRR is not intended to be regulatory or the final authoritative source of all flood risk data in the project area. Rather, it should be used in conjunction with other data sources to provide a comprehensive picture of flood risk within the project area.

Table of Contents

1	Introduction.....	1
1.1	About Flood Risk	1
1.1.1	Calculating Flood Risk	1
1.1.2	Flood Risk Products.....	1
1.2	Uses of this Report	2
1.3	Sources of Flood Risk Assessment Data Used.....	3
1.4	Related Resources	4
2	Flood Risk Analysis.....	5
2.1	Overview	5
2.2	Analysis of Risk	5
2.2.1	Changes Since Last FIRM	6
2.2.2	Flood Depth and Analysis Grids.....	6
2.2.3	Flood Risk Assessments	7
2.2.4	Areas of Mitigation Interest.....	9
3	Flood Risk Analysis Results	15
3.1	Flood Risk Map.....	16
3.2	Chester County, Brandywine-Christina Watershed Flood Risk Project Area Summary	18
3.2.1	Overview	18
3.2.2	Flood Risk Datasets	22
3.3	Communities	25
3.3.1	Borough Of Atglen Summary (CID 420273)	25
3.3.2	Borough Of Avondale Summary (CID 421473).....	29
3.3.3	Township Of Birmingham Summary (CID 421474)	33
3.3.4	Township Of Caln Summary (CID 422247).....	37
3.3.5	Township Of Charlestown Summary (CID 421475)	41
3.3.6	City Of Coatesville Summary (CID 420274)	44
3.3.7	Borough Of Downingtown Summary (CID 420275)	48
3.3.8	Township Of East Bradford Summary (CID 420276).....	52
3.3.9	Township Of East Brandywine Summary (CID 421476).....	56
3.3.10	-Township Of East Caln Summary (CID 421477).....	60
3.3.11	Township Of East Coventry Summary (CID 421478)	64

3.3.12	Township Of East Fallowfield Summary (CID 421479).....	67
3.3.13	Township Of East Goshen Summary (CID 420277)	71
3.3.14	Township Of East Marlborough Summary (CID 421480)	74
3.3.15	Township Of East Nantmeal Summary (CID 421481).....	78
3.3.16	Township Of East Nottingham Summary (CID 421482)	81
3.3.17	Township Of East Pikeland Summary (CID 421483)	85
3.3.18	Township Of East Vincent Summary (CID 420278).....	88
3.3.19	Township Of East Whiteland Summary (CID 420279).....	91
3.3.20	Township Of Easttown Summary (CID 422600)	95
3.3.21	Township Of Elk Summary (CID 422286).....	98
3.3.22	Borough Of Elverson Summary (CID 422287)	101
3.3.23	Township Of Franklin Summary (CID 422288).....	104
3.3.24	French Creek State Park Summary (CID 42ST04).....	108
3.3.25	Township Of Highland Summary (CID 422289)	112
3.3.26	Borough Of Honey Brook Summary (CID 422692).....	116
3.3.27	Township Of Honey Brook Summary (CID 422290).....	119
3.3.28	Hopewell Furnace National Historical Site (CID 42ST02)	123
3.3.29	Township Of Kennett Summary (CID 422586).....	127
3.3.30	Borough Of Kennett Square Summary (CID 420280)	131
3.3.31	Township Of London Britain Summary (CID 422273).....	135
3.3.32	Township Of London Grove Summary (CID 422274).....	139
3.3.33	Township Of Londonderry Summary (CID 421484)	143
3.3.34	Township Of Lower Oxford Summary (CID 421485)	147
3.3.35	Borough Of Malvern Summary (CID 420281).....	151
3.3.36	Marsh Creek State Park (CID ST05)	154
3.3.37	Borough Of Modena Summary (CID 420282)	158
3.3.38	Township Of New Garden Summary (CID 422275).....	162
3.3.39	Township Of New London Summary (CID 422276)	166
3.3.40	Township Of Newlin Summary (CID 421486)	170
3.3.41	Township Of North Coventry Summary (CID 420283).....	174
3.3.42	Borough Of Oxford Summary (CID 420284).....	178
3.3.43	Borough Of Parkesburg Summary (CID 422277)	181
3.3.44	Township Of Penn Summary (CID 421487)	185

3.3.45	Township Of Pennsbury Summary (CID 420285)	189
3.3.46	Borough Of Phoenixville Summary (CID 420287)	193
3.3.47	Township Of Pocopson Summary (CID 420286)	196
3.3.48	Township Of Sadsbury Summary (CID 421488)	200
3.3.49	Township Of Schuylkill Summary (CID 421489)	204
3.3.50	Borough Of South Coatesville Summary (CID 420288)	207
3.3.51	Township Of South Coventry Summary (CID 421490)	211
3.3.52	Borough Of Spring City Summary (CID 420289)	215
3.3.53	Springlawn Corridor (CID 42ST07)	218
3.3.54	State Game Lands 43 (CID 42ST01)	222
3.3.55	Township Of Thornbury Summary (CID 420290)	226
3.3.56	Township Of Tredyffrin Summary (CID 420291)	230
3.3.57	Township Of Upper Oxford Summary (CID 422278)	233
3.3.58	Township Of Upper Uwchlan Summary (CID 421491)	237
3.3.59	Township Of Uwchlan Summary (CID 421492)	241
3.3.60	Township Of Valley Summary (CID 421206)	245
3.3.61	Valley Forge National Historical Park (CID 42FED)	249
3.3.62	Township Of Wallace Summary (CID 421493)	253
3.3.63	Township Of Warwick Summary (CID 421494)	257
3.3.64	Township Of West Bradford Summary (CID 421495)	260
3.3.65	Township Of West Brandywine Summary (CID 421496)	264
3.3.66	Township Of West Caln Summary (CID 421497)	268
3.3.67	Borough Of West Chester Summary (CID 420292)	272
3.3.68	Township Of West Fallowfield Summary (CID 422602)	276
3.3.69	Township Of West Goshen Summary (CID 420293)	280
3.3.70	Borough Of West Grove Summary (CID 422691)	284
3.3.71	Township Of West Marlborough Summary (CID 422279)	288
3.3.72	Township Of West Nantmeal Summary (CID 421498)	292
3.3.73	Township Of West Nottingham Summary (CID 422280)	296
3.3.74	Township Of West Pikeland Summary (CID 421151)	300
3.3.75	Township Of West Sadsbury Summary (CID 422281)	303
3.3.76	Township Of West Vincent Summary (CID 421499)	307
3.3.77	Township Of West Whiteland Summary (CID 420295)	310

3.3.78	Township Of Westtown Summary (CID 420294)	314
3.3.79	White Clay Creek State Park (42ST06)	317
3.3.80	Township Of Willistown Summary (CID 422282)	321
4	Actions to Reduce Flood Risk	324
4.1	Types of Mitigation Actions	324
4.1.1	Local Plans and Regulations	324
4.1.2	Structure and Infrastructure Projects	325
4.1.3	Natural Resource Protection Activities	325
4.1.4	Public Education and Awareness Activities	325
4.2	Identifying Specific Actions for Your Community	327
4.3	Mitigation Programs and Assistance	328
4.3.1	FEMA Mitigation Programs and Assistance	328
4.3.2	Additional Mitigation Programs and Assistance	329
5	Acronyms and Definitions	330
5.1	Acronyms	330
5.2	Definitions	331
6	Additional Resources	334
7	Data Used to Develop Flood Risk Products	336

FLOOD RISK REPORT

1 Introduction

1.1 About Flood Risk

Floods are naturally occurring phenomena that can and do happen almost anywhere. In its most basic form, a flood is an accumulation of water over normally dry areas. Floods become hazardous to people and property when they inundate an area where development has occurred, causing losses. Mild flood losses may have little impact on people or property, such as damage to landscaping or the generation of unwanted debris. Severe flooding can destroy buildings, ruin crops, and cause critical injuries or death.

1.1.1 Calculating Flood Risk

It is not enough to simply identify where flooding may occur. Just because one knows where a flood occurs does not mean they know the **risk** of flooding. The most common method for determining flood risk, also referred to as vulnerability, is to identify the probability of flooding and the consequences of flooding. In other words:

Flood Risk = Probability x Consequences; where

- **Probability** = the likelihood of occurrence
- **Consequences** = the estimated impacts associated with the occurrence

The probability of a flood is the likelihood that a flood will occur. The probability of flooding can change based on physical, environmental, and/or contributing engineering factors. Factors affecting the probability that a flood will impact an area range from changing weather patterns to the existence of mitigation projects. The ability to assess the probability of a flood and the level of accuracy for that assessment are also influenced by modeling methodology advancements, better knowledge, and longer periods of record for the water body in question.

The consequences of a flood are the estimated impacts associated with the flood occurrence. Consequences relate to humans activities within an area and how a flood impacts the natural and built environments.

1.1.2 Flood Risk Products

Through Risk MAP, FEMA provides communities with updated Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) Reports that focus on the probability of floods and that show where flooding may occur as well as the calculated 1-percent-annual-chance flood elevation.



Flooding is a natural part of our world and our communities. Flooding becomes a significant hazard, however, when it intersects with the built environment.

Which picture below shows more flood risk?



Even if you assume that the flood in both pictures was the same probability—let's say a 10-percent-annual-chance flood—the consequences in terms of property damage and potential injury as a result of the flood in the bottom picture are much more severe. Therefore, the flood risk in the area shown in the bottom picture is higher.

The 1-percent-annual-chance flood, also known as the base flood, has a 1% chance of being equaled or exceeded in any given year. FEMA understands that flood risk is dynamic—that flooding does not stop at a line on a map—and as such, provides the following flood risk products:

- **Flood Risk Report (FRR):** The FRR presents key risk analysis data for the Flood Risk Project.
- **Flood Risk Map (FRM):** Like the example found in Section 3.1 of this document, the FRM shows a variety of flood risk information in the project area. More information about the data shown on the FRM may be found in Section 2 of this report.
- **Flood Risk Database (FRD):** The FRD is in Geographic Information System (GIS) format and houses the flood risk data developed during the course of the flood risk analysis that can be used and updated by the community. After the Flood Risk Project is complete, this data can be used in many ways to visualize and communicate flood risk within the Flood Risk Project.



Whether or not an area might flood is one consideration. The extent to which it might flood adds a necessary dimension to that understanding.

These Flood Risk Products provide flood risk information at both the Flood Risk Project level and community level (for those portions of each community within the Flood Risk Project). They demonstrate how decisions made within a Flood Risk Project can impact properties downstream, upstream, or both. Community-level information is particularly useful for mitigation planning and emergency management activities, which often occur at a local jurisdiction level.

1.2 Uses of this Report

The goal of this report is to help inform and enable communities and tribes to take action to reduce flood risk. Possible users of this report include:

- Local elected officials
- Floodplain managers
- Community planners
- Emergency managers
- Public works officials
- Other special interests (e.g., watershed conservation groups, environmental awareness organizations, etc.)

State, local, and tribal officials can use the summary information provided in this report, in conjunction with the data in the FRD, to:

- **Update local hazard mitigation plans.** As required by the 2000 Federal Stafford Act, local hazard mitigation plans must be updated at least every five (5) years. Summary information presented in Section 3 of this report and the FRM can be used to identify areas that may need additional focus when updating the risk assessment section of a local hazard mitigation plan. Information



Vulnerability of infrastructure is another important consideration.

found in Section 4 pertains to the different mitigation techniques and programs and can be used to inform decisions related to the mitigation strategy of local plans.

- **Update community comprehensive plans.** Planners can use flood risk information in the development and/or update of comprehensive plans, future land use maps, and zoning regulations. For example, zoning codes may be changed to better provide for appropriate land uses in high-hazard areas.
- **Update emergency operations and response plans.** Emergency managers can identify low-risk areas for potential evacuation and sheltering and can help first responders avoid areas of high-depth flood water. Risk assessment results may reveal vulnerable areas, facilities, and infrastructure for which planning for continuity of operations plans (COOP), continuity of government (COG) plans, and emergency operations plans (EOP) would be essential.
- **Develop hazard mitigation projects.** Local officials (e.g., planners and public works officials) can use flood risk information to re-evaluate and prioritize mitigation actions in local hazard mitigation plans.
- **Communicate flood risk.** Local officials can use the information in this report to communicate with property owners, business owners, and other citizens about flood risks, changes since the last FIRM, and areas of mitigation interest. The report layout allows community information to be extracted in a fact sheet format.
- **Inform the modification of development standards.** Floodplain managers, planners, and public works officials can use information in this report to support the adjustment of development standards for certain locations. For example, heavily developed areas tend to increase floodwater runoff because paved surfaces cannot absorb water, indicating a need to adopt or revise standards that provide for appropriate stormwater retention.

FEMA in collaboration with the American Planning Association has released the publication, "Integrating Hazard Mitigation into Local Planning." This guide explains how hazard mitigation can be incorporated into several different types of local planning programs. For more information, go to www.planning.org or <http://www.fema.gov/library>.

The Flood Risk Database, Flood Risk Map, and Flood Risk Report are "non-regulatory" products. They are available and intended for community use but are neither mandatory nor tied to the regulatory development and insurance requirements of the National Flood Insurance Program (NFIP). They may be used as regulatory products by communities if authorized by state and local enabling authorities.

1.3 Sources of Flood Risk Assessment Data Used

To assess potential community losses, or the consequences portion of the "risk" equation, the following data is typically collected for analysis and inclusion in a Flood Risk Project:

- Information about local assets or resources at risk of flooding
- Information about the physical features and human activities that contribute to that risk
- Information about where the risk is most severe

For most Flood Risk Projects, FEMA uses the following sources of flood risk information to develop this report:

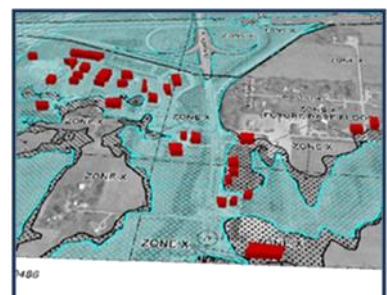
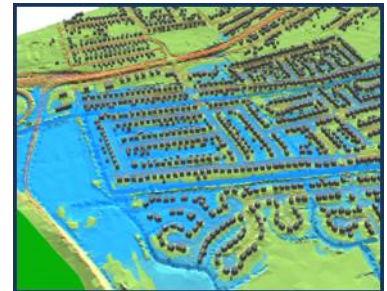
- Hazus estimated flood loss information

- New engineering analyses (e.g., hydrology and hydraulic modeling) to develop new flood boundaries
- Locally supplied data (see Section 7 for a description)
- Sources identified during the Discovery process

1.4 Related Resources

For a more comprehensive picture of flood risk, FEMA recommends that state and local officials use the information provided in this report in conjunction with other sources of flood risk data, such as those listed below.

- **FIRMs and FISs.** This information indicates areas with specific flood hazards by identifying the limit and extent of the 1-percent-annual-chance floodplain and the 0.2-percent-annual-chance floodplain. FIRMs and FIS Reports do not identify all floodplains in a Flood Risk Project. The FIS Report includes summary information regarding other frequencies of flooding, as well as flood profiles for riverine sources of flooding. In rural areas and areas for which flood hazard data are not available, the 1-percent-annual-chance floodplain may not be identified. In addition, the 1-percent-annual-chance floodplain may not be identified for flooding sources with very small drainage areas (less than 1 square mile).
- **Hazus Flood Loss Estimation Reports.** Hazus can be used to generate reports, maps and tables on potential flood damage that can occur based on new/proposed mitigation projects or future development patterns and practices. Hazus can also run specialized risk assessments, such as what happens when a dam or levee fails. Flood risk assessment tools are available through other agencies as well, including the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Army Corps of Engineers (USACE). Other existing watershed reports may have a different focus, such as water quality, but may also contain flood risk and risk assessment information. See Section 6 for additional resources.
- **Flood or multi-hazard mitigation plans.** Local hazard mitigation plans include risk assessments that contain flood risk information and mitigation strategies that identify community priorities and actions to reduce flood risk. This report was informed by any existing mitigation plans in the Flood Risk Project.
- **FEMA Map Service Center (MSC).** The MSC has useful information, including fly sheets, phone numbers, data, etc. Letters of Map Change are also available through the MSC. The user can view DFIRM databases and the National Flood Hazard Layer (NFHL) Database.



FEMA data can be leveraged to identify and measure vulnerability by including local building information (i.e. building type). The examples above show various ways to display flooding intersecting with buildings.

2 Flood Risk Analysis

2.1 Overview

Flood hazard identification uses FIRMs, and FIS Reports identify where flooding can occur along with the probability and depth of that flooding. Flood risk assessment is the systematic approach to identifying how flooding impacts the environment. In hazard mitigation planning, flood risk assessments serve as the basis for mitigation strategies and actions by defining the hazard and enabling informed decision making. Fully assessing flood risk requires the following:

- Identifying the flooding source and determining the flood hazard occurrence probability
- Developing a complete profile of the flood hazard including historical occurrence and previous impacts
- Inventorying assets located in the identified flood hazard area
- Estimating potential future flood losses caused by exposure to the flood hazard area

Flood risk analyses are different methods used in flood risk assessment to help quantify and communicate flood risk. Flood risk analysis can be performed on a large scale (state, community) level and on a very small scale (parcel, census block). Advantages of large-scale flood risk analysis, especially at the watershed level, include identifying how actions and development in one community can affect areas up- and downstream. On the parcel or census block level, flood risk analysis can provide actionable data to individual property owners so they can take appropriate mitigation steps.



Flooding impacts non-populated areas too, such as agricultural lands and wildlife habitats.

2.2 Analysis of Risk

The FRR, FRM, and FRD contain a variety of flood risk analysis information to help describe and visualize flood risk within the project area. Depending on the scope of the Flood Risk Project for this project area, this information may include some or all of the following elements:

- Changes Since Last FIRM
- Water Surface, Flood Depth, and Analysis Grids
- Flood Risk Assessment Information
- Areas of Mitigation Interest

State and Local Hazard Mitigation Plans are required to have a comprehensive all-hazard risk assessment. The flood risk analyses in the FRR, FRM, and FRD can inform the flood hazard portion of a community's or state's risk assessment. Further, data in the FRD can be used to develop information that meets the requirements for risk assessments as it relates to the hazard of flood in hazard mitigation plans.

2.2.1 Changes Since Last FIRM

The Changes Since Last FIRM (CSLF) dataset, stored in the FRD and shown in Section 3 of this report, illustrates where changes to flood risk may have occurred since the last FIRM was published for the subject area. Communities can use this information to update their mitigation plans, specifically quantifying “what is at risk” and identifying possible mitigation activities.

The CSLF dataset identifies changes in the Special Flood Hazard Area (SFHA) and floodway boundary changes since the previous FIRM was developed. These datasets quantify land area increases and decreases to the SFHA and floodway, as well as areas where the flood zone designation has changed (e.g., Zone A to AE, AE to VE, shaded Zone X protected by levee to AE for de-accredited levees).

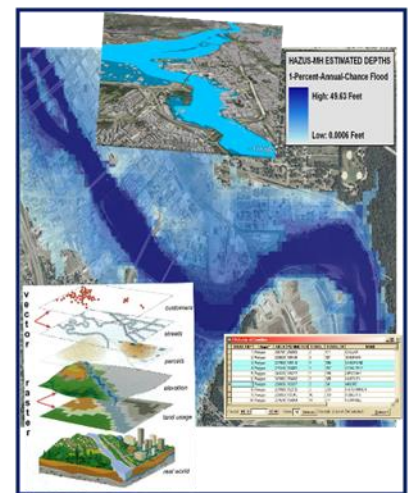
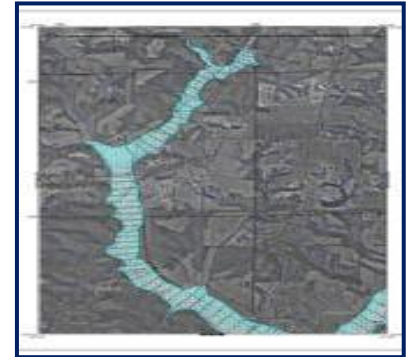
The CSLF dataset is created in areas that were previously mapped using digital FIRMs. The CSLF dataset for this project area includes:

- **Floodplain and/or Floodway Boundary Changes:** Any changes to the existing floodplain or floodway boundaries are depicted in this dataset
- **Floodplain Designation Changes:** This includes changed floodplain designations (e.g., Zone A to Zone AE).
- **Additional Change Information:** Within this dataset additional information is provided to help explain the floodplain and floodway boundary changes shown on the FIRM. This information is stored as digital attributes within the CSLF polygons and may include some or all of the following:
 - Changes in peak discharges
 - Changes to the modeling methodology (e.g., tide gage analysis)
 - New flood control structures (e.g., dams, levees, etc.)
 - Changes to hydraulic structures (e.g., bridges, culverts, etc.)
 - Sedimentation and/or Erosion
 - Man-made changes to a watercourse (e.g., realignment or improvement)

Please note that reasons for the floodplain and floodway changes (also known as Contributing Engineering Factors) are provided to give the user a general sense of what caused the change, as opposed to providing a reason for each and every area of change.

2.2.2 Flood Depth and Analysis Grids

Grids are FEMA datasets provided in the FRD to better describe the risk of the flood hazard. While the FIRM and FIS Report describe “what” is at



Floodplain maps have evolved considerably from the older paper-based FIRMs to the latest digital products and datasets.

CSLF data can be used to communicate changes in the physical flood hazard area (size, location) as part of the release of new FIRMs. It can also be used in the development or update of hazard mitigation plans to describe changes in hazard as part of the hazard profile.

CSLF data is shown in the FRR, and underlying data is stored in the FRD.

risk by identifying the hazard areas, water surface, flood depth, and analysis grids can help define “how bad” the risk is within those identified areas. These grids are intended to be used by communities for additional analysis, enhanced visualization, and communication of flood risks for hazard mitigation planning and emergency management. Grids provided in the FRD for this project area include the following:

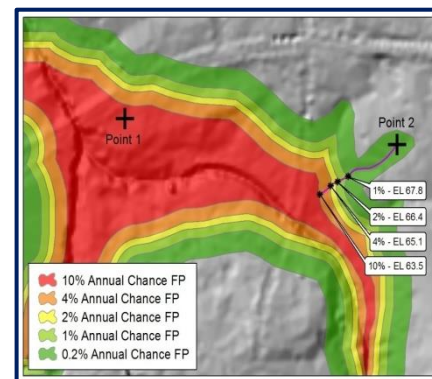
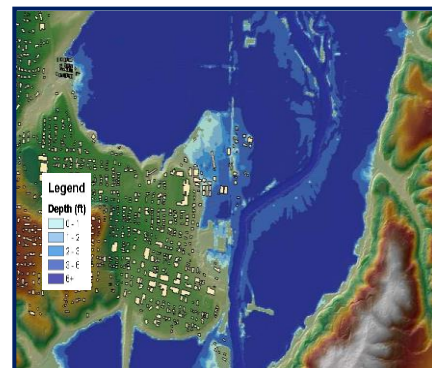
- **Water Surface Elevation Grids:** This dataset represents the raw results of the hydrologic and hydraulic analysis before adjustments are made to account for influences associated with other flooding sources.
- **Flood Depth Grids: (for the calculated flood frequencies included in the FIS Report):** Flood Depth Grids are created for each flood frequency calculated during the course of a Flood Risk Project. These grids communicate flood depth as a function of the difference between the calculated water surface elevation and the ground. Five grids will normally be delivered for riverine areas for the standard flood frequencies (10-, 4-, 2-, 1-, and 0.2-percent-annual-chance). Coastal areas only receive the 1-percent-annual-chance grid.

Depth grids form the basis for refined Hazus loss estimates (as presented in a table in Section 3 of this report) and are used to calculate potential flood losses for display on the FRM and for tabular presentation in this report. Depth grids may also be used for a variety of ad-hoc risk visualization and mitigation initiatives.

- **Percent Annual Chance of Flooding Grid:** This is a grid dataset that represents the percent annual chance of flooding for locations along a flooding source. This grid uses the five standard flood frequencies.
- **Percent Chance of Flooding over a 30-Year Time Period Grid:** This is a grid dataset that represents the estimated likelihood of flooding at least once within a 30-year period, which is the average lifespan for a home mortgage, for all locations within the extent of the 1-percent-annual-chance and 0.2-percent-annual-chance floodplain.

2.2.3 Flood Risk Assessments

Flood risk assessment results reported in the FRR were developed using a FEMA flood loss estimation tool, Hazus. Hazus (www.fema.gov/hazus) is a nationally-applicable and standardized risk assessment tool that estimates potential losses from earthquakes, floods, and hurricanes. It uses GIS technology to estimate physical, economic, and social impacts of disasters. Hazus can be used to help individuals and communities graphically



Grid data can make flood mapping more informative. The top image is a flood depth grid showing relative depths of water in a scenario flood event. The bottom image is a percent annual chance of flooding grid, which shows inundation areas of various frequency floods.

Grid data can be used to communicate the variability of floodplains, such as where floodplains are particularly deep or hazardous, where residual risks lie behind levees, and where losses may be great after a flood event. For mitigation planning, grid data can inform the hazard profile and vulnerability analysis (what is at risk for different frequencies) and can be used for preliminary benefit-cost analysis screening. For floodplain management, higher regulatory standards can be developed in higher hazard flood prone areas (i.e., 10-percent-annual-chance floodplains or deep floodplains).

Grid data is stored in the FRD, and a list of available grid data is provided in the FRR.

visualize the areas where flood risk is highest. Some benefits of using Hazus include the following:

- Outputs that can enhance state and local mitigation plans and help screen for cost-effectiveness in FEMA mitigation grant programs
- Analysis refinement through updating inventory data and integrating data produced using other flood models
- Widely available support documents and networks (Hazus Users Groups)

Files from the FRD can be imported into Hazus to develop other risk assessment information including:

- Debris generated after a flood event
- Dollar loss of the agricultural products in a study region
- Utility system damages in the region
- Vehicle loss in the study region
- Damages and functionality of lifelines such as highway and rail bridges, potable water, and wastewater facilities



Hazus is a loss estimation methodology developed by FEMA for flood, wind, and earthquake hazards. The methodology and data established by Hazus can also be used to study other hazards.

Scenario-Based Flood Loss Estimates:

Scenario-based flood losses have been calculated using Hazus for the 10-, 4-, 2-, 1-, and 0.2-percent-annual-chance flood events. In this report, these losses are expressed in dollar amounts and are provided for the Flood Risk Project area only, even though results are shown for the entire watershed and at the local jurisdiction level.

Loss estimates are based on best available data, and the methodologies applied result in an approximation of risk. These estimates should be used to understand relative risk from flood and potential losses. Uncertainties are inherent in any loss estimation methodology, arising in part from approximations and simplifications that are necessary for a comprehensive analysis (e.g., incomplete inventories, demographics, or economic parameters).

Flood loss estimates are being provided at the project and community levels for multiple flood frequencies including:

- **Residential Asset Loss:** These include direct building losses (estimated costs to repair or replace the damage caused to the building) for all classes of residential structures including single family, multi-family, manufactured housing, group housing, and nursing homes. This value also includes content losses.
- **Commercial Asset Loss:** These include direct building losses for all classes of commercial buildings including retail, wholesale, repair, professional services, banks, hospitals, entertainment,

Flood risk assessment data can be used in many ways to support local decision making and explanation of flood risk. For mitigation planning purposes, loss data can be used to help meet requirements to develop loss information for the hazard of flood. Also, the FRM can show where flood risk varies by geographic location. For emergency management, risk assessment data can help forecast losses based on predicted events, and resources can be assigned accordingly. Loss information can support floodplain management efforts, including those to adopt higher regulatory standards. Awareness of at-risk essential facilities and infrastructure also encourages mitigation actions to protect citizens from service disruption should flooding occur.

Flood risk assessment loss data is summarized in the FRR and on the FRM and stored in the FRD.

and parking facilities. This value also includes content and inventory losses.

- **Other Asset Loss:** This includes losses for facilities categorized as industrial, agricultural, religious, government, and educational. This value also includes content and inventory losses.
- **Essential Facility Losses:** Essential facilities are defined in Hazus as facilities which provide services to the community and should be functional after a flood, including schools, police stations, fire stations, medical facilities, and emergency operation centers. These facilities would otherwise be considered critical facilities for mitigation planning purposes. Estimated damages (in terms of loss of function) for essential facilities are determined on a site-specific basis according to latitude and longitude. For this report, Hazus calculates the types and numbers of essential facilities impacted.
- **Infrastructure:** For analysis of infrastructure, Hazus supports the analysis of transportation systems and lifeline utility systems. Transportation systems include highways, railways, light railways, busses, ports and harbors, ferries, and airport systems. Utility systems include potable water systems, wastewater, oil, natural gas, electric power, and communication systems. For this report, Hazus calculates the types of infrastructure impacted.
- **Business Disruption:** This includes the losses associated with the inability to operate a business due to the damage sustained during the flood. Losses include inventory, income, rental income, wage, and direct output losses, as well as relocation costs.
- **Annualized Losses:** Annualized losses are calculated using Hazus by taking losses from multiple events over different frequencies and expressing the long-term average by year. This factors in historic patterns of frequent smaller floods with infrequent but larger events to provide a balanced presentation of flood damage.
- **Loss Ratio:** The loss ratio expresses the scenario losses divided by the total building value for a local jurisdiction and can be a gauge to determine overall community resilience as a result of a scenario event. For example, a loss ratio of 5 percent for a given scenario would indicate that a local jurisdiction would be more resilient and recover more easily from a given event, versus a loss ratio of 75 percent which would indicate widespread losses. An annualized loss ratio uses the annualized loss data as a basis for computing the ratio. Loss ratios are not computed for business disruption. These data are presented in the FRR.
- **Hazus Flood Risk Value:** On the FRM, flood risk is expressed in the following five categories: very low, low, medium, high, and very high for census blocks that have flood risk. It is based on the 1-percent-annual-chance total asset loss by census block.

2.2.4 Areas of Mitigation Interest

Many factors contribute to flooding and flood losses. Some are natural, and some are not. In response to these risks, there has been a focus by the federal government, state agencies, and local jurisdictions to mitigate properties against the impacts of flood hazards so that future losses and impacts can be reduced. An area identified as an Area of Mitigation Interest (AoMI) is an important element of defining a more comprehensive picture of flood risk and mitigation activity in a watershed, identifying target areas and potential projects for flood hazard mitigation, encouraging local collaboration, and communicating how various mitigation activities can successfully reduce flood risk.

This report and the FRM may include information that focuses on identifying Areas of Mitigation Interest that may be contributing (positively or negatively) to flooding and flood losses in the Flood Risk Project. AoMIs are identified through coordination with local stakeholders; through revised hydrologic and hydraulic and/or coastal analyses; by leveraging other studies or previous flood studies; from community mitigation plans, floodplain management plans, and local surveys; and from the mining of federal government databases (e.g., flood claims, disaster grants, and data from other agencies). Below is a list of the types of Areas of Mitigation Interest that may be identified in this Flood Risk Report, shown on the Flood Risk Map, and stored in the Flood Risk Database:

- **Dams**

A dam is a barrier built across a waterway for impounding water. Dams vary from impoundments that are hundreds of feet tall and contain thousands of acre-feet of water (e.g., Hoover Dam) to small dams that are a few feet high and contain only a few acre-feet of water (e.g., small residential pond). “Dry dams,” which are designed to contain water only during floods and do not impound water except for the purposes of flood control, include otherwise dry land behind the dam.

While most modern, large dams are highly engineered structures with components such as impervious cores and emergency spillways, most smaller and older dams are not. State dam safety programs emerged in the 1960s, and the first Federal Guidelines for Dam Safety were not prepared until 1979. By this time, the vast majority of dams in the United States had already been constructed.



Dams vary in size and shape, the amount of water they impound, and their assigned hazard classification.

- **Reasons dams are considered AoMIs:**

- Many older dams were not built to any particular standard and thus may not withstand extreme rainfall events. Older dams in some parts of the country are made out of an assortment of materials. These structures may not have any capacity to release water and could be overtopped, which could result in catastrophic failure.
- Even dams that follow current dam safety programs may not be regulated, as downstream risk may have changed since the dam was constructed. Years after a dam is built, a house, subdivision, or other development may be constructed in the area downstream of the dam. Thus, a subsequent dam failure could result in damage. Since these dams are not regulated, it is impossible to predict how safe they are.
- A significant dam failure risk is structural deficiencies associated with older dams that are not being adequately addressed today through needed inspection/maintenance practices.



This dam failure caused flooding that damaged several homes and vehicles.

- For larger dams a flood easement may have been obtained on a property. However, there may have been buildings constructed in violation of the flood easement.
- When a new dam is constructed, the placement of such a large volume of material in a floodplain area (if that is the dam location) will displace flood waters and can alter how the watercourse flows. This can result in flooding upstream, downstream, or both.
- For many dams, the dam failure inundation zone is not known. Not having knowledge of these risk areas could lead to unprotected development in these zones.

- **Stream Flow Constrictions**

A stream flow constriction occurs when a human-made structure, such as a culvert or bridge, constricts the flow of a river or stream. The results of this constriction can be increased damage potential to the structure, an increase in velocity of flow through the structure, and the creation of significant ponding or backwater upstream of the structure. Regulatory standards regarding the proper opening size for a structure spanning a river or stream are not consistent and may be non-existent. Some local regulations require structures to pass a volume of water that corresponds to a certain size rain event; however, under sizing, these openings can result in flood damage to the structure itself. After a large flood event, it is not uncommon to have numerous bridges and culverts “washed out.”

- **Reasons stream flow constrictions are considered AoMIs:**

- Stream flow constrictions can back water up on property upstream of the structure if not designed properly.
- These structures can accelerate the flow through the structure causing downstream erosion if not properly mitigated. This erosion can affect the structure itself, causing undermining and failure.
- If the constriction is a bridge or culvert, it can get washed out causing an area to become isolated and potentially more difficult to evacuate.
- Washed-out culverts and associated debris can wash downstream and cause additional constrictions.

- **At-Risk Essential Facilities**

Essential facilities, sometimes called “critical facilities,” are those whose impairment during a flood could cause significant problems to individuals or communities. For example, when a community’s wastewater treatment is flooded and shut down, not only do contaminants escape and flow into the floodwaters, but backflows of sewage can contaminate basements or other areas of the community. Similarly, when a facility such as a hospital is flooded, it can result in a significant hardship on the community not only during the event but long afterwards as well.

- **Reasons at-risk essential facilities are considered AoMIs:**

- Costly and specialized equipment may be damaged and need to be replaced.

- Impairments to facilities such as fire stations may result in lengthy delays in responding and a focus on evacuating the facility itself.
- Critical records and information stored at these facilities may be lost.

- **Past Flood Insurance Claims and Individual Assistance/Public Assistance Hotspots**

Assistance provided after flood events (flood insurance in any event and Individual Assistance [IA] or Public Assistance [PA] after declared disasters) occurs in flood affected areas. Understanding geographically where this assistance is being provided may indicate unique flood problems.



Clusters of past flood insurance claims can show where there is a repetitive flood problem.

Flood insurance claims are not always equally distributed in a community. Although estimates indicate that 20 to 50 percent of structures in identified flood hazard areas have flood insurance, clusters of past claims may indicate where there is a flood problem. However, clusters of past claims and/or areas where there are high payments under FEMA's IA or PA Programs may indicate areas of significant flood hazard.

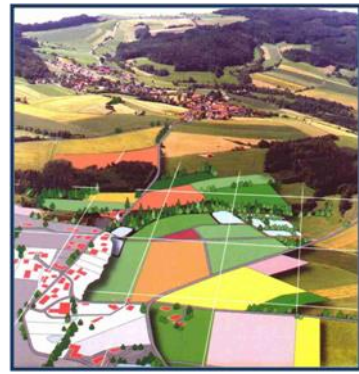
- **Reasons past claim hotspots are considered AoMIs:**

- A past claim hotspot may reflect an area of recent construction (large numbers of flood insurance policies as a result of a large number of mortgages) and an area where the as-built construction is not in accordance with local floodplain management regulations.
- Sometimes clusters of past claims occur in subdivisions that were constructed before flood protection standards were in place, places with inadequate stormwater management systems, or in areas that may not have been identified as SFHAs.
- Clusters of IA or PA claims may indicate areas where high flood insurance coverage or other mitigation actions are needed.

- **Areas of Significant Land Use Change**

Development, whether it is a 100-lot subdivision or a single lot big box commercial outlet, can result in large amounts of fill and other material being deposited in flood storage areas, thereby increasing flood hazards downstream.

Additionally, when development occurs, hard surfaces such as parking lots, buildings and driveways do not allow water to absorb into the ground, and more of the rainwater becomes runoff flowing directly into streams. As a result, the “peak flow” in a stream after a storm event will be higher and will occur faster. Without careful planning, major land use changes can affect the impervious area of a site and result in a significant increase in flood risk caused by streams that cannot handle the extra storm water runoff.



- **Reasons Areas of Significant Land Use Change are considered AoMIs:**

- Development in areas mapped SFHA reduces flood storage areas, which can make flooding worse at the development site and downstream of it.
- Impervious surfaces speed up the water flowing in the streams, which can increase erosion and the danger that fast-flowing floodwaters pose to people and buildings.
- Rezoning flood-prone areas to high densities and/or higher intensity uses can result in more people and property at risk of flooding and flood damage.



Rooftops, pavements, patios, and driveways contribute to the impervious area in a watershed. This occurs in both urban areas and rural areas being developed.

- **Key Emergency Routes Overtopped During Frequent Flooding Events**

Roads are not always elevated above estimated flood levels, and present a significant flood risk to motorists during flooding events. When alternate routes are available, risks may be reduced, including risks to life and economic loss.



When large highways close due to flooding, traffic is detoured causing inconvenience and economic loss.

- **Reasons overtopped roads are considered AoMIs:**

- Such areas, when identified, can be accounted for and incorporated into Emergency Action Plans.
- Roads may be elevated or reinforced to reduce the risk of overtopping during flood events.

- **Drainage or Stormwater-Based Flood Hazard Areas, or Areas Not Identified as Floodprone on the FIRM But Known to Be Inundated**

Flood hazard areas exist everywhere. While FEMA maps many of these, others are not identified. Many of these areas may be located in communities with existing, older, and often

inadequate stormwater management systems or in very rural areas. Other similar areas could be a result of complex or unique drainage characteristics. Even though they are not mapped, awareness of these areas is important so adequate planning and mitigation actions can be performed.

- **Reasons drainage or stormwater-based flood hazard areas or unidentified floodprone locations are considered AoMIs:**

- So further investigation of such areas can occur and, based on scientific data, appropriate mitigation actions can result (i.e., land use and building standards).
- To create viable mitigation project applications in order to reduce flood losses.

- **Areas of Mitigation Success**

Flood mitigation projects are powerful tools to communicate the concepts of mitigation and result in more resilient communities. Multiple agencies have undertaken flood hazard mitigation actions for decades. Both structural measures—those that result in flood control structures—and non-structural measures have been implemented in thousands of communities. An extensive list of mitigation actions can be found in Section 4.

- **Reasons areas of mitigation success are considered AoMIs:**

- Mitigation successes identify those areas within the community that have experienced a reduction or elimination of flood risk.
- Such areas are essential in demonstrating successful loss reduction measures and in educating citizens and officials on available flood hazard mitigation techniques.
- Avoided losses can be calculated and shown.

- **Areas of Significant Riverine or Coastal Erosion**

Stream channels are shaped by a number of factors, including: degradation, aggradation, general scour, local scour, deposition, and lateral migration. Streams are constantly progressing towards a state of dynamic equilibrium involving water and sediment.

Coastal shorelines erode in response to wave and water level conditions and other factors. As sea levels rise, erosion is typically exasperated.

- **Reasons why areas of significant riverine or coastal erosion are considered AoMIs:**

- Riverine flood damage assessments generally consider inundation alone
- Bank erosion caused by within channel flows is not recognized as a significant hazard in Federal floodplain management regulations
- Riverine and coastal erosion can undercut structures and roads, causing instability and possible collapse.

- Landslides and mudslides are a result of erosion
- Approximately one-third of the nation's streams experience severe erosion problems
- **Other**

Other types of flood risk areas include drainage or stormwater-based flood hazard areas, or areas known to be inundated during storm events.

3 Flood Risk Analysis Results

The following pages provide summary flood risk results for the Flood Risk Project as follows:

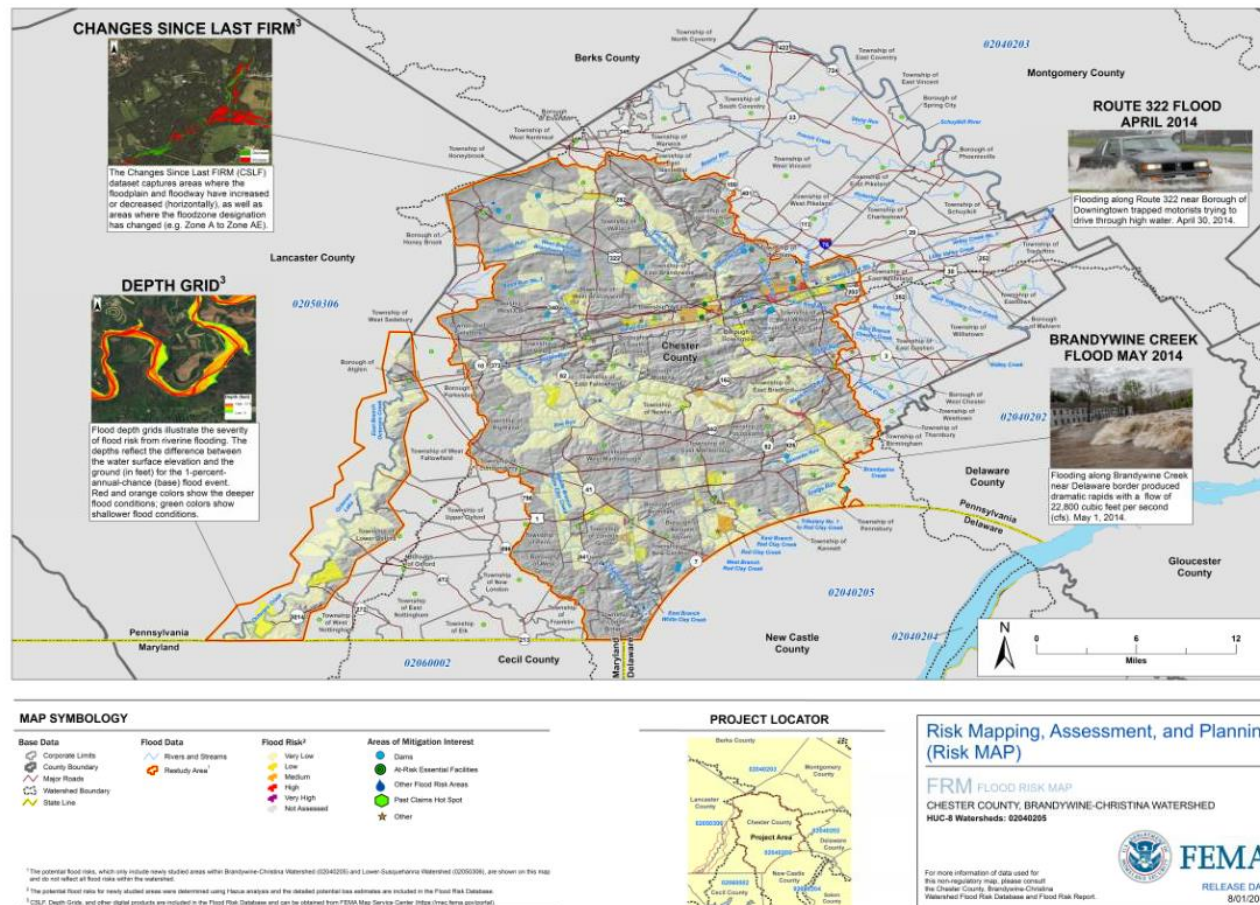
- **Flood Risk Map.** Within the Flood Risk Project the FRM displays base data reflecting community boundaries, major roads, and stream lines; potential flood risk assessment loss estimates; new Flood Risk Project areas; and graphics and text that promote access and usage of additional data available through the FRD, FIRM, and National Flood Hazard Layer and viewers (desktop or FEMA website, etc.). This information can be used to assist in Flood Risk Project-level planning as well as for developing mitigation actions within each jurisdiction located within the Flood Risk Project.

The FRM provides a graphical overview of the Flood Risk Project which highlights areas of risk that should be noted, based on potential losses, exposed facilities, etc., based on data found in the FRD. Refer to the data in the FRD to conduct additional analyses.
- **Flood Risk Project Summary.** Within the Flood Risk Project area, summary data for some or all of the following datasets are provided for the entire project area and also on a jurisdiction by jurisdiction basis:
 - **Changes Since Last FIRM.** This is a summary of where the floodplain and flood zones have increased or decreased (only analyzed for areas that were previously mapped using digital FIRMs).
 - **Flood Depth and Analysis Grids.** A general discussion of the data provided in the FRD, including analysis grids if furnished as part of the project.
 - **Flood Risk Assessments.** A loss estimation of potential flood damages using different flood scenarios.
 - **Areas of Mitigation Interest.** A description of areas that may benefit from mitigation or additional risk analysis.

3.1 Flood Risk Map

The Flood Risk Map for this Flood Risk Project is shown below. In addition to this reduced version of the map, a full size version is available within the FRD.

Flood Risk Map: Chester County, PA



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3.2 Chester County, Brandywine-Christina Watershed Flood Risk Project Area Summary

The Brandywine-Christina Watershed (HUC-8 02040205) is located in Delaware, Maryland, and Pennsylvania. The primary rivers flowing through the watershed include Brandywine Creek and the Christina River. The entire watershed discharges to the Delaware River through the Christina River in the City of Wilmington, Delaware.

Please note that the flood loss estimates presented in the Estimated Potential Losses for Flood Event Scenarios tables only include the newly studied Zone AE areas within the Brandywine-Christina Watershed. The additional potential losses expected from Zone A floodplains, were not included in the Estimated Potential Losses for Flood Event Scenarios tables for the overall watershed or individual communities. For Octoraro Creek, East Brach Octoraro Creek, and Pine Creek No. 2 located in Chester County, PA and the Lower-Susquehanna Watershed (02050306), newly modeled Zone A analysis was used for the potential flood loss estimates. See the complete Brandywine-Christina Watershed Flood Risk Report for discussion of flood loss estimates for other communities included in the Flood Risk Project Area.

3.2.1 Overview

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Atglen	420273	1,406	100	0.9	100	Y	10	Y
Borough Of Avondale	421473	1,262	100	0.5	100	Y	10	Y
Township Of Birmingham	421474	4,257	100	6.3	100	Y	10	Y
Township Of Caln	422247	13,819	100	8.9	100	Y	10	Y
Township Of Charlestown	421475	5,671	100	12.5	100	Y	10	Y
City Of Coatesville	420274	13,092	100	1.8	100	Y	10	Y
Borough Of Downingtown	420275	7,889	100	2.2	100	Y	10	Y
Township Of East Bradford	420276	9,946	100	15.2	100	Y	10	Y
Township Of East Brandywine	421476	6,744	100	11.3	100	Y	10	Y
Township Of East Caln	421477	4,838	100	3.7	100	Y	10	Y
Township Of East Coventry	421478	6,636	100	10.9	100	Y	10	Y

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Fallowfield	421479	7,449	100	15.6	100	Y	10	Y
Township Of East Goshen	420277	18,025	100	10.2	100	Y	10	Y
Township Of East Marlborough	421480	7,026	100	15.5	100	Y	10	Y
Township Of East Nantmeal	421481	1,803	100	16.4	100	Y	10	Y
Township Of East Nottingham	421482	8,649	100	20.1	100	Y	10	Y
Township Of East Pikeland	421483	7,079	100	8.9	100	Y	10	Y
Township Of East Vincent	420278	6,822	100	13.7	100	Y	10	Y
Township Of East Whiteland	420279	10,650	100	11	100	Y	10	Y
Township Of Easttown	422600	10,477	100	8.3	100	Y	10	Y
Township Of Elk	422286	1,643	100	9.7	100	Y	10	Y
Borough Of Elverson	422287	1,214	100	1	100	Y	10	Y
Township Of Franklin	422288	4,326	100	12.4	100	Y	10	Y
French Creek State Park	42ST04	0	0	1.87	100	N/A	10	Y
Township Of Highland	422289	1,273	100	17.2	100	N	10	N
Borough Of Honey Brook	422692	1,711	100	0.5	100	Y	10	N
Township Of Honey Brook	422290	7,660	100	25.2	100	Y	10	Y
Hopewell Furnace National Historical Site	42ST02	0	0	0.62	100	N/A	10	Y
Township Of Kennett	422586	7,566	100	15.5	100	Y	10	Y
Borough Of Kennett Square	420280	6,071	100	1.1	100	Y	10	Y
Township Of London Britain	422273	118	100	0.4	100	Y	10	Y
Township Of London Grove	422274	7,478	100	17.3	100	Y	10	Y

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Londonderry	421484	2,149	100	11.4	100	Y	10	Y
Township Of Lower Oxford	421485	5,209	100	18.5	100	Y	10	Y
Borough Of Malvern	420281	2,999	100	1.3	100	Y	10	Y
Marsh Creek State Park	42ST05	0	0	2.7	100	N/A	10	Y
Borough Of Modena	420282	535	100	0.4	100	Y	10	Y
Township Of New Garden	422275	11,984	100	16.3	100	Y	10	Y
Township Of New London	422276	5,631	100	11.7	100	Y	10	Y
Township Of Newlin	421486	1,285	100	12.1	100	Y	10	Y
Township Of North Coventry	420283	7,817	100	13.2	100	Y	10	Y
Borough Of Oxford	420284	5,068	100	2	100	Y	10	Y
Borough Of Parkesburg	422277	3,592	100	1.3	100	Y	10	Y
Township Of Penn	421487	5,363	100	9.6	100	Y	10	Y
Township Of Pennsbury	420285	3,604	100	10.1	100	Y	10	Y
Borough Of Phoenixville	420287	16,438	100	3.7	100	Y	10	Y
Township Of Pocopson	420286	4,582	100	8.3	100	Y	10	Y
Township Of Sadsbury	421488	3,571	100	6.2	100	Y	10	Y
Township Of Schuylkill	421489	8,389	100	8.4	100	Y	10	Y
Borough Of South Coatesville	420288	1,302	100	1.8	100	Y	10	Y
Township Of South Coventry	421490	2,604	100	7.6	100	Y	10	Y
Borough Of Spring City	420289	3,323	100	0.8	100	Y	10	Y
Springlawn Corridor	42ST07	0	0	0.8	100	N/A	10	Y
State Game Lands 43	42ST01	0	0	3.45	100	N/A	10	Y
Township Of Thornbury	420290	3,016	100	3.9	100	Y	10	Y
Township Of Tredyffrin	420291	29,225	100	18.7	100	Y	10	Y
Township Of Upper Oxford	422278	2,484	100	16.7	100	Y	10	Y

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Upper Uwchlan	421491	10,508	100	9.6	100	Y	10	Y
Township Of Uwchlan	421492	18,087	100	10.5	100	Y	10	Y
Township Of Valley	421206	6,244	100	5.5	100	Y	10	Y
Valley Forge National Historical Site	42FED	0	0	1.5	100	N/A	10	Y
Township Of Wallace	421493	3,429	100	11.6	100	Y	10	Y
Township Of Warwick	421494	5	100	0.1	100	Y	10	Y
Township Of West Bradford	421495	12,223	100	18.6	100	Y	10	Y
Township Of West Brandywine	421496	7,395	100	13.3	100	Y	10	Y
Township Of West Caln	421497	9,011	100	21.9	100	Y	10	Y
Borough Of West Chester	420292	18,460	100	1.8	100	Y	10	Y
Township Of West Fallowfield	422602	2,566	100	18.2	100	Y	10	Y
Township Of West Goshen	420293	21,864	100	12	100	Y	10	Y
Borough Of West Grove	422691	2,854	100	0.7	100	N	10	N
Township Of West Marlborough	422279	814	100	17.1	100	Y	10	Y
Township Of West Nantmeal	421498	2,161	100	13.3	100	Y	10	Y
Township Of West Nottingham	422280	2,719	100	13.9	100	Y	10	Y
Township Of West Pikeland	421151	4,024	100	10	100	Y	10	Y
Township Of West Sadsbury	422281	2,440	100	10.6	100	Y	10	Y
Township Of West Vincent	421499	4,567	100	17.8	100	Y	10	Y
Township Of West Whiteland	420295	18,275	100	12.9	100	Y	10	Y
Township Of Westtown	420294	10,778	100	8.6	100	Y	10	Y

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
White Clay Creek State Park	42ST06	0	0	2.16	100	N/A	10	Y
Township Of Willistown	422282	10,497	100	18.3	100	Y	10	Y

3.2.2 Flood Risk Datasets

As a part of this Flood Risk Project, flood risk datasets were created for inclusion in the Flood Risk Database. Those datasets are summarized for this Flood Risk Project below:

- **Changes Since Last FIRM**

The table below summarizes the increases, decreases, and net change of SFHAs for the watershed.

Area of Interest	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Area within SFHA*	54.3	1.5	-1.3	0.2
Area within Floodway*	4.0	1.0	-0.4	0.5

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Chester County, Brandywine-Christina Watershed, the figures in this table only represent information within the Chester County, Brandywine-Christina Watershed.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Chester County, Brandywine-Christina Watershed's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional

information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

- **Areas of Mitigation Interest**

- For more information about other areas of mitigation interest, review the additional data inside the FRD, as well as the community specific sections of this report. The table below provides an overview of identified AoMIs within the Project Area. This does not preclude the identification of other AoMIs by state and local sources.

Chester County, Brandywine-Christina Watershed: Areas of Mitigation Interest Summary

Type of Mitigation Interest	Number of Areas	Data Source
Dams	21	PA State Government
Other Flood Risk Areas	50	FEMA
At Risk Essential Facilities	4	FEMA
Past Claims Hot Spot	596	FEMA

Chester County, Brandywine-Christina Watershed: Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$159,359,200,000	68%	\$36,800,000	<1%	\$82,000,000	<1%	\$104,420,000	<1%	\$162,010,000	<1%	\$7,100,000	<1%
Commercial Building/Contents	\$46,940,100,000	20%	\$53,400,000	<1%	\$85,400,000	<1%	\$100,800,000	<1%	\$142,900,000	<1%	\$7,700,000	<1%
Other Building/Contents	\$27,471,700,000	12%	\$36,500,000	<1%	\$58,600,000	<1%	\$67,900,000	<1%	\$96,600,000	<1%	\$5,300,000	<1%
Total Building/Contents ²	\$233,771,000,000	100%	\$126,500,000	<1%	\$225,800,000	<1%	\$272,700,000	<1%	\$401,100,000	<1%	\$20,100,000	<1%
Business Disruption ³	N/A	N/A	\$3,400,000	N/A	\$5,400,000	N/A	\$6,300,000	N/A	\$8,800,000	N/A	\$500,000	N/A
TOTAL⁴	\$233,771,000,000	N/A	\$129,900,000	<1%	\$231,200,000	<1%	\$279,000,000	<1%	\$409,800,000	<1%	\$20,600,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

3.3 Communities

The following sections provide an overview of the community's floodplain management program as of the date of this publication, as well as summarize the flood risk analysis performed for each project area in Chester County, Brandywine-Christina Watershed.

3.3.1 Borough Of Atglen Summary (CID 420273)

The following pages include Flood Risk data for the Borough Of Atglen.

3.3.1.1. Overview

The information below provides an overview of the Borough Of Atglen as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Atglen	420273	1,406	100	0.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 2 policies totaling approximately \$420,000

Data provided below only includes areas within the Borough Of Atglen, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.1.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Atglen are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	0	0	0
Within Floodway	<0.1	0	0	0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Atglen, the figures in this table only represent information within the Borough Of Atglen.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - flood depth grids (1-percent-annual-chance flood events)
 - Water surface elevation grids (1-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of Atglen's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough of Atglen (420273): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$146,300,000	87%	N/A	N/A	N/A	N/A	\$10,000	<1%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$8,100,000	5%	N/A	N/A	N/A	N/A	\$10,000	<1%	N/A	N/A	N/A	N/A
Other Building/Contents	\$12,900,000	8%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$167,400,000	100%	N/A	N/A	N/A	N/A	\$10,000	<1%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$167,400,000	N/A	N/A	N/A	N/A	N/A	\$10,000	<1%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Atglen (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.2 Borough Of Avondale Summary (CID 421473)

The following pages include Flood Risk data for the Borough Of Avondale.

3.3.2.1. Overview

The information below provides an overview of the Borough Of Avondale as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Avondale	421473	1,262	100	0.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 11 policies totaling approximately \$2,800,600

Data provided below only includes areas within the Borough Of Avondale, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.2.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Avondale are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.2	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Avondale, the figures in this table only represent information within the Borough Of Avondale.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of Avondale's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough of Avondale (421473): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$106,600,000	48%	\$2,300,000	2%	\$9,100,000	8%	\$10,700,000	10%	\$14,500,000	14%	\$700,000	1%
Commercial Building/Contents	\$25,300,000	11%	\$300,000	1%	\$800,000	3%	\$1,000,000	4%	\$1,600,000	6%	\$70,000	<1%
Other Building/Contents	\$91,100,000	41%	\$8,500,000	9%	\$12,600,000	14%	\$14,200,000	16%	\$18,100,000	20%	\$1,100,000	1%
Total Building/Contents ²	\$222,900,000	100%	\$11,100,000	5%	\$22,400,000	10%	\$25,900,000	12%	\$34,100,000	15%	\$1,900,000	1%
Business Disruption ³	N/A	N/A	\$800,000	N/A	\$1,100,000	N/A	\$1,300,000	N/A	\$1,600,000	N/A	\$100,000	N/A
TOTAL⁴	\$222,900,000	N/A	\$11,900,000	5%	\$23,500,000	11%	\$27,200,000	12%	\$35,700,000	16%	\$2,000,000	1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Avondale (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	19	FEMA

3.3.3 Township Of Birmingham Summary (CID 421474)

The following pages include Flood Risk data for the Township Of Birmingham.

3.3.3.1 Overview

The information below provides an overview of the Township Of Birmingham as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Birmingham	421474	4,257	100	6.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 14 policies totaling approximately \$3,609,300

Data provided below only includes areas within the Township Of Birmingham, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.3.2 Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Birmingham are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.0	<0.1	<-0.1	<0.1
Within Floodway	0.5	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Birmingham, the figures in this table only represent information within the Township Of Birmingham.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Birmingham's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township of Birmingham (421474): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$829,000,000	84%	\$500,000	<1%	\$1,500,000	<1%	\$2,100,000	<1%	\$3,100,000	<1%	\$100,000	<1%
Commercial Building/Contents	\$128,800,000	13%	\$700,000	1%	\$1,100,000	1%	\$1,300,000	1%	\$1,600,000	1%	\$100,000	<1%
Other Building/Contents	\$25,400,000	3%	\$30,000	<1%	\$100,000	<1%	\$100,000	<1%	\$100,000	<1%	\$10,000	<1%
Total Building/Contents ²	\$983,200,000	100%	\$1,300,000	<1%	\$2,700,000	<1%	\$3,400,000	<1%	\$4,800,000	<1%	\$200,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$100,000	N/A	\$100,000	N/A	\$0	N/A
TOTAL⁴	\$983,200,000	N/A	\$1,300,000	<1%	\$2,700,000	<1%	\$3,500,000	<1%	\$4,900,000	<1%	\$200,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Birmingham (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.4 Township Of Caln Summary (CID 422247)

The following pages include Flood Risk data for the Township Of Caln.

3.3.4.1. Overview

The information below provides an overview of the Township Of Caln as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Caln	422247	13,819	100	8.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 70 policies totaling approximately \$16,187,800

Data provided below only includes areas within the Township Of Caln, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.4.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Caln are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.7	<0.1	<-0.1	<0.1
Within Floodway	0.3	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Caln, the figures in this table only represent information within the Township Of Caln.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Caln's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Caln (422247): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,219,600,000	74%	\$3,600,000	<1%	\$6,600,000	<1%	\$8,300,000	<1%	\$15,800,000	1%	\$6,600,000	<1%
Commercial Building/Contents	\$411,000,000	14%	\$9,700,000	2%	\$14,100,000	3%	\$15,700,000	4%	\$19,900,000	5%	\$14,100,000	<1%
Other Building/Contents	\$350,900,000	12%	\$2,300,000	1%	\$3,400,000	1%	\$3,800,000	1%	\$4,700,000	1%	\$3,400,000	<1%
Total Building/Contents ²	\$2,981,400,000	100%	\$15,600,000	1%	\$24,100,000	1%	\$27,800,000	1%	\$40,400,000	1%	\$2,200,000	<1%
Business Disruption ³	N/A	N/A	\$400,000	N/A	\$600,000	N/A	\$600,000	N/A	\$800,000	N/A	\$100,000	N/A
TOTAL⁴	\$2,981,400,000	N/A	\$16,000,000	1%	\$24,700,000	1%	\$28,400,000	1%	\$41,200,000	1%	\$2,300,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Caln (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	4	PA State Government
At Risk Essential Facilities	1	PA State Government
Past Claims Hot Spot	5	FEMA

3.3.5 Township Of Charlestown Summary (CID 421475)

The following pages include Flood Risk data for the Township Of Charlestown.

3.3.5.1 Overview

The information below provides an overview of the Township Of Charlestown as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Charlestown	421475	5,671	100	12.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 12 policies totaling approximately \$3,262,000

Data provided below only includes areas within the Township Of Charlestown, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.5.2 Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Charlestown are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.5	0.0	0.0	0.0
Within Floodway	0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Charlestown, the figures in this table only represent information within the Township Of Charlestown.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Charlestown (421475): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,097,100,000	79%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$232,100,000	16%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$68,000,000	5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,397,200,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,397,200,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Charlestown (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.6 City Of Coatesville Summary (CID 420274)

The following pages include Flood Risk data for the City Of Coatesville.

3.3.6.1 Overview

The information below provides an overview of the City Of Coatesville as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
City Of Coatesville	420274	13,092	100	1.8	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 14 policies totaling approximately \$2,230,800

Data provided below only includes areas within the City Of Coatesville, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.6.2 Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for City Of Coatesville are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.2	<0.1	<-0.1	<0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of City Of Coatesville, the figures in this table only represent information within the City Of Coatesville.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The City Of Coatesville's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

City of Coatsville (420274): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,253,800,000	74%	\$100,000	<1%	\$400,000	<1%	\$600,000	<1%	\$1,800,000	<1%	\$40,000	<1%
Commercial Building/Contents	\$255,700,000	16%	\$100,000	<1%	\$400,000	<1%	\$600,000	<1%	\$1,300,000	1%	\$30,000	<1%
Other Building/Contents	\$176,500,000	10%	\$300,000	<1%	\$1,200,000	1%	\$1,700,000	1%	\$3,900,000	2%	\$100,000	<1%
Total Building/Contents ²	\$1,686,000,000	100%	\$500,000	<1%	\$2,000,000	<1%	\$2,800,000	<1%	\$7,000,000	<1%	\$200,000	<1%
Business Disruption ³	N/A	N/A	\$10,000	N/A	\$0	N/A	\$100,000	N/A	\$100,000	N/A	\$0	N/A
TOTAL⁴	\$1,686,000,000	N/A	\$500,000	<1%	\$2,000,000	<1%	\$2,900,000	<1%	\$7,100,000	<1%	\$200,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for City Of Coatesville (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	9	FEMA

3.3.7 Borough Of Downingtown Summary (CID 420275)

The following pages include Flood Risk data for the Borough Of Downingtown.

3.3.7.1. Overview

The information below provides an overview of the Borough Of Downingtown as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Downingtown	420275	7,889	100	2.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 220 policies totaling approximately \$44,466,800

Data provided below only includes areas within the Borough Of Downingtown, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.7.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Downingtown are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.4	<0.1	<-0.1	<0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Downingtown, the figures in this table only represent information within the Borough Of Downingtown.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of Downingtown's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough of Downingtown (420274): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$878,100,000	52%	\$6,300,000	1%	\$9,300,000	1%	\$11,000,000	1%	\$17,900,000	2%	\$900,000	<1%
Commercial Building/Contents	\$442,400,000	26%	\$8,400,000	2%	\$13,300,000	3%	\$15,100,000	3%	\$21,500,000	5%	\$1,200,000	<1%
Other Building/Contents	\$380,700,000	22%	\$7,500,000	2%	\$10,700,000	3%	\$11,600,000	3%	\$14,700,000	4%	\$1,000,000	<1%
Total Building/Contents ²	\$1,701,200,000	100%	\$22,200,000	1%	\$33,300,000	2%	\$37,700,000	2%	\$54,100,000	3%	\$3,100,000	<1%
Business Disruption ³	N/A	N/A	\$400,000	N/A	\$600,000	N/A	\$600,000	N/A	\$900,000	N/A	\$0	N/A
TOTAL⁴	\$1,701,200,000	N/A	\$22,600,000	1%	\$33,900,000	2%	\$38,300,000	2%	\$55,000,000	3%	\$3,100,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Downingtown (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	3	FEMA
At Risk Essential Facilities	2	FEMA
Past Claims Hot Spot	157	FEMA

3.3.8 Township Of East Bradford Summary (CID 420276)

The following pages include Flood Risk data for the Township Of East Bradford.

3.3.8.1 Overview

The information below provides an overview of the Township Of East Bradford as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Bradford	420276	9,946	100	15.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 25 policies totaling approximately \$5,180,000

Data provided below only includes areas within the Township Of East Bradford, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.8.2 Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Bradford are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	2.1	<0.1	-0.1	<-0.1
Within Floodway	0.5	<0.1	-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Bradford, the figures in this table only represent information within the Township Of East Bradford.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of East Bradford's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of East Bradford (420276): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,758,300,000	85%	\$2,300,000	<1%	\$5,300,000	<1%	\$6,300,000	<1%	\$8,900,000	1%	\$400,000	<1%
Commercial Building/Contents	\$202,700,000	10%	\$600,000	<1%	\$1,100,000	1%	\$1,300,000	1%	\$1,600,000	1%	\$90,000	<1%
Other Building/Contents	\$98,800,000	5%	\$1,500,000	2%	\$2,500,000	3%	\$2,900,000	3%	\$3,800,000	4%	\$200,000	<1%
Total Building/Contents ²	\$2,059,800,000	100%	\$4,500,000	<1%	\$8,900,000	<1%	\$10,500,000	1%	\$14,300,000	1%	\$800,000	<1%
Business Disruption ³	N/A	N/A	\$100,000	N/A	\$100,000	N/A	\$200,000	N/A	\$200,000	N/A	\$0	N/A
TOTAL⁴	\$2,059,800,000	N/A	\$4,600,000	<1%	\$9,000,000	<1%	\$10,700,000	1%	\$14,500,000	1%	\$800,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Bradford (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	4	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	94	FEMA

3.3.9 Township Of East Brandywine Summary (CID 421476)

The following pages include Flood Risk data for the Township Of East Brandywine.

3.3.9.1 Overview

The information below provides an overview of the Township Of East Brandywine as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Brandywine	421476	6,744	100	11.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 18 policies totaling approximately \$3,921,400

Data provided below only includes areas within the Township Of East Brandywine, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.9.2 Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Brandywine are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.6	<0.1	<-0.1	<0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Brandywine, the figures in this table only represent information within the Township Of East Brandywine.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of East Brandywine's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of East Brandywine (421476): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,011,600,000	82%	\$800,000	<1%	\$1,600,000	<1%	\$2,000,000	<1%	\$3,300,000	<1%	\$140,000	<1%
Commercial Building/Contents	\$153,900,000	13%	\$100,000	<1%	\$400,000	<1%	\$500,000	<1%	\$800,000	1%	\$30,000	<1%
Other Building/Contents	\$61,700,000	5%	\$100,000	<1%	\$400,000	1%	\$500,000	1%	\$800,000	1%	\$30,000	<1%
Total Building/Contents ²	\$1,227,200,000	100%	\$1,100,000	<1%	\$2,400,000	<1%	\$3,000,000	<1%	\$4,900,000	<1%	\$200,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$100,000	N/A	\$0	N/A
TOTAL⁴	\$1,227,200,000	N/A	\$1,100,000	<1%	\$2,400,000	<1%	\$3,000,000	<1%	\$5,000,000	<1%	\$200,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Brandywine (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	1	PA State Government
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.10 -Township Of East Caln Summary (CID 421477)

The following pages include Flood Risk data for the Township Of East Caln.

3.3.10.1. Overview

The information below provides an overview of the Township Of East Caln as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Caln	421477	4,838	100	3.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 10 policies totaling approximately \$3,496,900

Data provided below only includes areas within the Township Of East Caln, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.10.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Caln are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.2	<0.1	<-0.1	<-0.1
Within Floodway	<0.1	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Caln, the figures in this table only represent information within the Township Of East Caln.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of East Caln's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of East Caln (421477): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$706,000,000	61%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Commercial Building/Contents	\$341,900,000	30%	\$200,000	<1%	\$400,000	<1%	\$400,000	<1%	\$600,000	<1%	\$30,000	<1%
Other Building/Contents	\$102,700,000	9%	\$300,000	<1%	\$600,000	1%	\$700,000	1%	\$1,000,000	1%	\$50,000	<1%
Total Building/Contents ²	\$1,150,600,000	100%	\$500,000	<1%	\$900,000	<1%	\$1,100,000	<1%	\$1,600,000	<1%	\$80,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$100,000	N/A	\$100,000	N/A	\$100,000	N/A	\$10,000	N/A
TOTAL⁴	\$1,150,600,000	N/A	\$500,000	<1%	\$1,000,000	<1%	\$1,200,000	<1%	\$1,700,000	<1%	\$90,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Caln (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	3	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	6	FEMA

3.3.11 Township Of East Coventry Summary (CID 421478)

The following pages include Flood Risk data for the Township Of East Coventry.

3.3.11.1. Overview

The information below provides an overview of the Township Of East Coventry as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Coventry	421478	6,636	100	10.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 24 policies totaling approximately \$5,484,900

Data provided below only includes areas within the Township Of East Coventry, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.11.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Coventry are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.5	0.0	0.0	0.0
Within Floodway	0.6	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Coventry, the figures in this table only represent information within the Township Of East Coventry.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of East Coventry (421478): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,140,400,000	77%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$174,200,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$154,800,000	11%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,469,500,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,469,500,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Coventry (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	13	FEMA

3.3.12 Township Of East Fallowfield Summary (CID 421479)

The following pages include Flood Risk data for the Township Of East Fallowfield.

3.3.12.1. Overview

The information below provides an overview of the Township Of East Fallowfield as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Fallowfield	421479	7,449	100	15.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 12 policies totaling approximately \$3,470,000

Data provided below only includes areas within the Township Of East Fallowfield, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.12.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Fallowfield are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	<0.1	<-0.1	<0.1
Within Floodway	0.2	0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Fallowfield, the figures in this table only represent information within the Township Of East Fallowfield.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of East Fallowfield's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of East Fallowfield (421479): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,089,800,000	90%	\$100,000	<1%	\$500,000	<1%	\$800,000	<1%	\$1,400,000	<1%	\$40,000	<1%
Commercial Building/Contents	\$70,700,000	6%	\$80,000	<1%	\$100,000	<1%	\$200,000	<1%	\$200,000	<1%	\$10,000	<1%
Other Building/Contents	\$52,600,000	4%	\$70,000	<1%	\$100,000	<1%	\$200,000	<1%	\$200,000	<1%	\$10,000	<1%
Total Building/Contents ²	\$1,213,000,000	100%	\$300,000	<1%	\$800,000	<1%	\$1,100,000	<1%	\$1,900,000	<1%	\$70,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$10,000	N/A
TOTAL⁴	\$1,213,000,000	N/A	\$300,000	<1%	\$800,000	<1%	\$1,100,000	<1%	\$1,900,000	<1%	\$70,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Fallowfield (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	1	PA State Government
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.13 Township Of East Goshen Summary (CID 420277)

The following pages include Flood Risk data for the Township Of East Goshen.

3.3.13.1. Overview

The information below provides an overview of the Township Of East Goshen as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Goshen	420277	18,025	100	10.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 90 policies totaling approximately \$14,743,900

Data provided below only includes areas within the Township Of East Goshen, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.13.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Goshen are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.1	0.0	0.0	0.0
Within Floodway	0.3	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Goshen, the figures in this table only represent information within the Township Of East Goshen.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of East Goshen (420277): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$3,106,800,000	59%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$537,200,000	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$1,643,600,000	31%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$5,287,700,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$5,287,700,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Goshen (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.14 Township Of East Marlborough Summary (CID 421480)

The following pages include Flood Risk data for the Township Of East Marlborough.

3.3.14.1. Overview

The information below provides an overview of the Township Of East Marlborough as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Marlborough	421480	7,026	100	15.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 19 policies totaling approximately \$5,457,200

Data provided below only includes areas within the Township Of East Marlborough, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.14.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Marlborough are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	0.1	<-0.1	0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Marlborough, the figures in this table only represent information within the Township Of East Marlborough.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of East Marlborough's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of East Malborough (421480): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,319,700,000	76%	\$200,000	<1%	\$600,000	<1%	\$800,000	<1%	\$2,300,000	<1%	\$50,000	<1%
Commercial Building/Contents	\$280,100,000	16%	\$300,000	<1%	\$700,000	<1%	\$900,000	<1%	\$2,000,000	1%	\$60,000	<1%
Other Building/Contents	\$141,300,000	8%	\$200,000	<1%	\$600,000	<1%	\$800,000	1%	\$1,300,000	1%	\$50,000	<1%
Total Building/Contents ²	\$1,741,100,000	100%	\$700,000	<1%	\$1,800,000	<1%	\$2,500,000	<1%	\$5,500,000	<1%	\$200,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$100,000	N/A	\$100,000	N/A	\$100,000	N/A	\$0	N/A
TOTAL⁴	\$1,741,100,000	N/A	\$700,000	<1%	\$1,900,000	<1%	\$2,600,000	<1%	\$5,600,000	<1%	\$200,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Marlborough (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.15 Township Of East Nantmeal Summary (CID 421481)

The following pages include Flood Risk data for the Township Of East Nantmeal.

3.3.15.1. Overview

The information below provides an overview of the Township Of East Nantmeal as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Nantmeal	421481	1,803	100	16.4	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 4 policies totaling approximately \$612,000

Data provided below only includes areas within the Township Of East Nantmeal, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.15.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Nantmeal are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.3	0.0	0.0	0.0
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Nantmeal, the figures in this table only represent information within the Township Of East Nantmeal.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of East Nantmeal (421481): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$329,200,000	76%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$50,300,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$51,600,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$431,100,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$431,100,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Nantmeal (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.16 Township Of East Nottingham Summary (CID 421482)

The following pages include Flood Risk data for the Township Of East Nottingham.

3.3.16.1. Overview

The information below provides an overview of the Township Of East Nottingham as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Nottingham	421482	8,649	100	20.1	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 8 policies totaling approximately \$1,800,000

Data provided below only includes areas within the Township Of East Nottingham, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.16.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Nottingham are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.0	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Nottingham, the figures in this table only represent information within the Township Of East Nottingham.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (1-percent-annual-chance flood events)
 - Water surface elevation grids (1-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of East Nottingham's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

East Nottingham (421482): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$998,700,000	80%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$132,500,000	11%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Other Building/Contents	\$113,900,000	9%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,245,100,000	100%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,245,100,000	N/A	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Nottingham (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.17 Township Of East Pikeland Summary (CID 421483)

The following pages include Flood Risk data for the Township Of East Pikeland.

3.3.17.1. Overview

The information below provides an overview of the Township Of East Pikeland as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Pikeland	421483	7,079	100	8.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 20 policies totaling approximately \$6,251,700

Data provided below only includes areas within the Township Of East Pikeland, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.17.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Pikeland are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.8	0.0	0.0	0.0
Within Floodway	0.4	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Pikeland, the figures in this table only represent information within the Township Of East Pikeland.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of East Pikeland (421483): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,304,400,000	74%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$301,700,000	17%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$162,400,000	9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,768,500,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,768,500,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Pikeland (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	4	FEMA

3.3.18 Township Of East Vincent Summary (CID 420278)

The following pages include Flood Risk data for the Township Of East Vincent.

3.3.18.1. Overview

The information below provides an overview of the Township Of East Vincent as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Vincent	420278	6,822	100	13.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 27 policies totaling approximately \$6,960,200

Data provided below only includes areas within the Township Of East Vincent, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.18.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Vincent are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.5	0.0	0.0	0.0
Within Floodway	0.4	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Vincent, the figures in this table only represent information within the Township Of East Vincent.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of East Vincent (420278): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$994,100,000	67%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$179,500,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$318,500,000	21%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,492,000,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,492,000,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Vincent (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	9	FEMA

3.3.19 Township Of East Whiteland Summary (CID 420279)

The following pages include Flood Risk data for the Township Of East Whiteland.

3.3.19.1. Overview

The information below provides an overview of the Township Of East Whiteland as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of East Whiteland	420279	10,650	100	11.0	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 19 policies totaling approximately \$5,585,500

Data provided below only includes areas within the Township Of East Whiteland, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.19.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of East Whiteland are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.5	<0.1	0.0	<0.1
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of East Whiteland, the figures in this table only represent information within the Township Of East Whiteland.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.
- **Hazus Estimated Loss Information**
 - The Township Of East Whiteland's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of East Whiteland (420479): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,726,500,000	43%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Commercial Building/Contents	\$1,394,000,000	35%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$897,700,000	22%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$4,018,200,000	100%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$4,018,200,000	N/A	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of East Whiteland (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.20 Township Of Easttown Summary (CID 422600)

The following pages include Flood Risk data for the Township Of Easttown.

3.3.20.1. Overview

The information below provides an overview of the Township Of Easttown as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Easttown	422600	10,477	100	8.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 53 policies totaling approximately \$15,980,400

Data provided below only includes areas within the Township Of Easttown, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.20.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Easttown are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.4	0.0	0.0	0.0
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Easttown, the figures in this table only represent information within the Township Of Easttown.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Easttown (422600): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,896,400,000	75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$457,300,000	18%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$179,200,000	7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$2,533,000,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$2,533,000,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Easttown (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.21 Township Of Elk Summary (CID 422286)

The following pages include Flood Risk data for the Township Of Elk.

3.3.21.1. Overview

The information below provides an overview of the Township Of Elk as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
c	422286	1,643	100	9.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 1 policies totaling approximately \$350,000

Data provided below only includes areas within the Township Of Elk, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.21.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Elk are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.6	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Elk, the figures in this table only represent information within the Township Of Elk.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Elk (422286): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$237,500,000	88%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$17,500,000	6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$16,300,000	6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$271,300,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$271,300,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Elk (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.22 Borough Of Elverson Summary (CID 422287)

The following pages include Flood Risk data for the Borough Of Elverson.

3.3.22.1. Overview

The information below provides an overview of the Borough Of Elverson as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Elverson	422287	1,214	100	1.0	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 1 policies totaling approximately \$350,000

Data provided below only includes areas within the Borough Of Elverson, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.22.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Elverson are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	<0.1	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Elverson, the figures in this table only represent information within the Borough Of Elverson.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Borough Of Elverson (422287): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$177,400,000	66%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$20,900,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$68,000,000	26%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$266,300,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$266,300,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Elverson (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.23 Township Of Franklin Summary (CID 422288)

The following pages include Flood Risk data for the Township Of Franklin.

3.3.23.1. Overview

The information below provides an overview of the Township Of Franklin as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Franklin	422288	4,326	100	12.4	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 11 policies totaling approximately \$3,041,400

Data provided below only includes areas within the Township Of Franklin, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.23.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Franklin are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Franklin, the figures in this table only represent information within the Township Of Franklin.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Franklin's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Frankline(422288): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$712,100,000	89%	\$200,000	<1%	\$400,000	<1%	\$500,000	<1%	\$600,000	<1%	\$30,000	<1%
Commercial Building/Contents	\$59,300,000	7%	\$30,000	<1%	\$40,000	<1%	\$40,000	<1%	\$50,000	<1%	\$0	0%
Other Building/Contents	\$32,300,000	4%	\$30,000	<1%	\$40,000	<1%	\$50,000	<1%	\$60,000	<1%	\$0	0%
Total Building/Contents ²	\$803,700,000	100%	\$300,000	<1%	\$500,000	<1%	\$500,000	<1%	\$700,000	<1%	\$40,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$803,700,000	N/A	\$300,000	<1%	\$500,000	<1%	\$500,000	<1%	\$700,000	<1%	\$40,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Franklin (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.24 French Creek State Park Summary (CID 42ST04)

The following pages include Flood Risk data for the French Creek State Park.

3.3.24.1. Overview

The information below provides an overview of the French Creek State Park as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
French Creek State Park	42ST04	0	0	1.87	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the French Creek State Park, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.24.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for French Creek State Park are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	<0.1	0	0	0
Within Floodway	0	0	0	0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of French Creek State Park, the figures in this table only represent information within the French Creek State Park.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The French Creek State Park 's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

French Creek State (42ST04): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$20,200,000	91%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$800,000	4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$1,200,000	5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$22,200,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$22,200,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.25 Township Of Highland Summary (CID 422289)

The following pages include Flood Risk data for the Township Of Highland.

3.3.25.1. Overview

The information below provides an overview of the Township Of Highland as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Highland	422289	1,273	100	17.2	100	N	10	N

- Past Federal Disaster Declarations for flooding = 5
- This community is not participating in the NFIP

Data provided below only includes areas within the Township Of Highland, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.25.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Highland are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.5	<0.1	-0.1	<-0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Highland, the figures in this table only represent information within the Township Of Highland.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)

- Percent annual chance of flooding grids
- Percent chance of flooding over a 30-year period grids
- Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.
- **Hazus Estimated Loss Information**
 - The Township Of Highland's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Highland (422289): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$144,000,000	78%	\$10,000	<1%	\$60,000	<1%	\$90,000	<1%	\$200,000	<1%	\$10,000	<1%
Commercial Building/Contents	\$18,700,000	10%	\$10,000	<1%	\$20,000	<1%	\$30,000	<1%	\$50,000	<1%	\$0	0%
Other Building/Contents	\$21,700,000	12%	\$10,000	<1%	\$20,000	<1%	\$20,000	<1%	\$30,000	<1%	\$0	0%
Total Building/Contents ²	\$184,400,000	100%	\$30,000	<1%	\$100,000	<1%	\$100,000	<1%	\$300,000	<1%	\$10,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$184,400,000	N/A	\$30,000	<1%	\$100,000	<1%	\$100,000	<1%	\$300,000	<1%	\$10,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Highland (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.26 Borough Of Honey Brook Summary (CID 422692)

The following pages include Flood Risk data for the Borough Of Honey Brook.

3.3.26.1. *Overview*

The information below provides an overview of the Borough Of Honey Brook as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Honey Brook	422692	1,711	100	0.5	100	N	10	N

- Past Federal Disaster Declarations for flooding = 5
- This community is not participating in the NFIP

Data provided below only includes areas within the Borough Of Honey Brook, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.26.2. *Community Analyses and Results*

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM was not performed within the boundaries of the Borough Of Honey Brook because the community falls outside the area of updated engineering analysis.
- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$256,700,000	82%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$31,000,000	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$25,000,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$312,600,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$312,600,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Honey Brook (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.27 Township Of Honey Brook Summary (CID 422290)

The following pages include Flood Risk data for the Township Of Honey Brook.

3.3.27.1. Overview

The information below provides an overview of the Township Of Honey Brook as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Honey Brook	422290	7,660	100	25.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 2 policies totaling approximately \$378,000

Data provided below only includes areas within the Township Of Honey Brook, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.27.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Honey Brook are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	2.3	0.1	<-0.1	0.1
Within Floodway	0.2	0.1	<-0.1	0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Honey Brook, the figures in this table only represent information within the Township Of Honey Brook.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 4-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Honey Brook's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Honey Brook (422290): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$957,800,000	64%	\$1,400,000	<1%	\$1,800,000	<1%	\$2,300,000	<1%	\$3,100,000	<1%	\$1,800,000	<1%
Commercial Building/Contents	\$218,900,000	14%	\$1,000,000	<1%	\$1,200,000	1%	\$1,500,000	1%	\$1,800,000	1%	\$1,200,000	1%
Other Building/Contents	\$333,200,000	22%	\$50,000	<1%	\$60,000	<1%	\$70,000	<1%	\$90,000	<1%	\$60,000	N/A
Total Building/Contents ²	\$1,509,900,000	100%	\$2,400,000	<1%	\$3,100,000	<1%	\$3,900,000	<1%	\$5,000,000	<1%	\$3,100,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$100,000	N/A	\$30,000	N/A
TOTAL⁴	\$1,509,900,000	N/A	\$2,400,000	<1%	\$3,100,000	<1%	\$3,900,000	<1%	\$5,100,000	<1%	\$3,100,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Honey Brook (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.28 Hopewell Furnace National Historical Site (CID 42ST02)

The following pages include Flood Risk data for the Hopewell Furnace National Historical Site.

3.3.28.1. Overview

The information below provides an overview of the Hopewell Furnace National Historical Site as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Hopewell Furnace National Historical Site	42ST02	0	0	0.62	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the Hopewell Furnace National Historical Site, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.28.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Hopewell Furnace National Historical Site are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.0	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Hopewell Furnace National Historical Site, the figures in this table only represent information within the Hopewell Furnace National Historical Site.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Hopewell Furance National Historical Site 's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Hopewell Furnace National Historical Site (42ST02): Estimated Potential Losses for Flood Event Scenarios

Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$5,700,000	80%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$200,000	3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$1,200,000	17%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$7,000,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$7,000,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.29 Township Of Kennett Summary (CID 422586)

The following pages include Flood Risk data for the Township Of Kennett.

3.3.29.1. Overview

The information below provides an overview of the Township Of Kennett as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Kennett	422586	7,566	100	15.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 33 policies totaling approximately \$8,896,000

Data provided below only includes areas within the Township Of Kennett, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.29.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Kennett are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.2	0.2	<-0.1	0.2
Within Floodway	0.3	0.1	<-0.1	0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Kennett, the figures in this table only represent information within the Township Of Kennett.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Kennett's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Kennett (422586): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,321,100,000	62%	\$1,400,000	<1%	\$4,800,000	<1%	\$6,800,000	1%	\$11,900,000	1%	\$400,000	<1%
Commercial Building/Contents	\$437,100,000	21%	\$1,500,000	<1%	\$3,800,000	1%	\$5,000,000	1%	\$8,400,000	2%	\$300,000	<1%
Other Building/Contents	\$357,600,000	17%	\$900,000	<1%	\$2,400,000	1%	\$3,000,000	1%	\$5,300,000	2%	\$200,000	<1%
Total Building/Contents ²	\$2,115,900,000	100%	\$3,900,000	<1%	\$11,000,000	1%	\$14,800,000	1%	\$25,700,000	1%	\$900,000	<1%
Business Disruption ³	N/A	N/A	\$100,000	N/A	\$200,000	N/A	\$200,000	N/A	\$500,000	N/A	\$100,000	N/A
TOTAL⁴	\$2,115,900,000	N/A	\$4,000,000	<1%	\$11,200,000	1%	\$15,000,000	1%	\$26,200,000	1%	\$1,000,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Kennett (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	10	FEMA

3.3.30 Borough Of Kennett Square Summary (CID 420280)

The following pages include Flood Risk data for the Borough Of Kennett Square.

3.3.30.1. Overview

The information below provides an overview of the Borough Of Kennett Square as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Kennett Square	420280	6,071	100	1.1	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 10 policies totaling approximately \$2,515,100

Data provided below only includes areas within the Borough Of Kennett Square, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.30.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Kennett Square are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Kennett Square, the figures in this table only represent information within the Borough Of Kennett Square.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of Kennett Square's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough Of Kennett Square (420280): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$658,600,000	57%	\$700,000	<1%	\$3,000,000	<1%	\$3,900,000	1%	\$7,600,000	1%	\$300,000	<1%
Commercial Building/Contents	\$351,800,000	31%	\$300,000	<1%	\$800,000	<1%	\$1,100,000	<1%	\$2,200,000	1%	\$70,000	<1%
Other Building/Contents	\$138,500,000	12%	\$1,100,000	1%	\$2,100,000	2%	\$2,600,000	2%	\$3,900,000	2%	\$200,000	<1%
Total Building/Contents ²	\$1,148,800,000	100%	\$2,100,000	<1%	\$6,000,000	1%	\$7,600,000	1%	\$13,800,000	1%	\$500,000	<1%
Business Disruption ³	N/A	N/A	\$100,000	N/A	\$200,000	N/A	\$200,000	N/A	\$300,000	N/A	\$0	N/A
TOTAL⁴	\$1,148,800,000	N/A	\$2,200,000	<1%	\$6,200,000	1%	\$7,900,000	1%	\$14,100,000	1%	\$500,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Kennett Square (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	3	PA State Government
At Risk Essential Facilities	-	-
Past Claims Hot Spot	4	FEMA

3.3.31 Township Of London Britain Summary (CID 422273)

The following pages include Flood Risk data for the Township Of London Britain.

3.3.31.1. Overview

The information below provides an overview of the Township Of London Britain as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of London Britain	422273	118	100	0.4	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 7 policies totaling approximately \$1,913,700

Data provided below only includes areas within the Township Of London Britain, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.31.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of London Britain are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.3	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of London Britain, the figures in this table only represent information within the Township Of London Britain.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of London Britain (4222273): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$643,100,000	89%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$45,600,000	6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$34,800,000	5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$723,500,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$723,500,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of London Britain (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.32 Township Of London Grove Summary (CID 422274)

The following pages include Flood Risk data for the Township Of London Grove.

3.3.32.1. Overview

The information below provides an overview of the Township Of London Grove as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of London Grove	422274	7,478	100	17.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 18 policies totaling approximately \$4,499,600

Data provided below only includes areas within the Township Of London Grove, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.32.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of London Grove are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.2	0.1	<-0.1	<0.1
Within Floodway	0.4	0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of London Grove, the figures in this table only represent information within the Township Of London Grove.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of London Grove's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of London Grove (422274): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$955,300,000	73%	\$3,100,000	<1%	\$6,400,000	1%	\$8,200,000	1%	\$13,400,000	1%	\$600,000	<1%
Commercial Building/Contents	\$150,000,000	11%	\$1,600,000	1%	\$2,700,000	2%	\$3,200,000	2%	\$4,400,000	3%	\$200,000	<1%
Other Building/Contents	\$208,800,000	16%	\$1,000,000	1%	\$1,800,000	1%	\$2,100,000	1%	\$3,000,000	1%	\$200,000	<1%
Total Building/Contents ²	\$1,314,100,000	100%	\$5,700,000	<1%	\$10,900,000	1%	\$13,400,000	1%	\$20,800,000	2%	\$1,000,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$200,000	N/A	\$200,000	N/A	\$200,000	N/A	\$0	N/A
TOTAL⁴	\$1,314,100,000	N/A	\$5,700,000	<1%	\$11,100,000	1%	\$13,600,000	1%	\$21,000,000	2%	\$1,000,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of London Grove (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.33 Township Of Londonderry Summary (CID 421484)

The following pages include Flood Risk data for the Township Of Londonderry.

3.3.33.1. Overview

The information below provides an overview of the Township Of Londonderry as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Londonderry	421484	2,149	100	11.4	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 2 policies totaling approximately \$453,600

Data provided below only includes areas within the Township Of Londonderry, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.33.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Londonderry are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.6	<0.1	<-0.1	<-0.1
Within Floodway	<0.1	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Londonderry, the figures in this table only represent information within the Township Of Londonderry.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Londonderry's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Londonderry (421484): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$310,700,000	83%	\$0	0%	\$0	0%	\$10,000	<1%	\$20,000	<1%	\$0	0%
Commercial Building/Contents	\$31,500,000	8%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$30,500,000	9%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$372,700,000	100%	\$0	0%	\$0	0%	\$10,000	<1%	\$20,000	<1%	\$0	0%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$372,700,000	N/A	\$0	0%	\$0	0%	\$10,000	<1%	\$20,000	<1%	\$0	0%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Londonderry (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.34 Township Of Lower Oxford Summary (CID 421485)

The following pages include Flood Risk data for the Township Of Lower Oxford.

3.3.34.1. Overview

The information below provides an overview of the Township Of Lower Oxford as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Lower Oxford	421485	5,209	100	18.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 1 policies totaling approximately \$70,000

Data provided below only includes areas within the Township Of Lower Oxford, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.34.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Lower Oxford are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.5	0.1	<-0.1	<-0.1
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Lower Oxford, the figures in this table only represent information within the Township Of Lower Oxford.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (1-percent-annual-chance flood events)
 - Water surface elevation grids (10-, 4-, 2-, 1-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Lower Oxford's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Lower Oxford (421485): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$675,900,000	83%	N/A	N/A	N/A	N/A	\$1,100,000	<1%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$68,200,000	8%	N/A	N/A	N/A	N/A	\$60,000	<1%	N/A	N/A	N/A	N/A
Other Building/Contents	\$72,300,000	9%	N/A	N/A	N/A	N/A	\$100,000	<1%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$816,300,000	100%	N/A	N/A	N/A	N/A	\$1,300,000	<1%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$816,300,000	N/A	N/A	N/A	N/A	N/A	\$1,300,000	<1%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Lower Oxford (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.35 Borough Of Malvern Summary (CID 420281)

The following pages include Flood Risk data for the Borough Of Malvern.

3.3.35.1. Overview

The information below provides an overview of the Borough Of Malvern as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Malvern	420281	2,999	100	1.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 9 policies totaling approximately \$2,235,000

Data provided below only includes areas within the Borough Of Malvern, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.35.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Malvern are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	<0.1	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Malvern, the figures in this table only represent information within the Borough Of Malvern.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Borough Of Malvern (420281): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$477,300,000	57%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$203,800,000	25%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$149,400,000	18%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$830,600,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$830,600,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Malvern (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.36 Marsh Creek State Park (CID ST05)

The following pages include Flood Risk data for the Marsh Creek State Park.

3.3.36.1. Overview

The information below provides an overview of the Marsh Creek State Park as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Marsh Creek State Park	42ST05	0	0	2.7	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the Marsh Creek State Park, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.36.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Marsh Creek State Park are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1	<0.1	<-0.1	<-0.1
Within Floodway	<0.1	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Marsh Creek State Park, the figures in this table only represent information within the Marsh Creek State Park.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Marsh Creek State Park 's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Marsh Creek State (42ST05): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$157,100,000	91%	\$0	0%	\$50,000	<1%	\$80,000	<1%	\$200,000	<1%	\$0	0%
Commercial Building/Contents	\$12,900,000	8%	\$0	0%	\$10,000	<1%	\$10,000	<1%	\$30,000	<1%	\$0	0%
Other Building/Contents	\$1,900,000	1%	\$0	0%	\$0	0%	\$0	0%	\$10,000	<1%	\$0	0%
Total Building/Contents ²	\$171,900,000	100%	\$10,000	<1%	\$60,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	N/A	N/A
TOTAL⁴	\$171,900,000	N/A	\$10,000	<1%	\$60,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.37 Borough Of Modena Summary (CID 420282)

The following pages include Flood Risk data for the Borough Of Modena.

3.3.37.1. Overview

The information below provides an overview of the Borough Of Modena as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Modena	420282	535	100	0.4	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 19 policies totaling approximately \$2,976,400

Data provided below only includes areas within the Borough Of Modena, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.37.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Modena are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	<0.1	<-0.1	<-0.1
Within Floodway	0.0	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Modena, the figures in this table only represent information within the Borough Of Modena.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of Modena's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough of Modena (420282): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$42,100,000	99%	\$1,600,000	4%	\$2,700,000	6%	\$3,200,000	8%	\$4,400,000	10%	\$200,000	1%
Commercial Building/Contents	\$400,000	1%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$10,000	<1%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$42,500,000	100%	\$1,600,000	4%	\$2,700,000	6%	\$3,200,000	8%	\$4,400,000	10%	\$200,000	1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$42,500,000	N/A	\$1,600,000	4%	\$2,700,000	6%	\$3,200,000	8%	\$4,400,000	10%	\$200,000	1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Modena (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.38 Township Of New Garden Summary (CID 422275)

The following pages include Flood Risk data for the Township Of New Garden.

3.3.38.1. Overview

The information below provides an overview of the Township Of New Garden as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of New Garden	422275	11,984	100	16.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 25 policies totaling approximately \$8,481,300

Data provided below only includes areas within the Township Of New Garden, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.38.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of New Garden are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.7	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of New Garden, the figures in this table only represent information within the Township Of New Garden.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of New Garden's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of New Garden (422275): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,705,200,000	66%	\$800,000	<1%	\$1,400,000	<1%	\$1,600,000	<1%	\$2,200,000	<1%	\$100,000	<1%
Commercial Building/Contents	\$356,900,000	14%	\$20,000	<1%	\$30,000	<1%	\$80,000	<1%	\$400,000	<1%	\$10,000	<1%
Other Building/Contents	\$503,900,000	20%	\$70,000	<1%	\$100,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%
Total Building/Contents ²	\$2,565,900,000	100%	\$800,000	<1%	\$1,600,000	<1%	\$1,800,000	<1%	\$2,800,000	<1%	\$100,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$2,565,900,000	N/A	\$800,000	<1%	\$1,600,000	<1%	\$1,800,000	<1%	\$2,800,000	<1%	\$100,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of New Garden (if applicable): None

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	3	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	3	FEMA

3.3.39 Township Of New London Summary (CID 422276)

The following pages include Flood Risk data for the Township Of New London.

3.3.39.1. Overview

The information below provides an overview of the Township Of New London as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of New London	422276	5,631	100	11.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 6 policies totaling approximately \$2,027,100

Data provided below only includes areas within the Township Of New London, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.39.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of New London are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.8	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of New London, the figures in this table only represent information within the Township Of New London.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of New London's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of New London (422276): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$982,500,000	92%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Commercial Building/Contents	\$44,400,000	4%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$42,500,000	4%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$1,069,400,000	100%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$1,069,400,000	N/A	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of New London (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	3	FEMA

3.3.40 Township Of Newlin Summary (CID 421486)

The following pages include Flood Risk data for the Township Of Newlin.

3.3.40.1. Overview

The information below provides an overview of the Township Of Newlin as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Newlin	421486	1,285	100	12.1	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 14 policies totaling approximately \$3,084,600

Data provided below only includes areas within the Township Of Newlin, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.40.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Newlin are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.5	0.1	<-0.1	<0.1
Within Floodway	0.7	0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Newlin, the figures in this table only represent information within the Township Of Newlin.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Newlin's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Newlin (421486): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$209,400,000	88%	\$2,900,000	1%	\$5,100,000	2%	\$5,600,000	3%	\$7,300,000	4%	\$400,000	<1%
Commercial Building/Contents	\$15,800,000	7%	\$500,000	3%	\$800,000	5%	\$800,000	5%	\$1,000,000	7%	\$70,000	<1%
Other Building/Contents	\$11,600,000	5%	\$300,000	3%	\$500,000	4%	\$500,000	4%	\$600,000	5%	\$40,000	<1%
Total Building/Contents ²	\$236,800,000	100%	\$3,800,000	2%	\$6,300,000	3%	\$7,000,000	3%	\$9,000,000	4%	\$600,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$236,800,000	N/A	\$3,800,000	2%	\$6,300,000	3%	\$7,000,000	3%	\$9,000,000	4%	\$600,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Newlin (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	2	FEMA

3.3.41 Township Of North Coventry Summary (CID 420283)

The following pages include Flood Risk data for the Township Of North Coventry.

3.3.41.1. Overview

The information below provides an overview of the Township Of North Coventry as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of North Coventry	420283	7,817	100	13.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 98 policies totaling approximately \$16,258,700

Data provided below only includes areas within the Township Of North Coventry, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.41.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of North Coventry are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.1	<0.1	0.0	<0.1
Within Floodway	0.3	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of North Coventry, the figures in this table only represent information within the Township Of North Coventry.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of North Coventry (420283): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,162,400,000	75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$257,000,000	17%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$123,800,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,543,200,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,543,200,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of North Coventry (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	33	FEMA

3.3.42 Borough Of Oxford Summary (CID 420284)

The following pages include Flood Risk data for the Borough Of Oxford.

3.3.42.1. Overview

The information below provides an overview of the Borough Of Oxford as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Oxford	420284	5,068	100	2.0	100	Y	N/A	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 2 policies totaling approximately \$196,000

Data provided below only includes areas within the Borough Of Oxford, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.42.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Oxford are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Oxford, the figures in this table only represent information within the Borough Of Oxford.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Borough of Oxford (420284): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$526,100,000	60%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$146,500,000	17%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$206,400,000	23%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$879,000,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$879,000,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Oxford (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.43 Borough Of Parkesburg Summary (CID 422277)

The following pages include Flood Risk data for the Borough Of Parkesburg.

3.3.43.1. Overview

The information below provides an overview of the Borough Of Parkesburg as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Parkesburg	422277	3,592	100	1.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 7 policies totaling approximately \$1,927,500

Data provided below only includes areas within the Borough Of Parkesburg, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.43.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Parkesburg are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	<0.1	<-0.1	<-0.1
Within Floodway	0.0	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Parkesburg, the figures in this table only represent information within the Borough Of Parkesburg.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of Parkesburg's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough of Parkesburg (422277): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$420,100,000	73%	\$40,000	<1%	\$100,000	<1%	\$200,000	<1%	\$400,000	<1%	\$10,000	<1%
Commercial Building/Contents	\$118,400,000	21%	\$400,000	<1%	\$600,000	1%	\$800,000	1%	\$2,100,000	2%	\$60,000	<1%
Other Building/Contents	\$38,600,000	6%	\$100,000	<1%	\$100,000	<1%	\$200,000	<1%	\$500,000	1%	\$10,000	<1%
Total Building/Contents ²	\$577,200,000	100%	\$500,000	<1%	\$900,000	<1%	\$1,200,000	<1%	\$2,900,000	1%	\$90,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$577,200,000	N/A	\$500,000	<1%	\$900,000	<1%	\$1,200,000	<1%	\$2,900,000	1%	\$90,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Parkesburg (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.44 Township Of Penn Summary (CID 421487)

The following pages include Flood Risk data for the Township Of Penn.

3.3.44.1. Overview

The information below provides an overview of the Township Of Penn as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Penn	421487	5,363	100	9.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 6 policies totaling approximately \$2,110,000

Data provided below only includes areas within the Township Of Penn, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.44.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Penn are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.4	0.0	<-0.1	<-0.1
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Penn, the figures in this table only represent information within the Township Of Penn.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Penn's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Penn (421487): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$643,900,000	64%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Commercial Building/Contents	\$294,400,000	29%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$74,300,000	7%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$1,012,600,000	100%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$1,012,600,000	N/A	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Penn (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.45 Township Of Pennsbury Summary (CID 420285)

The following pages include Flood Risk data for the Township Of Pennsbury.

3.3.45.1. Overview

The information below provides an overview of the Township Of Pennsbury as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Pennsbury	420285	3,604	100	10.1	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 11 policies totaling approximately \$2,543,000

Data provided below only includes areas within the Township Of Pennsbury, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.45.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Pennsbury are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.8	<0.1	<-0.1	<-0.1
Within Floodway	0.4	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Pennsbury, the figures in this table only represent information within the Township Of Pennsbury.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Pennsbury's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Pennbury (420285): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$782,800,000	69%	\$700,000	<1%	\$1,300,000	<1%	\$1,500,000	<1%	\$2,100,000	<1%	\$100,000	<1%
Commercial Building/Contents	\$245,600,000	22%	\$2,100,000	1%	\$3,900,000	2%	\$4,500,000	2%	\$5,700,000	2%	\$300,000	<1%
Other Building/Contents	\$106,800,000	9%	\$90,000	<1%	\$200,000	<1%	\$300,000	<1%	\$300,000	<1%	\$20,000	<1%
Total Building/Contents ²	\$1,135,300,000	100%	\$2,900,000	<1%	\$5,400,000	<1%	\$6,300,000	1%	\$8,100,000	1%	\$500,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$100,000	N/A	\$100,000	N/A	\$200,000	N/A	\$0	N/A
TOTAL⁴	\$1,135,300,000	N/A	\$2,900,000	<1%	\$5,500,000	<1%	\$6,400,000	1%	\$8,300,000	1%	\$500,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Pennsbury (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	3	FEMA

3.3.46 Borough Of Phoenixville Summary (CID 420287)

The following pages include Flood Risk data for the Borough Of Phoenixville.

3.3.46.1. Overview

The information below provides an overview of the Borough Of Phoenixville as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Phoenixville	420287	16,438	100	3.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 29 policies totaling approximately \$10,252,000

Data provided below only includes areas within the Borough Of Phoenixville, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.46.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Phoenixville are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.6	<0.1	0.0	<0.1
Within Floodway	0.3	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Phoenixville, the figures in this table only represent information within the Borough Of Phoenixville.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Borough of Phoenixville (420287): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,283,700,000	70%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$724,900,000	22%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$253,200,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$3,261,800,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$3,261,800,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Phoenixville (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	16	FEMA

3.3.47 Township Of Pocopson Summary (CID 420286)

The following pages include Flood Risk data for the Township Of Pocopson.

3.3.47.1. Overview

The information below provides an overview of the Township Of Pocopson as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Pocopson	420286	4,582	100	8.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 16 policies totaling approximately \$5,252,300

Data provided below only includes areas within the Township Of Pocopson, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.47.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Pocopson are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.2	<0.1	<-0.1	<0.1
Within Floodway	0.4	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Pocopson, the figures in this table only represent information within the Township Of Pocopson.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Pocopson's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Pocopson (420286): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$783,600,000	86%	\$1,900,000	1%	\$4,000,000	1%	\$4,700,000	1%	\$6,700,000	1%	\$300,000	<1%
Commercial Building/Contents	\$69,100,000	7%	\$100,000	<1%	\$200,000	<1%	\$200,000	<1%	\$200,000	<1%	\$10,000	<1%
Other Building/Contents	\$62,500,000	7%	\$1,600,000	3%	\$2,100,000	3%	\$2,200,000	4%	\$2,700,000	4%	\$200,000	<1%
Total Building/Contents ²	\$915,300,000	100%	\$3,600,000	1%	\$6,200,000	1%	\$7,100,000	1%	\$9,700,000	1%	\$500,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$100,000	N/A
TOTAL⁴	\$915,300,000	N/A	\$3,600,000	1%	\$6,200,000	1%	\$7,100,000	1%	\$9,700,000	1%	\$600,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Pocopson (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	89	FEMA

3.3.48 Township Of Sadsbury Summary (CID 421488)

The following pages include Flood Risk data for the Township Of Sadsbury located in Chester County.

3.3.48.1. Overview

The information below provides an overview of the Township Of Sadsbury as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Sadsbury	421488	3,571	100	6.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 4 policies totaling approximately \$1,230,000

Data provided below only includes areas within the Township Of Sadsbury, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.48.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Sadsbury are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.5	<0.1	<-0.1	<-0.1
Within Floodway	<0.1	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Sadsbury, the figures in this table only represent information within the Township Of Sadsbury.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Sadsbury's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Sadsbury (421488): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$499,200,000	80%	\$50,000	<1%	\$90,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%
Commercial Building/Contents	\$70,700,000	11%	\$10,000	<1%	\$20,000	<1%	\$30,000	<1%	\$40,000	<1%	\$0	0%
Other Building/Contents	\$56,900,000	9%	\$70,000	<1%	\$100,000	<1%	\$100,000	<1%	\$200,000	<1%	\$0	0%
Total Building/Contents ²	\$626,700,000	100%	\$100,000	<1%	\$200,000	<1%	\$300,000	<1%	\$400,000	<1%	\$20,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$626,700,000	N/A	\$100,000	<1%	\$200,000	<1%	\$300,000	<1%	\$500,000	<1%	\$20,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Sadsbury (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.49 Township Of Schuylkill Summary (CID 421489)

The following pages include Flood Risk data for the Township Of Schuylkill.

3.3.49.1. Overview

The information below provides an overview of the Township Of Schuylkill as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Schuylkill	421489	8,389	100	8.4	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 21 policies totaling approximately \$5,116,600

Data provided below only includes areas within the Township Of Schuylkill, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.49.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Schuylkill are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.0	0.0	0.0	0.0
Within Floodway	0.5	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Schuylkill, the figures in this table only represent information within the Township Of Schuylkill.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Schuylkill (421489): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,484,200,000	58%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$439,500,000	18%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$617,600,000	24%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$2,541,300,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$2,541,300,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Schuylkill (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	2	FEMA

3.3.50 Borough Of South Coatesville Summary (CID 420288)

The following pages include Flood Risk data for the Borough Of South Coatesville.

3.3.50.1. Overview

The information below provides an overview of the Borough Of South Coatesville as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of South Coatesville	420288	1,302	100	1.8	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the Borough Of South Coatesville, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.50.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of South Coatesville are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of South Coatesville, the figures in this table only represent information within the Borough Of South Coatesville.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of South Coatesville's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Borough of South Coatsville (420288): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$124,900,000	49%	\$0	0%	\$0	0%	\$10,000	<1%	\$40,000	<1%	\$0	0%
Commercial Building/Contents	\$18,300,000	7%	\$30,000	<1%	\$80,000	<1%	\$100,000	1%	\$200,000	1%	\$10,000	<1%
Other Building/Contents	\$112,100,000	44%	\$10,000	<1%	\$50,000	<1%	\$90,000	<1%	\$300,000	<1%	\$10,000	<1%
Total Building/Contents ²	\$255,200,000	100%	\$40,000	<1%	\$100,000	<1%	\$200,000	<1%	\$600,000	<1%	\$10,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$255,200,000	N/A	\$40,000	<1%	\$100,000	<1%	\$200,000	<1%	\$600,000	<1%	\$10,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of South Coatesville (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.51 Township Of South Coventry Summary (CID 421490)

The following pages include Flood Risk data for the Township Of South Coventry.

3.3.51.1. Overview

The information below provides an overview of the Township Of South Coventry as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of South Coventry	421490	2,604	100	7.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 5 policies totaling approximately \$1,550,000

Data provided below only includes areas within the Township Of South Coventry, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.51.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of South Coventry are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.5	0.0	0.0	0.0
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of South Coventry, the figures in this table only represent information within the Township Of South Coventry.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of South Coventry (421490): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$406,400,000	83%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$56,700,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$26,300,000	5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$489,300,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$489,300,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of South Coventry (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.52 Borough Of Spring City Summary (CID 420289)

The following pages include Flood Risk data for the Borough Of Spring City.

3.3.52.1. Overview

The information below provides an overview of the Borough Of Spring City as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of Spring City	420289	3,323	100	0.8	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 14 policies totaling approximately \$6,643,800

Data provided below only includes areas within the Borough Of Spring City, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.52.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of Spring City are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.2	0.0	0.0	0.0
Within Floodway	0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of Spring City, the figures in this table only represent information within the Borough Of Spring City.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Borough of Spring City (420289): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$434,700,000	75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$80,000,000	14%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$62,600,000	11%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$577,300,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$577,300,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of Spring City (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.53 Springlawn Corridor (CID 42ST07)

The following pages include Flood Risk data for the Springlawn Corridor.

3.3.53.1. Overview

The information below provides an overview of the Springlawn Corridor as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Springlawn Corridor	42ST07	0	0	0.8	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the Springlawn Corridor, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.53.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Springlawn Corridor are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	<0.1	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Springlawn Corridor, the figures in this table only represent information within the Springlawn Corridor.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.
- **Hazus Estimated Loss Information**
 - The Springlawn Corridor 's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Springlawn Corridor (42ST07): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$10,800,000	97%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$300,000	3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$11,100,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$11,100,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.54 State Game Lands 43 (CID 42ST01)

The following pages include Flood Risk data for the State Game Lands 43.

3.3.54.1. Overview

The information below provides an overview of the State Game Lands 43 as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
State Game Lands 43	42ST01	0	0	3.45	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the State Game Lands 43, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.54.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for State Game Lands 43 are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.2	0.0	0.0	0.0
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of State Gamelands 43, the figures in this table only represent information within the State Gamelands 43.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The State Game Lands 43's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

State Game Lands 43 (42ST01): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$31,600,000	62%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$9,000,000	18%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$10,600,000	20%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$51,200,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$22,200,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.55 Township Of Thornbury Summary (CID 420290)

The following pages include Flood Risk data for the Township Of Thornbury located in Chester County.

3.3.55.1. Overview

The information below provides an overview of the Township Of Thornbury as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Thornbury	420290	3,016	100	3.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 11 policies totaling approximately \$2,287,100

Data provided below only includes areas within the Township Of Thornbury, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.55.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Thornbury are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.4	<0.1	0.0	<0.1
Within Floodway	0.2	0.2	0.0	0.2

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Thornbury, the figures in this table only represent information within the Township Of Thornbury.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Thornbury's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Thornbury (420290): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$566,700,000	83%	\$0	0%	\$0	0%	\$0	0%	\$10,000	<1%	\$0	0%
Commercial Building/Contents	\$98,600,000	14%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$18,600,000	3%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$684,000,000	100%	\$0	0%	\$0	0%	\$0	0%	\$10,000	<1%	\$0	0%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$684,000,000	N/A	\$0	0%	\$0	0%	\$0	0%	\$10,000	<1%	\$0	0%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	2	FEMA

3.3.56 Township Of Tredyffrin Summary (CID 420291)

The following pages include Flood Risk data for the Township Of Tredyffrin.

3.3.56.1. Overview

The information below provides an overview of the Township Of Tredyffrin as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Tredyffrin	420291	29,225	100	18.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 178 policies totaling approximately \$37,077,100

Data provided below only includes areas within the Township Of Tredyffrin, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.56.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Tredyffrin are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	<0.01	0.0	0.0	0.0
Within Floodway	0.3	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Tredyffrin, the figures in this table only represent information within the Township Of Tredyffrin.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Tredyffrin (420291): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$5,330,200,000	60%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$2,484,200,000	28%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$1,015,100,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$8,829,500,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$8,829,500,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Tredyffrin (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	15	FEMA

3.3.57 Township Of Upper Oxford Summary (CID 422278)

The following pages include Flood Risk data for the Township Of Upper Oxford.

3.3.57.1. Overview

The information below provides an overview of the Township Of Upper Oxford as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Upper Oxford	422278	2,484	100	16.7	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 3 policies totaling approximately \$439,000

Data provided below only includes areas within the Township Of Upper Oxford, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.57.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Upper Oxford are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	0.1	<-0.1	0.1
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Upper Oxford, the figures in this table only represent information within the Township Of Upper Oxford.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (1-percent-annual-chance flood events)
 - Water surface elevation grids (1-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Upper Oxford's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Upper Oxford (422278): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$349,200,000	86%	N/A	N/A	N/A	N/A	\$400,000	<1%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$25,300,000	7%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Other Building/Contents	\$29,700,000	7%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$404,100,000	100%	N/A	N/A	N/A	N/A	\$400,000	<1%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$404,100,000	N/A	N/A	N/A	N/A	N/A	\$400,000	<1%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Upper Oxford (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.58 Township Of Upper Uwchlan Summary (CID 421491)

The following pages include Flood Risk data for the Township Of Upper Uwchlan.

3.3.58.1. Overview

The information below provides an overview of the Township Of Upper Uwchlan as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Upper Uwchlan	421491	10,508	100	9.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 20 policies totaling approximately \$5,557,600

Data provided below only includes areas within the Township Of Upper Uwchlan, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.58.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Upper Uwchlan are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.6	<0.1	<-0.1	<0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Upper Uwchlan, the figures in this table only represent information within the Township Of Upper Uwchlan.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Upper Uwchlan's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Upper Uwchlan (421491): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,080,600,000	88%	\$100,000	<1%	\$500,000	<1%	\$700,000	<1%	\$1,300,000	<1%	\$40,000	<1%
Commercial Building/Contents	\$227,700,000	10%	\$10,000	<1%	\$40,000	<1%	\$50,000	<1%	\$80,000	<1%	\$0	0%
Other Building/Contents	\$66,400,000	2%	\$10,000	<1%	\$40,000	<1%	\$50,000	<1%	\$70,000	<1%	\$0	0%
Total Building/Contents ²	\$2,374,700,000	100%	\$100,000	<1%	\$600,000	<1%	\$800,000	<1%	\$1,400,000	<1%	\$40,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$2,374,700,000	N/A	\$100,000	<1%	\$600,000	<1%	\$800,000	<1%	\$1,400,000	<1%	\$40,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Upper Uwchlan (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	1	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	6	FEMA

3.3.59 Township Of Uwchlan Summary (CID 421492)

The following pages include Flood Risk data for the Township Of Uwchlan.

3.3.59.1. Overview

The information below provides an overview of the Township Of Uwchlan as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Uwchlan	421492	18,087	100	10.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 38 policies totaling approximately \$8,052,000

Data provided below only includes areas within the Township Of Uwchlan, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.59.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Uwchlan are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Uwchlan, the figures in this table only represent information within the Township Of Uwchlan.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Uwchlan's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Uwchland (421492): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,971,300,000	63%	\$20,000	<1%	\$100,000	<1%	\$200,000	<1%	\$400,000	<1%	\$10,000	<1%
Commercial Building/Contents	\$1,110,000,000	24%	\$0	0%	\$10,000	<1%	\$20,000	<1%	\$30,000	<1%	\$0	0%
Other Building/Contents	\$602,500,000	13%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$4,683,900,000	100%	\$20,000	<1%	\$100,000	<1%	\$200,000	<1%	\$400,000	<1%	\$10,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$4,683,900,000	N/A	\$20,000	<1%	\$100,000	<1%	\$200,000	<1%	\$400,000	<1%	\$10,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Uwchlan (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	4	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.60 Township Of Valley Summary (CID 421206)

The following pages include Flood Risk data for the Township Of Valley.

3.3.60.1. Overview

The information below provides an overview of the Township Of Valley as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Valley	421206	6,244	100	5.5	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 22 policies totaling approximately \$3,976,600

Data provided below only includes areas within the Township Of Valley, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.60.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Valley are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.2	<0.1	<-0.1	<0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Valley, the figures in this table only represent information within the Township Of Valley.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Valley's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Valley (421206): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$965,400,000	70%	\$1,000,000	<1%	\$6,300,000	1%	\$8,200,000	1%	\$13,300,000	1%	\$500,000	<1%
Commercial Building/Contents	\$173,200,000	13%	\$400,000	<1%	\$800,000	<1%	\$1,000,000	1%	\$1,500,000	1%	\$70,000	<1%
Other Building/Contents	\$233,200,000	17%	\$2,500,000	1%	\$4,300,000	2%	\$5,000,000	2%	\$6,800,000	3%	\$400,000	<1%
Total Building/Contents ²	\$1,371,800,000	100%	\$3,800,000	<1%	\$11,400,000	1%	\$14,200,000	1%	\$21,600,000	2%	\$900,000	<1%
Business Disruption ³	N/A	N/A	\$100,000	N/A	\$300,000	N/A	\$300,000	N/A	\$500,000	N/A	\$100,000	N/A
TOTAL⁴	\$1,371,800,000	N/A	\$3,900,000	<1%	\$11,700,000	1%	\$14,500,000	1%	\$22,100,000	2%	\$1,000,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Valley (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	2	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	8	FEMA

3.3.61 Valley Forge National Historical Park (CID 42FED)

The following pages include Flood Risk data for the Valley Forge National Historical Park.

3.3.61.1. Overview

The information below provides an overview of the Valley Forge National Historical Site as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Valley Forge National Historical Park	42FED	0	0	1.5	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the Valley Forge National Historical Park, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.61.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Valley Forge National Historical Park are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	<0.1	0.0	0.0	0.0
Within Floodway	<0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Valley Forge National Historical Park, the figures in this table only represent information within the Valley Forge National Historical Park.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Valley Forge National Historical Park's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Valley Forge National Historical Park (42FED): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$42,400,000	45%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$37,200,000	40%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$14,600,000	15%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$94,300,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$94,300,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.62 Township Of Wallace Summary (CID 421493)

The following pages include Flood Risk data for the Township Of Wallace.

3.3.62.1. Overview

The information below provides an overview of the Township Of Wallace as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Wallace	421493	3,429	100	11.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 3 policies totaling approximately \$728,000

Data provided below only includes areas within the Township Of Wallace, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.62.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Wallace are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.7	0.1	<-0.1	0.1
Within Floodway	0.1	0.1	<-0.1	0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Wallace, the figures in this table only represent information within the Township Of Wallace.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of Wallace's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of Wallace (421493): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$476,800,000	77%	\$400,000	<1%	\$900,000	<1%	\$1,100,000	<1%	\$1,500,000	<1%	\$70,000	<1%
Commercial Building/Contents	\$88,300,000	14%	\$3,600,000	4%	\$5,800,000	7%	\$6,900,000	8%	\$8,600,000	10%	\$500,000	1%
Other Building/Contents	\$52,100,000	9%	\$200,000	<1%	\$400,000	1%	\$500,000	1%	\$700,000	1%	\$40,000	<1%
Total Building/Contents ²	\$617,200,000	100%	\$4,300,000	1%	\$7,100,000	1%	\$8,400,000	1%	\$10,900,000	2%	\$700,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$100,000	N/A	\$200,000	N/A	\$200,000	N/A	\$0	N/A
TOTAL⁴	\$617,200,000	N/A	\$4,300,000	1%	\$7,200,000	1%	\$8,600,000	1%	\$11,100,000	2%	\$700,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Wallace (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	1	PA State Government
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.63 Township Of Warwick Summary (CID 421494)

The following pages include Flood Risk data for the Township Of Warwick.

3.3.63.1. Overview

The information below provides an overview of the Township Of Warwick as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Warwick	421494	05	100	0.1	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 8 policies totaling approximately \$1,769,100

Data provided below only includes areas within the Township Of Warwick, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.63.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Warwick are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.2	0.0	0.0	0.0
Within Floodway	0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Warwick, the figures in this table only represent information within the Township Of Warwick.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Warwick (421494): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$418,000,000	74%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$70,500,000	13%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$74,700,000	13%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$563,200,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$563,200,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Warwick (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.64 Township Of West Bradford Summary (CID 421495)

The following pages include Flood Risk data for the Township Of West Bradford.

3.3.64.1. Overview

The information below provides an overview of the Township Of West Bradford as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Bradford	421495	12,223	100	18.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 12 policies totaling approximately \$2,907,000

Data provided below only includes areas within the Township Of West Bradford, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.64.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Bradford are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.8	<0.1	<-0.1	<-0.1
Within Floodway	0.2	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Bradford, the figures in this table only represent information within the Township Of West Bradford.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Bradford's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Bradford (421495): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,878,800,000	87%	\$30,000	<1%	\$100,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%
Commercial Building/Contents	\$192,400,000	9%	\$200,000	<1%	\$300,000	<1%	\$300,000	<1%	\$400,000	<1%	\$30,000	<1%
Other Building/Contents	\$97,400,000	4%	\$800,000	1%	\$1,100,000	1%	\$1,200,000	1%	\$1,400,000	2%	\$100,000	<1%
Total Building/Contents ²	\$2,168,600,000	100%	\$1,100,000	<1%	\$1,600,000	<1%	\$1,700,000	<1%	\$2,100,000	<1%	\$100,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$100,000	N/A	\$0	N/A	\$100,000	N/A	\$90,000	N/A
TOTAL⁴	\$2,168,600,000	N/A	\$1,100,000	<1%	\$1,700,000	<1%	\$1,700,000	<1%	\$2,200,000	<1%	\$100,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Bradford (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	2	FEMA

3.3.65 Township Of West Brandywine Summary (CID 421496)

The following pages include Flood Risk data for the Township Of West Brandywine.

3.3.65.1. Overview

The information below provides an overview of the Township Of West Brandywine as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Brandywine	421496	7,395	100	13.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 7 policies totaling approximately \$1,696,600

Data provided below only includes areas within the Township Of West Brandywine, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.65.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Brandywine are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.8	<0.1	<-0.1	<-0.1
Within Floodway	<0.1	<0.1	<-0.1	<-0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Brandywine, the figures in this table only represent information within the Township Of West Brandywine.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Brandywine's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Brandywine (421496): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,160,900,000	72%	\$200,000	<1%	\$700,000	<1%	\$1,000,000	<1%	\$1,600,000	<1%	\$60,000	<1%
Commercial Building/Contents	\$387,600,000	24%	\$30,000	<1%	\$80,000	<1%	\$100,000	<1%	\$100,000	<1%	\$10,000	<1%
Other Building/Contents	\$68,200,000	4%	\$40,000	<1%	\$80,000	<1%	\$90,000	<1%	\$100,000	<1%	\$10,000	<1%
Total Building/Contents ²	\$1,616,700,000	100%	\$300,000	<1%	\$900,000	<1%	\$1,200,000	<1%	\$1,800,000	<1%	\$70,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$1,616,700,000	N/A	\$300,000	<1%	\$900,000	<1%	\$1,200,000	<1%	\$1,800,000	<1%	\$70,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Brandywine (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.66 Township Of West Caln Summary (CID 421497)

The following pages include Flood Risk data for the Township Of West Caln.

3.3.66.1. Overview

The information below provides an overview of the Township Of West Caln as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Caln	421497	9,011	100	21.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 9 policies totaling approximately \$2,478,000

Data provided below only includes areas within the Township Of West Caln, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.66.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Caln are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.2	<0.1	<-0.1	<-0.1
Within Floodway	0.1	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Caln, the figures in this table only represent information within the Township Of West Caln.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Caln's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Caln (421497): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,064,600,000	85%	\$90,000	<1%	\$200,000	<1%	\$300,000	<1%	\$600,000	<1%	\$20,000	<1%
Commercial Building/Contents	\$79,100,000	6%	\$0	0%	\$10,000	<1%	\$10,000	<1%	\$20,000	<1%	\$0	0%
Other Building/Contents	\$111,600,000	9%	\$60,000	<1%	\$100,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%
Total Building/Contents ²	\$1,255,300,000	100%	\$100,000	<1%	\$400,000	<1%	\$500,000	<1%	\$900,000	<1%	\$30,000	<1%
Business Disruption ³	N/A	N/A	\$100,000	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$1,255,300,000	N/A	\$200,000	<1%	\$400,000	<1%	\$500,000	<1%	\$900,000	<1%	\$30,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Caln (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.67 Borough Of West Chester Summary (CID 420292)

The following pages include Flood Risk data for the Borough Of West Chester.

3.3.67.1. Overview

The information below provides an overview of the Borough Of West Chester as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of West Chester	420292	18,460	100	1.8	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 58 policies totaling approximately \$12,659,500

Data provided below only includes areas within the Borough Of West Chester, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.67.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of West Chester are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.1	<0.1	<-0.1	<-0.1
Within Floodway	<0.1	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of West Chester, the figures in this table only represent information within the Borough Of West Chester.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Borough Of West Chester's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Chester (420292) Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,282,300,000	61%	\$30,000	<1%	\$90,000	<1%	\$100,000	<1%	\$200,000	<1%	\$10,000	<1%
Commercial Building/Contents	\$947,200,000	25%	\$10,000	<1%	\$20,000	<1%	\$20,000	<1%	\$30,000	<1%	\$0	0%
Other Building/Contents	\$515,300,000	14%	\$10,000	<1%	\$20,000	<1%	\$20,000	<1%	\$30,000	<1%	\$0	0%
Total Building/Contents ²	\$3,744,800,000	100%	\$50,000	<1%	\$100,000	<1%	\$200,000	<1%	\$300,000	<1%	\$10,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$3,744,800,000	N/A	\$50,000	<1%	\$100,000	<1%	\$200,000	<1%	\$300,000	<1%	\$10,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of West Chester (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	53	FEMA

3.3.68 Township Of West Fallowfield Summary (CID 422602)

The following pages include Flood Risk data for the Township Of West Fallowfield.

3.3.68.1. Overview

The information below provides an overview of the Township Of West Fallowfield as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Fallowfield	422602	2,566	100	18.2	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 5 policies totaling approximately \$1,403,200

Data provided below only includes areas within the Township Of West Fallowfield, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.68.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Fallowfield are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.7	<0.1	<-0.1	<-0.1
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Fallowfield, the figures in this table only represent information within the Township Of West Fallowfield.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (1-percent-annual-chance flood events)
 - Water surface elevation grids (1-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Fallowfield's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Fallowfield (422602): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$261,000,000	73%	N/A	N/A	N/A	N/A	\$400,000	<1%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$36,900,000	10%	N/A	N/A	N/A	N/A	\$60,000	<1%	N/A	N/A	N/A	N/A
Other Building/Contents	\$58,300,000	17%	N/A	N/A	N/A	N/A	\$20,000	<1%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$356,200,000	100%	N/A	N/A	N/A	N/A	\$500,000	<1%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$356,200,000	N/A	N/A	N/A	N/A	N/A	\$500,000	<1%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Fallowfield (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.69 Township Of West Goshen Summary (CID 420293)

The following pages include Flood Risk data for the Township Of West Goshen.

3.3.69.1. Overview

The information below provides an overview of the Township Of West Goshen as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Goshen	420293	21,864	100	12.0	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 62 policies totaling approximately \$19,224,200

Data provided below only includes areas within the Township Of West Goshen, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.69.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Goshen are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	<0.1	<-0.1	<-0.1
Within Floodway	0.1	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Goshen, the figures in this table only represent information within the Township Of West Goshen.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Goshen's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Goshen (420293): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$3,413,700,000	49%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Commercial Building/Contents	\$2,250,200,000	33%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Other Building/Contents	\$1,245,000,000	18%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Total Building/Contents ²	\$6,909,000,000	100%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$6,909,000,000	N/A	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Goshen (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	3	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	7	FEMA

3.3.70 Borough Of West Grove Summary (CID 422691)

The following pages include Flood Risk data for the Borough Of West Grove.

3.3.70.1. Overview

The information below provides an overview of the Borough Of West Grove as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Borough Of West Grove	422691	2,854	100	0.7	100	N	10	N

- Past Federal Disaster Declarations for flooding = 5
- This community is not participating in the NFIP

Data provided below only includes areas within the Borough Of West Grove, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.70.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Borough Of West Grove are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.0	0.0	0.0	0.0
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Borough Of West Grove, the figures in this table only represent information within the Borough Of West Grove.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)

- Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.
- **Hazus Estimated Loss Information**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Borough Of West Grove (422691): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$273,700,000	78%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$42,300,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$36,000,000	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$352,100,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$352,100,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Borough Of West Grove (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.71 Township Of West Marlborough Summary (CID 422279)

The following pages include Flood Risk data for the Township Of West Marlborough.

3.3.71.1. Overview

The information below provides an overview of the Township Of West Marlborough as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Marlborough	422279	814	100	17.1	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 3 policies totaling approximately \$380,000

Data provided below only includes areas within the Township Of West Marlborough, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.71.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Marlborough are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.4	<0.1	<-0.1	<0.1
Within Floodway	0.2	<0.1	<-0.1	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Marlborough, the figures in this table only represent information within the Township Of West Marlborough.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Marlborough's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Malborough (422279) Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$150,400,000	61%	\$80,000	<1%	\$600,000	<1%	\$1,100,000	1%	\$1,600,000	1%	\$50,000	<1%
Commercial Building/Contents	\$45,400,000	19%	\$300,000	1%	\$500,000	1%	\$500,000	1%	\$600,000	1%	\$40,000	<1%
Other Building/Contents	\$50,000,000	20%	\$90,000	<1%	\$200,000	<1%	\$200,000	<1%	\$300,000	1%	\$20,000	<1%
Total Building/Contents ²	\$245,800,000	100%	\$500,000	<1%	\$1,300,000	1%	\$1,800,000	1%	\$2,600,000	1%	\$100,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$100,000	N/A	\$0	N/A	\$0	N/A
TOTAL⁴	\$245,800,000	N/A	\$500,000	<1%	\$1,300,000	1%	\$1,900,000	1%	\$2,600,000	1%	\$100,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Marlborough (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.72 Township Of West Nantmeal Summary (CID 421498)

The following pages include Flood Risk data for the Township Of West Nantmeal.

3.3.72.1. Overview

The information below provides an overview of the Township Of West Nantmeal as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Nantmeal	421498	2,161	100	13.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 7 policies totaling approximately \$1,290,000

Data provided below only includes areas within the Township Of West Nantmeal, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.72.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Nantmeal are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.1	0.1	<-0.1	<0.1
Within Floodway	0.2	0.2	<-0.1	0.2

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Nantmeal, the figures in this table only represent information within the Township Of West Nantmeal.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Nantmeal's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Nantmeal (421498): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$251,600,000	63%	\$50,000	<1%	\$300,000	<1%	\$500,000	<1%	\$900,000	<1%	\$20,000	<1%
Commercial Building/Contents	\$94,700,000	24%	\$400,000	<1%	\$800,000	1%	\$1,100,000	1%	\$1,500,000	2%	\$70,000	<1%
Other Building/Contents	\$51,300,000	13%	\$200,000	<1%	\$500,000	1%	\$600,000	1%	\$700,000	1%	\$40,000	<1%
Total Building/Contents ²	\$397,700,000	100%	\$600,000	<1%	\$1,600,000	<1%	\$2,200,000	1%	\$3,100,000	1%	\$100,000	<1%
Business Disruption ³	N/A	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$100,000	N/A	\$60,000	N/A
TOTAL⁴	\$397,700,000	N/A	\$600,000	<1%	\$1,600,000	<1%	\$2,200,000	1%	\$3,200,000	1%	\$100,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Nantmeal (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.73 Township Of West Nottingham Summary (CID 422280)

The following pages include Flood Risk data for the Township Of West Nottingham.

3.3.73.1. Overview

The information below provides an overview of the Township Of West Nottingham as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Nottingham	422280	2,719	100	13.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 4 policies totaling approximately \$810,000

Data provided below only includes areas within the Township Of West Nottingham, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.73.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Nottingham are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.1	<0.1	<-0.1	<-0.1
Within Floodway	0.0	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Nottingham, the figures in this table only represent information within the Township Of West Nottingham.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (1-percent-annual-chance flood events)
 - Water surface elevation grids (1-,percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Nottingham's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Nottingham (422280): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$234,100,000	51%	N/A	N/A	N/A	N/A	\$400,000	<1%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$42,800,000	10%	N/A	N/A	N/A	N/A	\$80,000	<1%	N/A	N/A	N/A	N/A
Other Building/Contents	\$179,400,000	39%	N/A	N/A	N/A	N/A	\$30,000	<1%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$456,300,000	100%	N/A	N/A	N/A	N/A	\$500,000	<1%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$456,300,000	N/A	N/A	N/A	N/A	N/A	\$500,000	<1%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Nottingham (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.74 Township Of West Pikeland Summary (CID 421151)

The following pages include Flood Risk data for the Township Of West Pikeland.

3.3.74.1. Overview

The information below provides an overview of the Township Of West Pikeland as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Pikeland	421151	4,024	100	10.0	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 25 policies totaling approximately \$7,278,000

Data provided below only includes areas within the Township Of West Pikeland, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.74.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Pikeland are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	0.0	0.0	0.0
Within Floodway	0.2	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Pikeland, the figures in this table only represent information within the Township Of West Pikeland.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

**Township Of West Pikeland (421151 Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses**

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$811,100,000	85%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$100,300,000	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$45,600,000	5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$957,100,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$957,100,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Pikeland (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.75 Township Of West Sadsbury Summary (CID 422281)

The following pages include Flood Risk data for the Township Of West Sadsbury.

3.3.75.1. Overview

The information below provides an overview of the Township Of West Sadsbury as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Sadsbury	422281	2,440	100	10.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 1 policies totaling approximately \$220,000

Data provided below only includes areas within the Township Of West Sadsbury, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.75.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Sadsbury are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.9	<0.1	<-0.1	<0.1
Within Floodway	<0.1	<0.1	0.0	<0.1

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Sadsbury, the figures in this table only represent information within the Township Of West Sadsbury.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Sadsbury's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Sadsbury (422281): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$306,100,000	49%	N/A	N/A	N/A	N/A	\$20,000	<1%	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$208,400,000	34%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Other Building/Contents	\$107,500,000	17%	N/A	N/A	N/A	N/A	\$0	0%	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$622,100,000	100%	N/A	N/A	N/A	N/A	\$20,000	<1%	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	\$0	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$622,100,000	N/A	N/A	N/A	N/A	N/A	\$20,000	<1%	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Sadsbury (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.76 Township Of West Vincent Summary (CID 421499)

The following pages include Flood Risk data for the Township Of West Vincent.

3.3.76.1. Overview

The information below provides an overview of the Township Of West Vincent as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Vincent	421499	4,567	100	17.8	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 16 policies totaling approximately \$3,195,800

Data provided below only includes areas within the Township Of West Vincent, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.76.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Vincent are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.7	0.0	0.0	0.0
Within Floodway	0.1	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Vincent, the figures in this table only represent information within the Township Of West Vincent.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of West Vincent (421499): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$868,500,000	85%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$87,600,000	9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$61,000,000	6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$1,017,100,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$1,017,100,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Vincent (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.77 Township Of West Whiteland Summary (CID 420295)

The following pages include Flood Risk data for the Township Of West Whiteland.

3.3.77.1. Overview

The information below provides an overview of the Township Of West Whiteland as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of West Whiteland	420295	18,275	100	12.9	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 120 policies totaling approximately \$32,795,100

Data provided below only includes areas within the Township Of West Whiteland, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.77.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of West Whiteland are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.3	0.1	-0.3	-0.3
Within Floodway	0.3	0.1	-0.1	0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of West Whiteland, the figures in this table only represent information within the Township Of West Whiteland.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The Township Of West Whiteland's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

Township Of West Whiteland (420295): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,919,700,000	54%	\$3,800,000	<1%	\$6,100,000	<1%	\$7,300,000	<1%	\$11,100,000	<1%	\$600,000	<1%
Commercial Building/Contents	\$1,868,100,000	34%	\$20,300,000	2%	\$30,500,000	2%	\$36,100,000	2%	\$52,100,000	2%	\$2,800,000	<1%
Other Building/Contents	\$637,400,000	12%	\$6,300,000	1%	\$10,000,000	2%	\$12,100,000	2%	\$20,100,000	3%	\$900,000	<1%
Total Building/Contents ²	\$5,425,200,000	100%	\$30,300,000	1%	\$46,600,000	1%	\$55,500,000	1%	\$83,300,000	1%	\$4,300,000	<1%
Business Disruption ³	N/A	N/A	\$900,000	N/A	\$1,400,000	N/A	\$1,700,000	N/A	\$2,500,000	N/A	\$100,000	N/A
TOTAL⁴	\$5,425,200,000	N/A	\$31,200,000	1%	\$48,000,000	1%	\$57,200,000	1%	\$85,800,000	1%	\$4,400,000	<1%

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of West Whiteland (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	3	PA State Government
Other Flood Risk Areas	4	FEMA
At Risk Essential Facilities	1	PA State Government
Past Claims Hot Spot	25	FEMA

3.3.78 Township Of Westtown Summary (CID 420294)

The following pages include Flood Risk data for the Township Of Westtown.

3.3.78.1. Overview

The information below provides an overview of the Township Of Westtown as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Westtown	420294	10,778	100	8.6	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 25 policies totaling approximately \$6,940,300

Data provided below only includes areas within the Township Of Westtown, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.78.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Westtown are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.5	0.0	0.0	0.0
Within Floodway	0.2	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Westtown, the figures in this table only represent information within the Township Of Westtown.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Westtown (420294): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$1,822,100,000	80%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$292,200,000	13%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$168,200,000	7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$2,282,500,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$2,282,500,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Westtown (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.79 White Clay Creek State Park (42ST06)

The following pages include Flood Risk data for the White Clay Creek State Park.

3.3.79.1. Overview

The information below provides an overview of the White Clay Creek State Park as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
White Clay Creek State Park	42ST06	0	0	2.16	100	N/A	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5

Data provided below only includes areas within the White Clay Creek State Park, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.79.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for White Clay Creek State Park are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	0.6	0	0	0
Within Floodway	0	0	0	0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of White Clay Creek State Park, the figures in this table only represent information within the White Clay Creek State Park.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**

- See the FRD for the following depth and analysis grid data (Section 2 of the FRR provides general information regarding the development of and potential uses for this data):
 - Multi-frequency flood depth grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
 - Percent annual chance of flooding grids
 - Percent chance of flooding over a 30-year period grids
 - Water surface elevation grids (10-, 2-, 1-, and 0.2-percent-annual-chance flood events)
- Additional information and data layers provided within the FRD should be used to further isolate these and other areas where flood mitigation potential is high. The FRD includes data which may be helpful in planning and implementing mitigation strategies. Properties located in areas expected to experience some depth of water should seriously consider mitigation options for implementation.

- **Hazus Estimated Loss Information**

- The White Clay Creek State Park 's flood risk analysis uses results from a FEMA-performed Hazus analysis which accounts for newly modeled areas in the Flood Risk Project and newly modeled depths for certain flood events. Potential losses were compared with locally provided tax data to estimate loss ratios for multiple scenarios. Additional information and data layers provided within the FRD should be used to further analyze potential losses and areas where they are likely to occur.

White Clay Creek State Park (42ST06): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$70,600,000	85%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$6,100,000	7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$7,000,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$83,700,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$83,700,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- **Areas of Mitigation Interest**

- Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	2	PA State Government
Other Flood Risk Areas	1	FEMA
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

3.3.80 Township Of Willistown Summary (CID 422282)

The following pages include Flood Risk data for the Township Of Willistown.

3.3.80.1. Overview

The information below provides an overview of the Township Of Willistown as of the date of this publication.

Community Name	CID	Total Community Population	Percent of Population in County	Total Community Land Area (sq. mi)	Percent of Land Area in County	NFIP	CRS Rating	Mitigation Plan
Township Of Willistown	422282	10,497	100	18.3	100	Y	10	Y

- Participating in Chester County Multi-Jurisdictional Hazard Mitigation Plan, which expires on 12/1/2020.
- Past Federal Disaster Declarations for flooding = 5
- National Flood Insurance Program (NFIP) policy coverage (policies/values) = 58 policies totaling approximately \$15,113,000

Data provided below only includes areas within the Township Of Willistown, that area located within the Brandywine-Christina Watershed, and do not necessarily represent community-wide totals. Section 2 of the Flood Risk Report (FRR) provides more information regarding the source and methodology used to develop the information presented below. Datasets used toward the generation of results of this project are described in Section 7 of the FRR and are found in the Flood Risk Database (FRD).

3.3.80.2. Community Analyses and Results

Results for each of the Flood Risk Datasets developed for this Flood Risk Project are summarized below:

- **Changes Since Last FIRM**
 - Changes Since Last FIRM for Township Of Willistown are shown below.

The table below summarizes the increases, decreases, and net change of SFHAs for the community.

Area of Study	Total Area (mi ²)	Increase (mi ²)	Decrease (mi ²)	Net Change (mi ²)
Within SFHA	1.4	0.0	0.0	0.0
Within Floodway	0.4	0.0	0.0	0.0

**Although the Flood Risk Database may contain Changes Since Last FIRM information outside of Township Of Willistown, the figures in this table only represent information within the Township Of Willistown.*

Section 2 of this report provides more information regarding the source and methodology used to develop this table.

- **Flood Depth and Analysis Grids**
 - Within this community, flood hazards beyond the initial 2010 HAZUS study were not conducted, hence additional data for the Flood Depth and Analysis Grids are not available.

Township Of Willistown (422282): Estimated Potential Losses for Flood Event Scenarios
Flood Risk Project Refined Losses

	Estimated Potential Losses for Flood Event Scenarios											
	Total Inventory		10% (10-yr)		2% (50-yr)		1% (100-yr)		0.2% (500-yr)		Annualized (\$/yr)	
	Estimated Value	% of Total	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}	Dollar Losses ⁵	Loss Ratio ^{1,6}
Residential Building/Contents	\$2,006,800,000	62%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial Building/Contents	\$829,500,000	26%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Building/Contents	\$390,800,000	12%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Building/Contents ²	\$3,227,100,000	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business Disruption ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL⁴	\$3,227,100,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹Loss ratio = Dollar Losses / Estimated Value

²Total Building/Contents Loss = Residential Building/Contents Loss + Commercial Building/Contents Loss + Other Building/Contents Loss.

³Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁴Total Loss = Total Building/Contents + Business Disruption

⁵Losses shown are rounded to nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

⁶Loss Ratios rounded to nearest integer percent.

- Additional Estimated Loss Information for Township Of Willistown (if applicable): None
- **Areas of Mitigation Interest**
 - Section 2.2.4 of the FRR provides more information regarding areas of mitigation interest, how they are defined for this analysis, and potential mitigation actions that could be considered for each type.

Type of Mitigation Interest	Number of Areas	Data Source
Dams	-	-
Other Flood Risk Areas	-	-
At Risk Essential Facilities	-	-
Past Claims Hot Spot	-	-

4 Actions to Reduce Flood Risk

In order to fully leverage the Flood Risk Datasets and Products created for this Flood Risk Project, local stakeholders should consider many different flood risk mitigation tactics, including, but not limited to the items shown in the sub-sections below.

4.1 Types of Mitigation Actions

Mitigation provides a critical foundation on which to reduce loss of life and property by avoiding or lessening the impact of hazard events. This creates safer communities and facilitates resiliency by enabling communities to return to normal function as quickly as possible after a hazard event. Once a community understands its flood risk, it is in a better position to identify potential mitigation actions that can reduce the risk to its people and property.

The mitigation plan requirements in 44 CFR Part 201 encourage communities to understand their vulnerability to hazards and take actions to minimize vulnerability and promote resilience. Flood mitigation actions generally fall into the following categories:

- local plans and regulations,
- structure and infrastructure projects,
- natural systems protections, and
- education and awareness activities.

4.1.1 Local Plans and Regulations

Preventative measures are intended to keep flood hazards from getting worse. They can reduce future vulnerability to flooding, especially in areas where development has not yet occurred or where capital improvements have not been substantial. Examples include:

- Comprehensive land use planning
- Zoning regulations
- Subdivision regulations
- Participation in the NFIP Community Rating System (CRS)
- Open space preservation
- Building codes
- Floodplain development regulations
- Stormwater management
- Purchase development rights or conservation easements

Before Mitigation and After Mitigation



Communities will need to prioritize projects as part of the planning process. FEMA can then help route federal mitigation dollars to fund these projects.

NFIP's CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from community actions meeting the three goals of the CRS: to reduce flood losses, to facilitate accurate insurance rating, and to promote the awareness of flood insurance.

For CRS participating communities, flood insurance premium rates are discounted in increments of 5%; i.e., a Class 1 community would receive a 45% premium discount, while a Class 9 community would receive a 5% discount. (A Class 10 is not participating in the CRS and receives no discount.)

4.1.2 Structure and Infrastructure Projects

Property protection measures protect existing buildings by modifying the building to withstand floods, or by removing buildings from hazardous locations. Examples include:

- Building relocation
- Acquisition and clearance
- Building elevation
- Barrier installation
- Building retrofit

Infrastructure projects such as upgrading dams/levees for already existing development and critical facilities may be a realistic alternative. However, citizens should be made aware of their residual risk. Examples include:

- Reservoirs, retention, and detention basins
- Levees and floodwalls
- Channel modifications
- Channel maintenance
- Seawalls, reventments, and bulkheads
- Groins, offshore breakwaters, and jetties

4.1.3 Natural Resource Protection Activities

Natural resource protection activities reduce the impact of floods by preserving or restoring natural areas such as floodplains, wetlands, and dunes and their natural functions. Examples include:

- Wetland protection
- Habitat protection
- Erosion and sedimentation control
- Best management practices (BMP)
- Prevention of stream dumping activities (anti-litter campaigns)
- Dune protection measures such as walkovers, sand fencing, and vegetation

4.1.4 Public Education and Awareness Activities

Public education and awareness activities advise residents, business owners, potential property buyers, and visitors about floods, hazardous areas, and mitigation techniques they can use to reduce the flood risk to themselves and their property. Examples include:

- Readily available and readable updated maps
- Outreach projects
- Libraries

- Technical assistance
- Real estate disclosure
- Environmental education
- Risk information via the nightly news

For more information regarding hazard mitigation techniques, best practices, and potential grant funding sources, visit www.fema.gov or contact your local floodplain manager, emergency manager, or State Hazard Mitigation Officer.

In Section 3, specific AoMIs were identified. Table 4.1 below identifies possible mitigation actions for each AoMI to consider.

Table 4-1. Mitigation Actions for Areas of Mitigation Interest

AoMI	Possible Actions to Reduce Flood Risk
Dams	Engineering assessment Dam upgrades and strengthening Emergency Action Plan Dam removal Easement creation in impoundment and downstream inundation areas
Stream Flow Pinch Point Undersized culverts or bridge openings	Engineering analysis Replacement of structure pre- and post-disaster
Past Claims and IA/PA Hot Spots	Acquisition Elevation Relocation Floodproofing
Major Land Use Changes (past 5 years or next 5 years)	Higher regulatory standard Stormwater BMPs Transfer of Development rights Compensatory storage and equal conveyance standards
Key Emergency Routes Overtopped During Frequent Flooding Events	Elevation Creation of alternate routes Design as low water crossing
Areas of Significant Riverine or Coastal Erosion	Relocation of buildings and infrastructure Regulations and planning Natural vegetation Hardening
Drainage or Stormwater- Based Flood Hazard Areas, or Areas Not Identified as Floodprone on the FIRM But Known to be Inundated	Identification of all flood hazard areas
Areas of Mitigation Success	N/A

4.2 Identifying Specific Actions for Your Community

As many mitigation actions are possible to lessen the impact of floods, how can a community decide which ones are appropriate to implement? There are many ways to identify specific actions most appropriate for a community. Some factors to consider may include the following:

- **Site characteristics.** Does the site present unique challenges (e.g., significant slopes or erosion potential)?
- **Flood characteristics.** Are the flood waters affecting the site fast or slow moving? Is there debris associated with the flow? How deep is the flooding?
- **Social acceptance.** Will the mitigation action be acceptable to the public? Does it cause social or cultural problems?
- **Technical feasibility.** Is the mitigation action technically feasible (e.g., making a building watertight to a reasonable depth)?
- **Administrative feasibility.** Is there administrative capability to implement the mitigation action?
- **Legal.** Does the mitigation action meet all applicable codes, regulations, and laws? Public officials may have a legal responsibility to act and inform citizens if a known hazard has been identified.
- **Economic.** Is the mitigation action affordable? Is it eligible under grant or other funding programs? Can it be completed within existing budgets?
- **Environmental.** Does the mitigation action cause adverse impacts on the environment or can they be mitigated? Is it the most appropriate action among the possible alternatives?

Refer to FEMA's "Local Mitigation Planning Handbook" for more information on practical approaches, tools, worksheets and local mitigation planning examples for how communities can engage in effective planning to reduce risk from natural hazards and disasters.

"Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards" provides a FEMA resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters.

Your local Hazard Mitigation Plan is a valuable place to identify and prioritize possible mitigation actions. The plan includes a mitigation strategy with mitigation actions that were developed through a public and open process. You can then add to or modify those actions based on what is learned during the course of the Risk MAP project and the information provided within this FRR.

4.3 Mitigation Programs and Assistance

Not all mitigation activities require funding (e.g., local policy actions such as strengthening a flood damage prevention ordinance), and those that do are not limited to outside funding sources (e.g., inclusion in local capital improvements plan, etc.). For those mitigation actions that require assistance through funding or technical expertise, several state and federal agencies have flood hazard mitigation grant programs and offer technical assistance. These programs may be funded at different levels over time or may be activated under special circumstances such as after a presidential disaster declaration.

4.3.1 FEMA Mitigation Programs and Assistance

FEMA awards many mitigation grants each year to states and communities to undertake mitigation projects to prevent future loss of life and property resulting from hazard impacts, including flooding. The FEMA Hazard Mitigation Assistance (HMA) programs provide grants for mitigation through the programs listed in Table 4.2 below.

Table 4-2. FEMA Hazard Mitigation Assistance Programs

Mitigation Grant Program	Authorization	Purpose
Hazard Mitigation Grant Program (HMGP)	Robert T. Stafford Disaster Relief and Emergency Assistance Act	Activated after a presidential disaster declaration; provides funds on a sliding scale formula based on a percentage of the total federal assistance for a disaster for long-term mitigation measures to reduce vulnerability to natural hazards
Flood Mitigation Assistance (FMA)	National Flood Insurance Reform Act	Reduce or eliminate claims against the NFIP
Pre-Disaster Mitigation (PDM)	Disaster Mitigation Act	National competitive program focused on mitigation project and planning activities that address multiple natural hazards

The HMGP and PDM programs offer funding for mitigation planning and project activities that address multiple natural hazard events. The FMA, RFC, and SRL programs focus funding efforts on reducing claims against the NFIP. Funding under the HMA programs is subject to availability of annual appropriations, and HMGP funding is also subject to the amount of FEMA disaster recovery assistance provided under a presidential major disaster declaration.

FEMA's HMA grants are awarded to eligible states, tribes, and territories (applicant) that, in turn, provide subgrants to local governments and communities (subapplicant). The applicant selects and prioritizes subapplications developed and submitted to them by subapplicants and submits them to FEMA for funding consideration. Prospective subapplicants should consult the office designated as their applicant for further information regarding specific program and application requirements. Contact information for the FEMA Regional Offices and State Hazard Mitigation Officers (SHMO) is available on the FEMA website (www.fema.gov).



Communities can link hazard mitigation plans and actions to the right FEMA grant programs to fund flood risk reduction.

More information about FEMA HMA programs can be found at <https://www.fema.gov/hazard-mitigation-assistance>.

4.3.2 Additional Mitigation Programs and Assistance

Several additional agencies including USACE, Natural Resource Conservation Service (NRCS), U.S. Geological Survey (USGS), and others have specialists on staff and can offer further information on flood hazard mitigation. The State NFIP Coordinator and SHMO are state-level sources of information and assistance, which vary among different states.

The Silver Jackets program, active in several states, is a partnership of USACE, FEMA, and state agencies. The Silver Jackets program provides a state-based strategy for an interagency approach to planning and implementing measures for risk reduction.

5 Acronyms and Definitions

5.1 Acronyms

A

AAL	Average Annualized Loss
ALR	Annualized Loss Ratio
AoMI	Areas of Mitigation Interest

B

BCA	Benefit-Cost Analysis
BFE	Base Flood Elevation
BMP	Best Management Practices

C

CFR	Code of Federal Regulations
COG	Continuity of Government Plan
COOP	Continuity of Operations Plan
CRS	Community Rating System
CSLF	Changes Since Last FIRM

D

DHS	Department of Homeland Security
DMA 2000	Disaster Mitigation Act of 2000

E

EOP	Emergency Operations Plan

F

FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance
FRD	Flood Risk Database
FRM	Flood Risk Map
FRR	Flood Risk Report
FY	Fiscal Year

G

GIS	Geographic Information System

H

HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program

I

IA Individual Assistance

N

NFIA National Flood Insurance Act

NFIP National Flood Insurance Program

NRCS Natural Resource Conservation Service

P

PA Public Assistance

PDM Pre-Disaster Mitigation

R

RFC Repetitive Flood Claims

Risk MAP Mapping, Assessment, and Planning

S

SFHA Special Flood Hazard Area

SHMO State Hazard Mitigation Officer

SRL Severe Repetitive Loss

U

USACE U.S. Army Corps of Engineers

USGS U.S. Geological Survey

5.2 Definitions

0.2-percent-annual-chance flood – The flood elevation that has a 0.2-percent chance of being equaled or exceeded each year. Sometimes referred to as the 500-year flood.

1-percent-annual-chance flood – The flood elevation that has a 1-percent chance of being equaled or exceeded each year. Sometimes referred to as the 100-year flood.

Annualized Loss Ratio (ALR) – Expresses the annualized loss as a fraction of the value of the local inventory (total value/annualized loss).

Average Annualized Loss (AAL) – The estimated long-term weighted average value of losses to property in any single year in a specified geographic area.

Base Flood Elevation (BFE) – Elevation of the 1-percent-annual-chance flood. This elevation is the basis of the insurance and floodplain management requirements of the NFIP.

Berm – A small levee, typically built from earth.

Cfs – Cubic feet per second, the unit by which discharges are measured (a cubic foot of water is about 7.5 gallons).

Consequence (of flood) – The estimated damages associated with a given flood occurrence.

Crest – The peak stage or elevation reached or expected to be reached by the floodwaters of a specific flood at a given location.

Dam – An artificial barrier that has the ability to impound water, wastewater, or any liquid-borne material, for the purpose of storage or control of water.

Design flood event – The greater of the following two flood events: (1) the base flood, affecting those areas identified as SFHAs on a community's FIRM; or (2) the flood corresponding to the area designated as a flood hazard area on a community's flood hazard map or otherwise legally designated.

Erosion – Process by which floodwaters lower the ground surface in an area by removing upper layers of soil.

Essential facilities – Facilities that, if damaged, would present an immediate threat to life, public health, and safety. As categorized in Hazus, essential facilities include hospitals, emergency operations centers, police stations, fire stations, and schools.

Flood – A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters or (2) the unusual and rapid accumulation or runoff of surface waters from any source.

Flood Insurance Rate Map (FIRM) – An official map of a community, on which FEMA has delineated both the SFHAs and the risk premium zones applicable to the community. See also Digital Flood Insurance Rate Map.

Flood Insurance Study (FIS) Report – Contains an examination, evaluation, and determination of the flood hazards of a community, and if appropriate, the corresponding water-surface elevations.

Flood risk – Probability multiplied by consequence; the degree of probability that a loss or injury may occur as a result of flooding. Sometimes referred to as flood vulnerability.

Flood vulnerability – Probability multiplied by consequence; the degree of probability that a loss or injury may occur as a result of flooding. Sometimes referred to as flood risk.

Floodborne debris impact – Floodwater moving at a moderate or high velocity can carry floodborne debris that can impact buildings and damage walls and foundations.

Floodwall – A long, narrow concrete or masonry wall built to protect land from flooding.

Floodway (regulatory) – The channel of a river or other watercourse and that portion of the adjacent floodplain that must remain unobstructed to permit passage of the base flood without cumulatively increasing the water surface elevation more than a designated height (usually 1 foot).

Floodway fringe – The portion of the SFHA that is outside of the floodway.

Freeboard – A factor of safety usually expressed in feet above a flood level for purposes of flood plain management. “Freeboard” tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed (44CFR§59.1).

Hazus – A GIS-based risk assessment methodology and software application created by FEMA and the National Institute of Building Sciences for analyzing potential losses from floods, hurricane winds and storm surge, and earthquakes.

High velocity flow – Typically comprised of floodwaters moving faster than 5 feet per second.

Levee – A human-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding. (44CFR§59.1)

Loss ratio – Expresses loss as a fraction of the value of the local inventory (total value/loss).

Mudflow – Mudslide (i.e., mudflow) describes a condition where there is a river, flow or inundation of liquid mud down a hillside usually as a result of a dual condition of loss of brush cover, and the subsequent accumulation of water on the ground preceded by a period of unusually heavy or sustained rain. A mudslide (i.e., mudflow) may occur as a distinct phenomenon while a landslide is in progress, and will be recognized as such by the Administrator only if the mudflow, and not the landslide, is the proximate cause of damage that occurs. (44CFR§59.1)

Probability (of flood) – The likelihood that a flood will occur in a given area.

Risk MAP – Risk Mapping, Assessment, and Planning, a FEMA strategy to work collaboratively with state, local, and tribal entities to deliver quality flood data that increases public awareness and leads to action that reduces risk to life and property.

Riverine – Of or produced by a river. Riverine floodplains have readily identifiable channels.

Special Flood Hazard Area (SFHA) – Portion of the floodplain subject to inundation by the 1-percent-annual or base flood.

Stafford Act – Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707, signed into law November 23, 1988; amended the Disaster Relief Act of 1974, PL 93-288. This Act constitutes the statutory authority for most federal disaster response activities especially as they pertain to FEMA and FEMA programs.

Stillwater –Projected elevation that flood waters would assume, referenced to National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or other datum, in the absence of waves resulting from wind or seismic effects.

Stream Flow Constrictions – A point where a human-made structure constricts the flow of a river or stream.

6 Additional Resources

ASCE 7 – National design standard issued by the American Society of Civil Engineers (ASCE), *Minimum Design Loads for Buildings and Other Structures*, which gives current requirements for dead, live, soil, flood, wind, snow, rain, ice, and earthquake loads, and their combinations, suitable for inclusion in building codes and other documents.

ASCE 24-05 – National design standard issued by the ASCE, *Flood Resistant Design and Construction*, which outlines the requirements for flood resistant design and construction of structures in flood hazard areas.

National Flood Insurance Program (NFIP), Federal Emergency Management Agency (FEMA), www.floodsmart.gov

FEMA, www.fema.gov

FEMA, *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping

ASCE, 2010. *So, You Live Behind a Levee!* Reston, VA.

FEMA Publications – available at www.fema.gov

FEMA, 1985. *Manufactured Home Installation in Flood Hazard Areas*, FEMA 85. Washington, DC, September 1985.

FEMA and the American Red Cross, 1992. *Repairing Your Flooded Home*, FEMA 234/ARC 4476. Washington, DC, August 1992.

FEMA, 1996. *Addressing Your Community's Flood Problems*, FEMA 309. Washington, DC, June 1996.

FEMA, 1998. *Homeowner's Guide to Retrofitting*, FEMA 312. Washington, DC, June 1998.

FEMA, 1999. *Protecting Building Utilities from Flood Damage*, FEMA 348. Washington, DC, November 1999.

FEMA, 1999. *Riverine Erosion Hazard Areas Mapping Feasibility Study*. Washington, DC, September 1999.

FEMA, 2003. *Interim Guidance for State and Local Officials - Increased Cost of Compliance Coverage*, FEMA 301. Washington, DC, September 2003.

FEMA, 2000. *Above the Flood: Elevating Your Floodprone House*, FEMA 347. Washington, DC, May 2000.

FEMA, 2004a. *Design Guide for Improving School Safety in Earthquakes, Floods, and High Winds*, FEMA 424. Washington, DC, January 2004.

FEMA, 2004b. *Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners*, FEMA 64. Washington, DC, April 2004.

FEMA, 2005. *Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning*, FEMA 386-6. Washington, DC, May 2005.

FEMA, 2006c. *"Designing for Flood Levels Above the BFE," Hurricane Katrina Recovery Advisory 8, Hurricane Katrina in the Gulf Coast: Building Performance Observations, Recommendations, and Technical Guidance*, FEMA 549, Appendix E. Washington, DC, July 2006.

FEMA, 2007b. *Property Acquisition Handbook for Local Communities*, FEMA 317. Washington, DC, September 2007.

FEMA, 2007c. *Public Assistance Guide*, FEMA 322. Washington, DC, June 2007.

FEMA, 2007d. *Using Benefit-Cost Review in Mitigation Planning*, FEMA 386-5. Washington, DC, May 2007.

FEMA, 2007e. *Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings*, FEMA 543. Washington, DC, January 2007.

FEMA, 2007f. *Selecting Appropriate Mitigation Measures for Floodprone Structures*, FEMA 551. Washington, DC, March 2007.

FEMA, 2007g. *Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds: Providing Protection to People and Buildings*, FEMA 577. Washington, DC, June 2007.

FEMA, 2008a. *Reducing Flood Losses Through the International Codes: Meeting the Requirements of the National Flood Insurance Program*, FEMA 9-0372, Third Edition. Washington, DC, December 2007.

FEMA, 2009c. *Local Officials Guide for Coastal Construction*, FEMA P-762. Washington, DC, February 2009.

FEMA, 2009d. *Recommended Residential Construction for Coastal Areas: Building on Strong and Safe Foundations*, FEMA P-550, Second Edition. Washington, DC, December 2009.

FEMA, 2010b. *Home Builder's Guide to Coastal Construction*, FEMA P-499. Washington, DC, December 2010.

FEMA, 2011. *Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas*, Fourth Edition, FEMA P-55. Washington, DC, August 2011.

FEMA, 2013. *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*, Washington, DC, February 2013.

FEMA, 2013. *Local Mitigation Planning Handbook*, Washington, DC, March 2013.

USGS. *USGS National Assessment of Shoreline Change Project*, coastal.er.usgs.gov/shoreline-change/

7 Data Used to Develop Flood Risk Products

GIS base map information was acquired primarily from the following sources:

- FEMA
- U.S. Census Bureau
- U. S. Geological Survey (USGS)

Corporate limits, roads, and hydrographic features were obtained from FEMA's most recent countywide FIRM updates, USGS National Hydrography Dataset, and U.S. Census Bureau TIGER/LINE Shapefiles.

Hazard Mitigation Plan information was provided by FEMA.

Flood Insurance Claim, Policy, and additional Mitigation Plan information were acquired from FEMA.

Photos shown on the Flood Risk Map were taken from publically available sources on the Internet.

Census Information

Census information collected from FEMA's HAZUS version 2.2 software products. Census data used in the HAZUS Analysis for estimated losses was based on the 2000 census. Population data reported for each community is based on the 2010 census. As such there may be minor discrepancies in the FRD when comparing census blocks to communities to arrive at total population.

For more detailed information on the Census data and currency, please see the metadata file that is submitted along with the Flood Risk Database.

HUC-8 Boundary

HUC boundaries were provided by the USGS.

Hillshade

Hillshade, also known as Shaded Relief is shown on the background of the Flood Risk Map. Hillshade is a cartographic process of 3-D visualization of the terrain on maps and charts that implements graded shadows created by light shining from the north-west direction. Topographic data shown on the Flood Risk Map were collected by RAMPP from the USGS National Elevation Data.

General Building Stock

General Building Stock represents the total economic inventory for a community (i.e. an estimate of the replacement dollar cost for all buildings and their content). These data come from the Census information in HAZUS version 2.2. No updates were made to the General Building Stock in HAZUS for this analysis.