



APPENDIX A - Hazard Descriptions and Previous Significant Events

Disaster Declarations 1955– 2012

For historical prospective, Table 1 contains the history of Presidential Disaster Declarations (DR) and Emergency Declarations (EM) between 1955 and 2012.

Table 1: Disaster Declarations 1955 – 2012

Type of Event ⁽¹⁾	Date of Declaration	Declaration No.	Approximate Loss	Comments
Hurricane/Flooding	August 1955	DR-45	Unknown	—
Flooding	October 1955	DR-52	Unknown	—
Flooding	April 1987	DR-792	\$2 million	Damage to public infrastructure in the West Kill watershed
Severe Winter Storm	November 1987	DR-801	Unknown	
Severe Blizzard	March 1993	EM-3107	Unknown	
Blizzard	January 1996	DR-1083	\$160,000	
Severe Storms and Flooding	January 1996	DR-1095	\$10 million ⁽¹⁾	
Hurricane/Tropical Storm Floyd	September 1999	DR-1296	\$3 million ⁽¹⁾	
Severe Storms	September 2000	DR-1335	\$115,000 ⁽¹⁾	
Snowstorm	February 2003	EM-3173	\$462,000	
Snowstorm	March 2003	EM-3184	Unknown	
Severe Storms, Tornadoes and Flooding	August 2003	DR-1486	\$75,000 ⁽¹⁾	Tornado damage. Most of the damage was in Catskill and Athens.
Severe Storms and Flooding	April 2005	DR-1589	\$1.3 million ⁽¹⁾	Flood damage.
Severe Storms and Flooding	July 2006	DR-1650	\$609,000	Flood damage, particularly in the Towns of Catskill and Greenville.
Severe Storms and Inland and Coastal Flooding (also identified as a Nor'easter)	April 2007	DR-1692	\$1.3 million	The Town of Cairo and Village of Catskill experiencing the most losses.



Type of Event ⁽¹⁾	Date of Declaration	Declaration No.	Approximate Loss	Comments
Severe Winter Storm	December 2008	EM-3299	Unknown	
Severe Winter Storm	March 2009	DR-1827	\$1.2 million	
Hurricane Irene	August 2011	EM-3328 DR-4020	Unknown	
Tropical Storm Lee	September 2011	EM-3341	Unknown	
Hurricane Sandy	October 2012	EM-3351 DR-4082	Unknown	

Source: FEMA (2015); NCDC (2015)

(1) Type of event = disaster classification assigned by FEMA

(2) NCDC; SHELDUS

Floods

Description

Floods are one of the most common natural hazards in the United States. They can develop slowly over a period of days or develop quickly, with disastrous effects that can be local (impacting a neighborhood or community) or regional (affecting entire river basins, coastlines, and multiple counties or states). Floods are the most frequent and costly natural hazards in New York State in terms of human hardship and economic loss, particularly to communities that lie within flood-prone areas or floodplains of a major water source.

The FEMA definition for flooding is “a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from the overflow of inland or tidal waters or the rapid accumulation of runoff of surface waters from any source.”

A floodplain is defined as the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that becomes inundated with water during a flood. Most often floodplains are referred to as 100-year floodplains. A 100-year floodplain is the flood that has a one-percent chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once in a relatively short period of time.

Most floods fall into three categories: riverine, coastal, and shallow. Other types of floods could include ice-jam floods, dam failure floods, and floods associated with local drainage or high groundwater. For the purposes of this plan and as deemed appropriate by the County; riverine, flash,



ice-jam, and dam failure flooding are the main flood types of concern that could impact the county and are discussed as follows:

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

Ice-Jam Floods – As indicated by the Northeast States Emergency Consortium (NESEC), an ice jam is an accumulation of ice in a river that acts as a natural dam and can flood low-lying areas upstream. Downstream areas also can flood if the jam releases suddenly, releasing a wave of ice and water.

An ice jam occurs when warm temperatures and heavy rains cause rapid snow melt. The melting snow combined with the heavy rain causes frozen rivers to swell. The rising water breaks the ice layers into large chunks, which float downstream and often pile up near narrow passages and obstructions such as bridges and dams. The ice jam may then build to a thickness great enough to raise the water level and cause flooding. Some of the most devastating winter floods have been associated with a combination of heavy rainfall, rapid snowmelt, and ice jams.

It is difficult to identify particular areas that are generally prone to ice jams because the hazard can be very localized. However, based on causal characteristics, ice jam flood hazard is most prevalent in locations of flat terrain but also where climate includes extended periods of below freezing temperatures.

Most ice jam events create significant economic, environmental, and social impacts to areas located along rivers, streams, reservoirs, and/or tributaries. Impacts can include structural damages, disruption of geomorphology (e.g., bank erosion or channel shifting), and natural habitat loss to fish populations and microbial communities. Ice jams can result in damage to infrastructure through direct impact or through associated flooding of roads, bridges, buildings, and homes. This can cost communities thousands to millions of dollars.

Dam Failure Floods – A "dam" is 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 (different types of dams). Dams are man-made structures built for the purpose of power production, agriculture, water supply, recreation, and flood protection. A levee is a natural or artificial barrier that diverts or restrains the flow of a stream or other body of water for the purpose of protecting an area from inundation by flood waters. According to FEMA, dam failure is a catastrophic type of failure characterized by the sudden, rapid, and uncontrolled release of impounded water or the likelihood of such an uncontrolled release. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water is properly considered a failure. These lesser degrees of failure can progressively lead to or heighten the risk of a catastrophic failure. They are, however,



normally amenable to corrective action. A dam failure can result in severe loss of life, economic disaster, and extensive environmental damage, primarily due to their unexpected nature and high velocity floodwater. According to FEMA, dams can fail for one or a combination of the following reasons:

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

Table 2 presents details of dams located in Greene County.

Table 2: Type, Hazard Classification, Owner, and Purpose of Dams in Greene County

Name	Hazard Classification	Nearest City/Town	Type	Owner	Purpose
Herbert Wolff Farm Pond Dam #2	Low	High Falls	RE - Earth	Private	Recreation
High Falls Extension Mill Dam	Low	Catskill	MS - Masonry	Private	Other
Friar Tuck Pond Dam	Low	None	RE - Earth	Private	Recreation
Timber Lake Club Dam	Low	Allaben	RE - Earth, CN - Concrete Gravity	Town of Lexington	Recreation
(176-1176)	No Hazard		OT - Other	Not Found	Other
Cerny Pond Dam	Low	South Jewett	RE - Earth	Not Found	Recreation
Adar Dam	Low	Spruceton	RE - Earth	Private	Recreation
Lake Rip Van Winkle Dam	Low	Tannersville	CN - Concrete Gravity	LOCAL GOVERNMENT	Recreation
Onteora Pond Dam	Intermediate	Tannersville	RE - Earth	Town of Hunter	Irrigation
Tranquility Camp Dam	Low	Leeds	RE - Earth	Private	Recreation
Coxsackie Reservoir #2 Dam	Intermediate	West Coxsackie	CN - Concrete Gravity	State	Water Supply - Secondary



Name	Hazard Classification	Nearest City/Town	Type	Owner	Purpose
Beaver Dam Lake Dam	Low	Earlton	RE - Earth	Private	Recreation
Aiello Pond #1 Dam	Low	Paradise Hill	RE - Earth	Private	Recreation
Aiello Pond #2 Dam	Low	Paradise Hill	RE - Earth	Private	Fire Protection, Stock, Or Small Farm Pond, Recreation
Coxsackie Corr Fcly Retention Pnd Dam	Low	West Coxsackie	RE - Earth	State	Flood Control and Storm Water Management
Lloyd Zimmerman Dam	Low	West Coxsackie	RE - Earth	Not Found	Water Supply - Secondary
Mill Pond Dam	Low	Catskill	CN - Concrete Gravity	Private	Hydroelectric
Moore Pond Dam	Low	Coxsackie	RE - Earth	Not Found	Other
(210-1038)	No Hazard		OT - Other	Not Found	Other
Herbert Wolff Farm Pond Dam #1	Low	High Falls	RE - Earth	Private	Recreation
Prattsville Barrier Dam	Low	Prattsville	CN - Concrete Gravity	State	Other
East Jewett Campsite Dam	Low	East Jewett	RE - Earth	Not Found	Recreation
Tannersville Reservoir #3 Dam	Intermediate	Tannersville	RE - Earth	Town of Hunter	Water Supply - Primary
Camp Harriman Dam	High	East Jewett	ER - Rockfill, RE - Earth	Town of Jewett	Recreation
Nyc Police Pond Dam	Low	Platte Clove	RE - Earth	Not Found	Other, Recreation
Tannersville Reservoir #1 Dam	Low	Tannersville	RE - Earth, MS - Masonry	LOCAL GOVERNMENT	Water Supply - Primary
Dibble Dam	No Hazard	Hunter	CN - Concrete Gravity	LOCAL GOVERNMENT	Water Supply - Primary
Tannersville Reservoir #2 Dam	Low	Tannersville	RE - Earth	LOCAL GOVERNMENT	Water Supply - Primary
South Lake Dam	Low	Kaaterskill Falls	RE - Earth	State	Recreation
Dolan Lake Dam	Low	Hunter	OT - Other	Not Found	Other
Levy Dam	Low	Camp Beecher	RE - Earth	Private	Recreation



Name	Hazard Classification	Nearest City/Town	Type	Owner	Purpose
Twilight Park Dam (upper)	Low	Palenville	CN - Concrete Gravity	Private	Other
Hunter Mountain Lake Dam	High	Hunter	RE - Earth	Town of Hunter	Water Supply - Secondary
R & E Banks Dam	Low	Lexington	RE - Earth	Private	Recreation
William Mead Dam	Low	Lexington	RE - Earth	Private	Recreation
Szabo Pond Dam	No Hazard	Prattsville	RE - Earth	Private	Recreation
Masucchia Pond Dam	Low	Lexington	RE - Earth	Private	Recreation
Ilseher Pond Dam	Low	Jewett Center	RE - Earth	Private	Recreation
Potuck Reservoir Dam	High	Leeds	RE - Earth	Town of Coxsackie	Water Supply - Primary
Athens Dam	Low	Athens	CN - Concrete Gravity	LOCAL GOVERNMENT	Water Supply - Secondary
Albanese Pond Dam	Low	Cornwallville	RE - Earth	Not Found	Recreation
Nicholsen Pond Dam	Low	Woodstock	RE - Earth	Private	Recreation
Batavia Kill Watershed Dam #4a	High	Windham	RE - Earth	Town of Windham	Flood Control and Storm Water Management
Hull Farm Pond Dam	Low	Durham	RE - Earth	Not Found	Fire Protection, Stock, Or Small Farm Pond, Recreation
Schmollinger Pond Dam	Low	Cairo	RE - Earth	Town of Greenville	Irrigation
Batavia Kill Watershed Dam #3	High	Windham	RE - Earth	Town of Windham	Flood Control and Storm Water Management
Athens Water Supply Dam	Intermediate	Limestreet	RE - Earth	Town of Athens	Water Supply - Primary
Collins & Meurer Dam	Low	West Coxsackie	RE - Earth, CN - Concrete Gravity	Not Found	Recreation
Coxsackie Reservoir Dam	Intermediate	Climax	RE - Earth	Village of Coxsackie	Water Supply - Primary
Bronck Lake Dam	Low	West Coxsackie	RE - Earth	Private	Recreation, Water Supply - Primary



Name	Hazard Classification	Nearest City/Town	Type	Owner	Purpose
Deans Mill Dam	Low	None	CN - Concrete Gravity	Village of Ravana	Water Supply - Primary
Sportsmen Wildlife Marsh Dam	Low	Surprise	RE - Earth, CN - Concrete Gravity	Private	Recreation
Albright Brothers Pond Dam	Low	Athens	RE - Earth	Private	Fire Protection, Stock, Or Small Farm Pond, Recreation
Zimmerman Pond #1 Dam	Low	None	RE - Earth	Not Found	Recreation
Wilkinson Pond Dam	Low	None	RE - Earth	Private	Fire Protection, Stock, Or Small Farm Pond, Recreation
Medway Dam	Intermediate	Medway	RE - Earth	Village of Coxsackie	Water Supply - Primary
South Cairo Rod & Gun Club Dam	No Hazard	South Cairo	RE - Earth	Private	Recreation
Ordes Pond Dam	Low	None	RE - Earth	Town of Cairo	Recreation
Batavia Kill Watershed Dam #1	High	Maplecrest	RE - Earth	Town of Windham	Flood Control and Storm Water Management, Recreation
Abbuhl & Hosley Pond Dam	Low	Cornwallville	RE - Earth	Not Found	Recreation
Bdk Corporation Dam #1	No Hazard	East Durham	RE - Earth	Not Found	Recreation
Knupfer Dam & Dike	Low	Sunnyside	RE - Earth	Private	Recreation
Sumner Pond Dam	No Hazard	Norton Hill	RE - Earth	Private	Recreation
Bullivant Pond Dam	No Hazard	East Durham	RE - Earth	Private	Recreation
Loughman Pond Dam	No Hazard	East Durham	RE - Earth	Private	Recreation
Helmut Philipp Pond Dam	Low	Greenville Center	RE - Earth	Private	Recreation
John Galt Dam	Low	Camp Beecher	RE - Earth	Private	Recreation
Country Estates Retention Basin Dam	Low	Greenville	RE - Earth	Town of Greenville	Flood Control and Storm Water Management
Cairo Water Company Dam #1	Low	Woodstock	RE - Earth	Private	Recreation



Name	Hazard Classification	Nearest City/Town	Type	Owner	Purpose
Vitacco Pond Dam	Low		CN - Concrete Gravity, LS - Laid Up Stone	Town of Jewett	Recreation
Bocklet Dam	Low	Catskill	RE - Earth	Town of Durham	Recreation
Durham Concert Site Dam And Dike	Low		RE - Earth	Town of Durham	Recreation
Colgate Lake Dam	Intermediate	Jewett	RE - Earth, CN - Concrete Gravity	Town of Jewett	Recreation
Ferrer Pond Dam	No Hazard	None	RE - Earth	Private	Recreation
Tailleur Wildlife Marsh Dam	Low	None	RE - Earth	Private	Recreation
Clowes Pond Dam	No Hazard	Jefferson Heights	RE - Earth	Private	Recreation
King Pond Dam	No Hazard	Catskill	RE - Earth	Private	Recreation
Sleepy Hollow Dam	High	Athens	RE - Earth	Town of Athens	Recreation, Water Supply - Primary
Girard Pond Dam	Low	Catskill	RE - Earth	Private	Recreation
Zimmerman Pond Dam	No Hazard	Athens	RE - Earth	Private	Fire Protection, Stock, Or Small Farm Pond, Recreation
Silver Lake Dam	Intermediate	Brooksbury	ER - Rockfill	Town of Windham	Irrigation, Recreation
St John Pond Dam	Low	Brooksbury	ER - Rockfill	Not Found	Irrigation, Recreation
Klatz Dam	Low	Cairo	CB - Buttress	Town of Cairo	Other
East Durham Pond Dam	No Hazard	East Durham	CN - Concrete Gravity	Not Found	Recreation
Carelas Lake Dam	Low	Freehold	RE - Earth	Private	Recreation
Lake Heloise Dam	Low	Windham	RE - Earth, LS - Laid Up Stone	Private	Recreation
Conservative Baptists Pond Dams A & B	Low	Freehold	RE - Earth	Not Found	Recreation
Beers Pond Dam	Low	East Jewett	RE - Earth	Private	Recreation
Sclonsky Pond Dam	Low		ER- Rockfill	Private	Recreation
Zimmer Road Dam	Low		RE-Earth	Not Found	Recreations



Name	Hazard Classification	Nearest City/Town	Type	Owner	Purpose
Total	90				

Source: Inventory of Dam – New York State (NYSDEC) 2022

Previous Occurrences (prior to 2016)

Further descriptions of select flood events that have impacted Greene County are provided below for events where details regarding their impact were available. These descriptions are provided to give the reader a context of the flood events that have affected the county and to assist local officials in locating event-specific data for their municipalities based on the time and proximity of these events. Flood impacts associated with hurricanes, tropical storms, or nor’easters are discussed in this profile and are also mentioned in their designated hazard profiles (Section 4.2.2 Severe Storm and Section 4.2.3 Severe Winter Storm – 2016 plan).

Monetary figures within the event descriptions were U.S. Dollar (USD) figures calculated during or within the approximate time of the event (unless present day recalculations were made by the sources reviewed). If such an event would occur in the present day, monetary losses would be considerably higher in USDs as a result of inflation.

August 29 - September 14, 1960 (Hurricane Donna): This event holds the record for retaining "major hurricane" status (Category 3 or greater on the Saffir-Simpson Hurricane Scale) in the Atlantic Basin for the longest period of time on record (a total of 17 days). The storm affected every state along the East Coast; producing hurricane-force winds (up to 115 mph) from South Carolina to Maine (Barnes and Lyons, 2007). Greene County experienced between 5 and 7 inches of rain.

In Greene County, the impacts of this event fell primarily within the Batavia Kill watershed. The Soil Conservation Service indicated that the storm devastated the Town of Windham, producing more than \$750,000 in damages (1960 USD) to over 75 residences, 27 businesses, utilities, seven bridges, and multiple State, County, and Town roads. The Windham Country Club, two churches, and the Windham Ashland School all experienced damage. The flooding from this event caused water contamination in the Town of Windham, causing a boil water advisory for a period of time. Information regarding other areas throughout the county impacted from this event is limited or has not been disclosed in the materials reviewed to develop this plan.

April 3-6, 1987 (FEMA DR-792): Heavy rains from this event caused widespread flooding in southeastern New York State. As much as nine inches of rain fell throughout the Catskill Mountains. Flooding along the Schoharie Creek was the third largest since records began in the early 1900s and was exceeded only by the October 1955 and March 1980 floods. In 1987, NYSEMO estimated that flood damage to homes, businesses, farms, crops, roadways, and bridges in New York State exceeded \$65 million.

In Greene County, the Schoharie Creek at Prattsville had a water discharge of 47,600 cfs and crested to 18.37 feet (6.37 feet above 12-foot flood stage) during this event (USGS, 2008). It was a recorded



peak event for the East Kill near Jewett Center, cresting 15.68 feet (USGS, Date Unknown). It also caused significant damages in the Batavia Kill watershed and resulted in approximately \$2 million in property damage to public infrastructure in the West Kill watershed.

January 18-20, 1996 (FEMA DR-1095): Precipitation from a strong storm combined with unseasonably warm temperatures that caused rapid snowmelt, resulted in extensive flooding throughout New York State.

Greene County received between 1.5 and 4.5 inches of rain during this event, resulting in widespread flooding along the major rivers and small streams of the county. The Schoharie Creek at Prattville experienced its highest flood stage ever documented since the beginning of record floods at the gage in 1904. Floodwaters at the station crested at 19.4 feet (7.4 feet above 12-foot flood stage) with peak flows of 52,800 cfs, reaching its 100-year flood stage and representing “disastrous” flooding. Many residential and commercial properties, infrastructure, roadways, bridges, and transportation systems experienced significant damage throughout the county. In Athens, Coxsackie, and New Baltimore flooding of the Hudson River resulted in multiple evacuations and damage to sewer treatment plants. The Prattville Water System experienced severe damage. Flooding along the Hudson River damaged several marinas and parks including Riverside Park in Coxsackie, Athens Riverfront Park, and the marina section of New Baltimore. Some of the most severe flooding occurred in Palenville, Athens, Windham, and Lexington. Residents in Palenville were evacuated due to the flooding of Kaaterskill Creek. Road washouts were primarily reported in the mountainous terrain of the county. Eighty-percent of the roads in the Town of Durham suffered damage with six roads washed out. Severely damaged State routes within the county included Routes 42, 214, 296, 32 and 81. Melodywood Condominiums, along the Schoharie Creek in the Village of Hunter, suffered extreme streambank failure from this event, with the immediate safety of the structure and additional adjoining properties threatened.

This event resulted in nearly \$2 million in property damage to public infrastructures in the West Kill watershed. NOAA-NCDC and SHELDCUS indicated that Greene County experienced approximately \$10 million in total property damages from this event. With the extent of damage created throughout the County during this event, County and State officials began the preparation and initiation of a series of flood hazard mitigation and stream restoration projects throughout Greene County, particularly along Schoharie Creek, West Kill, Batavia Kill, East Kill and Stony Clove Creek.

September 16, 1999 (Hurricane/Tropical Storm Floyd) (FEMA DR-1296):

New York State experienced approximately \$62.2 million in property damages from this event. In Greene County, rainfall totals ranged between 6.9 inches (Prattsville) and 12.21 inches (Cairo). NOAA NCDC and SHELDCUS indicated that Greene County experienced approximately \$3 million in flood damages. Over 12 inches of rain was recorded in Cairo, the most recorded amount of rainfall associated with the storm in the state. The Schoharie Creek at Prattville had a water discharge of 42,800 cfs and crested to 17.64 feet (5.64 feet above 12-foot flood stage). This event created unstable conditions throughout many rivers and streams of the county and exacerbated the degradation and streambank erosion that was initially created during the January 1996 flood.



May through September 2000 (FEMA DR-1335): Between May and September 2000, multiple severe storm events occurred throughout New York State resulting in significant flooding and over \$34.6 million in damage throughout various New York State counties. In Greene County, NOAA NCDC indicated that flooding during this time period particularly occurred on June 6-7, 2000, when heavy rain fell across the Catskills with as much as 5.77 inches falling in East Jewett in Greene County. A portion of State Route 385 was closed in Athens. In New Baltimore, two roads and culvert bridges were closed as a result of flooding. In Leeds, 23 people had to be evacuated from homes along State Highway 23B as the Catskill creek rose out of its banks. Greene County experienced over \$115,000 in flood damages during this time period.

July 21 through August 15, 2003 (FEMA DR-1486): A series of slow-moving thunderstorms, accompanied by torrential rainfall, caused flash flooding throughout much of New York State, including Greene County. Although \$1 million in damages resulted from a tornado outbreak in July, Greene County suffered the most amount of flood damage in early August.

On August 2, the area experienced severe weather when isolated thunderstorms affected the Catskill region. Approximately four to five inches of rain fell in less than two hours throughout eastern Greene County. The heavy rainfall resulted in flooded roads in both Leeds and Catskill. In Catskill, the Catskill Creek overflowed onto State Highway 23B and a mudslide was reported on Sandy Plain Road. The Poltic Creek overflowed its banks and washed away a small bridge. Homes in the cities of Catskill and Athens took on significant water in their basements. According to NOAA NCDC and SHELUDS, Greene County had approximately \$60,000 in flood damage due to the storms.

Another slow-moving series of thunderstorms developed in the area on August 11, producing torrential rainfall and flooding. In Greene County, portions of Route 296 in Hensonville were washed out and flooding was noted on Route 23 near Cairo. According to NOAA NCDC and SHELUDS, Greene County had approximately \$15,000 in flood damage due to the series of storms.

April 2-4, 2005 (FEMA DR-1589): A slow moving storm moved up through the Appalachians and into the northeast U.S. The heavy rainfall from this event produced flooding throughout New York, New Jersey, and Pennsylvania (NCDC, 2005). Prior to this storm, the rivers and streams in the area had high flow-rates due to a previous rainstorm on March 28 and snowmelt. This substantially increased flooding and caused additional damage, along with the damage produced by this storm.

The NWS reported the heaviest rain and the worst flooding occurred in Greene and Ulster Counties. The NYS HMP indicated that New York State experienced approximately \$66.2 million in damages from this event.

In Greene County, NOAA NCDC indicated that many municipalities were impacted by floodwaters from this event. The Hamlet of East Jewett experienced the most rainfall, resulting in significant flooding. Many of the county's roads were closed, including: Paul Saxe, Embought, and Mountain Roads in the Town of Catskill and County Routes 77, 23C, 14, and State Route 23A in the Town of Jewett. In Haines Falls, State Route 23A was washed out and Route 32 was under water in Greenville Center. In Leeds, Lexington Road and Route 23B were under water. The Schoharie Creek at Prattsville



crested to 17.41 feet (5.41 feet above 12-foot flood stage). The West Kill reached flood stage at 3.0 feet in Spruceton. Rainfall totals throughout the county ranged between 1.5 inches in New Baltimore and 5.54 in East Jewett. According to NOAA NCDC and SHEL DUS, Greene County experienced approximately \$1.3 million in flood damages from this event.

June 25 through July 10, 2006 (FEMA DR-1650): This severe storm event resulted in significant flooding that affected much of the Mid-Atlantic region. The flooding was widespread, affecting numerous rivers, lakes, and communities from upstate New York to North Carolina. Rain totals throughout the eastern U.S. ranged from 2 to 17 inches, particularly between June 27 and 29, with the largest accumulations falling in Maryland, Pennsylvania, and New York State. Overall, the storm resulted in over 16 deaths and millions of dollars in damages throughout the affected states.

Some sources indicated that this flooding event was the largest and most costly natural disaster that New York State has encountered since Hurricane Agnes in 1972. The NYS HMP indicated that the counties affected throughout the state experienced approximately \$246.3 million in damages during this flood.

In Greene County, precipitation totals averaged between 3 and 12 inches of rain, with the largest accumulations generated in the south central portion of the county. Rain totals between June 26 and June 30 included: Tannersville (12.20 inches), East Jewett (8.3 inches), Catskill (4.43 inches), and Windham (3.14 inches) (NWS, 2006). Law enforcement personnel reported that several roads in Greene County were closed in and near the Towns of Catskill, Cairo, and Haines Falls due to flooding. Part of Route 23-A remained closed between Palenville and Haines Falls, where a retaining wall gave way. Cost estimates of property damage in Greene County were unavailable in the materials reviewed to develop this plan.

In Greene County, NOAA NCDC indicated that the heavy rain from this event led to widespread flooding of small streams and creeks. Precipitation totals for the county ranged between three and six inches, with the greatest accumulations centrally located in the Towns of Lexington, Jewett, and Hunter. Other sources indicate that specific rainfall totals in Greene County ranged from 3.97 inches in Cairo to 7.9 inches in Tannersville. Numerous roads were closed throughout Greene County, including County Route 61 in Coxsackie, and several roads near Catskill. The Schoharie Creek at Prattsville crested to 12.98 feet (0.98 feet above 12-foot flood stage). The Catskill Creek in the Town of Catskill experienced continued stream bank erosion and migration from this event, which would cost an estimated \$1 to \$1.5 million to restore. A reported landslide occurred along Warren Stein Road in the Town of Cairo.

The Greene County Department of Emergency Services indicated that preliminary storm damage totals eligible for Federal Public Assistance (PA) in Greene County totaled nearly \$472,000; with the Town of Cairo and the Village of Catskill experiencing the most losses. Storm damage totals for Individual Assistance (IA) in the county totaled \$111 million, with the Town and Village of Catskill experiencing the most losses, totaling \$110 million. IA losses to the County were denied by FEMA. Other sources indicate that final losses eligible for PA were estimated at \$1.3 million as a result of flood damage, response and debris removal costs throughout the County. Additionally, final loss



estimates to homeowners were tallied at \$547,000. These conflicting monetary figures indicate that a discrepancy exists regarding total damages to the county.

December 1, 2010 – A strong cold front swept across east-central New York on Wednesday, December 1, bringing strong and gusty winds and heavy rains to the area. With the passage of the cold front, winds quickly shifted from the south-southeast to the west, and temperatures rapidly dropped from the 50s into the 30s. Rain changed to sleet across the Mohawk Valley in the wake of the cold front, leading to minor traffic accidents.

Ahead of the cold front, a very strong south-to-southeast low-level jet resulted in wind gusts of up to 55 mph, and with the passage of the front, there were wind gusts up to approximately 50 mph. The strong wind gusts downed trees and power lines, resulting in power outages.

One to 3 inches of rain fell across the area with 5 to 7 inches of rainfall across the higher terrain of the eastern Catskills. Moderate to major flooding was reported in western Ulster and Greene Counties. Riverine flooding occurred in the eastern Catskills, southern Adirondacks, and Mohawk Valley. Urban and small stream flooding also occurred across the local area. Three planes, including one in route from Newfoundland to Newark Liberty International Airport, were forced to land at the Albany International Airport due to the extreme weather conditions along the East Coast.

Roads were closed because of flash flooding on Route 145 between Frank Hitchcock Street and Route 23, Snyder Lane, and Lincoln Drive in Cairo, and water was reported moving across Route 23.

August 28, 2011- Hurricane Irene (FEMA DR-4020) – Catastrophic flooding was reported throughout Greene County during Hurricane Irene, especially in the Catskill areas. Evacuations and rescues were widespread, along with widespread road closures and damage and houses that were swept away. Record flooding most likely occurred on the Schoharie Creek at Prattsville before the gage was lost in the flood. One death occurred in Maplecrest when a woman drowned when the house she was in was swept away by floodwaters. The combination of strong winds and extremely saturated soil led to numerous downed trees and power lines across the region and widespread, prolonged power outages. Approximately 18,000 people in Greene County were affected by power outages.

October 29, 2012 – Superstorm Sandy (FEMA DR-4085) – Superstorm Sandy moved northward off the eastern seaboard of the United States during the last week of October 2012. Due to a very strong blocking ridge of high pressure over the Atlantic Ocean, the storm turned back to the northwest and rapidly strengthened as it moved toward the mid-Atlantic coast.

Although less than an inch of rain fell in valley areas, higher terrain areas of the northern and eastern Catskills received over an inch of rain. It was reported that 3.25 inches of rain fell in the Borough of Halcott Center, Greene County. Wind gusts of 40 to 60 mph were common from the afternoon of October 29 until the early morning hours of October 30. Wind gusts reached 50 mph in Greene County. Numerous trees were reported down throughout Halcott Center due to high winds.

The powerful storm also caused a storm surge that moved up the Hudson River from the New York City area. Record flooding occurred on the Hudson River at Poughkeepsie as the river reached



9.54 feet. The surge of water moved all the way up to Albany. Flooding occurred along the Hudson River in Greene County, causing damage to homes and businesses near the river.

Businesses were flooded from tidal flooding near the confluence of Hudson River and Catskill Creek in Catskill.

FEMA approved more than \$384,000 in Hurricane Sandy assistance to fund emergency efforts and help repair and rebuild public infrastructure in Greene County.

July 22, 2013 – On the evening of Monday, July 22, 2013, a warm front was lifting northward from New Jersey into southern New York. Ahead of the warm front, a steady light-to-moderate rain was falling across the Catskills and Hudson Valley region. Embedded in the steady rain were pockets of heavy rainfall and thunderstorms that were moving north. The pockets of heavy rainfall and thunderstorms moved over the same locations across the mid-Hudson Valley as the warm front slowly lifted northward. As a result, very heavy rainfall repeatedly fell over the same locations over a several hours. The result was flash flooding across parts of eastern Greene County. Radar estimates and spotters reported 4 to 7 inches of rain across the region. Several roadways were closed as a result of the flooding and floodwaters covered a portion of the New York State Thruway. The water receded by early morning on Tuesday, July 23, as the rainfall tapered off across the region and the warm front continued to lift northward. Mansion Street in Coxsackie was closed due to flash flooding from heavy rainfall.

Potential Impact

All types of flooding can cause widespread damage throughout rural and urban areas, including but not limited to: water-related damage to the interior and exterior of buildings; destruction of electrical and other expensive and difficult-to-replace equipment; injury and loss of life; proliferation of disease vectors; disruption of utilities, including water, sewer, electricity, communications networks and facilities; loss of agricultural crops and livestock; placement of stress on emergency response and healthcare facilities and personnel; loss of productivity; and displacement of persons from homes and places of employment.

Any type of agricultural, commercial, residential, and recreational development and natural communities (e.g., wetlands, marshes) located in a floodplain (inland or coastal) are vulnerable to flooding. Increased urbanization, and thus increase in paved surfaces, enhances the threat of flooding where drainage systems cannot cope with the increased input of stormwater runoff and decrease in natural water infiltration into the soil (increasing runoff). In rural areas, property damage caused by flooding can be devastating to farmers. When flooding occurs during the growing season, farmers can suffer widespread crop loss. Livestock farmers may lose livestock if they are unable to find safe ground during rising floodwaters. This threat to agricultural areas is primarily associated with flash flooding.

Flooding can also pose several threats to industrial, residential, and commercial properties. Industrial facilities of all types typically handle and store various quantities of hazardous materials for their operations. These materials can potentially come into contact with flood waters and be



released into the environment impacting local water sources, natural resources, and threaten public health. Buildings can experience significant water-related damage, sometimes beyond repair, due to flooding. Household furnishings and business inventories can be lost if there is not adequate time to remove items to safe locations. In addition to being at risk because of floodwater, people face the threat of explosions and fires caused by leaking gas lines along with the possibility of being electrocuted. Even wild animals, forced out of their homes and brought into contact with humans by floodwaters, can be a threat. Post-flood concerns could include mold growth on structures creating an increased health concern.

Severe flooding can cause extensive damage to public utilities and disruptions to the delivery of services. Loss of power and communications can be expected. Drinking water and wastewater treatment facilities may be temporarily out of operation. Impacts of flooding on transportation are particularly noteworthy. Flooded streets and road blocks make it difficult for emergency vehicles to respond to calls for service. Floodwaters can washout sections of roadway and bridges. Most importantly, the majority of fatalities that occur in floods are the result of people trying to drive on roads covered by floodwaters.



Severe Storms

Description

For the purpose of this Plan the severe storm hazard includes hailstorms, windstorms, thunderstorms, tornadoes, hurricanes, and tropical storms, which are defined below.

Hailstorm: According to the National Weather Service (NWS), hail is defined as a showery precipitation in the form of irregular pellets or balls of ice more than 5 millimeters in diameter, falling from a cumulonimbus cloud. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight; they fall as precipitation, in the form of balls or irregularly shaped masses of ice. The size of hailstones is a direct function of the size and severity of the storm. Hailstorms are a potential damaging outgrowth of severe thunderstorms.

Windstorm: According to the Federal Emergency Management Agency (FEMA), wind is air moving from high to low pressure. It is rough horizontal movement of air (as opposed to an air current) caused by uneven heating of the Earth's surface. It occurs at all scales, from local breezes generated by heating of land surfaces and lasting tens of minutes to global winds resulting from solar heating of the Earth. The two major influences on the atmospheric circulation are the differential heating between the equator and the poles, and the rotation of the planet. Windstorm events are associated with cyclonic storms (e.g., hurricanes), thunderstorms, and tornadoes.

Thunderstorm: According to NWS, a thunderstorm is a local storm produced by a cumulonimbus cloud and accompanied by lightning and thunder. A thunderstorm forms from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm and cold front, a sea breeze, or a mountain. Thunderstorms form from the equator to as far north as Alaska. These storms occur most commonly in the tropics. Although thunderstorms generally affect a small area when they occur, they are very dangerous because of their ability to generate tornadoes, hailstorms, strong winds, flash flooding, and damaging lightning. A thunderstorm produces wind gusts less than 57 miles per hour (mph) and hail, if any, of less than 3/4-inch diameter (20 millimeters) at the surface. A severe thunderstorm has thunderstorm related surface winds (sustained or gusts) of 57 mph or greater and/or surface hail 3/4-inch (20 millimeters) or larger. Wind or hail damage may be used to infer the occurrence/existence of a severe thunderstorm.

Tornado: A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Tornado season is generally March through August, although tornadoes can occur at any time of year. Tornadoes tend to strike in the afternoons and evening, with over 80 percent of all tornadoes striking between noon and midnight. The average forward speed of a tornado is 30 mph, but can vary from nearly stationary to 70 mph. The NOAA Storm Prediction Center (SPC), indicates that the total duration of a tornado can last between a few seconds to over one hour; however, a tornado typically lasts less than 10 minutes.



High-wind velocity and wind-blown debris, along with lightning or hail, result in the damage caused by tornadoes. Destruction caused by tornadoes depends on the size, intensity, and duration of the storm. Tornadoes cause the greatest damage to structures that are light, such as residential homes and mobile homes, and tend to remain localized during impact.

Tropical Storm: A tropical storm is an organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds between 39 and 73 mph. Once a storm has reached tropical storm status, it is assigned a name. During this time, the storm itself becomes more organized and begins to become more circular in shape, resembling a hurricane. Tropical storms can cause a lot of problems, even without becoming a hurricane; however, most of the problems stem from heavy rainfall.

Hurricane: A hurricane is an intense tropical cyclone with wind speeds reaching a constant speed of 74 mph or more. It is a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. They are caused by the atmospheric instability created by the collision of warm air with cooler air. They form in the warm waters of tropical and sub-tropical oceans, seas, or Gulf of Mexico. Most hurricanes evolve from tropical disturbances. A tropical disturbance is a discrete system of organized convection (showers or thunderstorms), that originate in the tropics or subtropics, does not migrate along a frontal boundary, and maintains its identity for 24 hours or more. Hurricanes begin when areas of low atmospheric pressure move off the western coast of Africa and into the Atlantic, where they grow and intensify in the moisture-laden air above the warm tropical ocean. Air moves toward these atmospheric lows from all directions and circulates clockwise under the influence of the Coriolis effect, thereby initiating rotation in the converging wind fields. When these hot, moist air masses meet, they rise up into the atmosphere above the low pressure area, potentially establishing a self-reinforcing feedback system that produces weather systems known to meteorologists as tropical disturbances, tropical depressions, tropical storms, and hurricanes.

Almost all tropical storms and hurricanes in the Atlantic basin (which includes the Gulf of Mexico and Caribbean Sea) form between June 1 and November 30, known as hurricane season. August and September are peak months for hurricane development. The threats caused by an approaching hurricane can be divided into three main categories: storm surge, wind damage, and rainfall/flooding:

- Storm surge is simply water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level 15 feet or more. Storm surge is responsible for nearly 90 percent of all hurricane-related deaths and injuries.
- Wind damage is the force of wind that can quickly decimate the tree population, down power lines and utility poles, knock over signs, and damage/destroy homes and buildings. Flying debris can also cause damage to both structures and the general population. When hurricanes first make landfall, it is common for tornadoes to form which can cause severe localized wind damage.



Rainfall/flooding: the torrential rains that normally accompany a hurricane can cause serious flooding. Whereas the storm surge and high winds are concentrated around the “eye,” the rain may extend for hundreds of miles and may last for several days, affecting areas well after the hurricane has diminished.

Previous Occurrences (prior to 2016)

August 29-September 14, 1960 (Hurricane Donna): This event holds the record for retaining "major hurricane" status (Category 3 or greater on the Saffir-Simpson Hurricane Scale) in the Atlantic Basin for the longest period of time on record (a total of 17 days). The storm affected every state along the East Coast, producing hurricane-force winds (up to 115 mph) from South Carolina to Maine. Fifty fatalities were reported in the U.S., with damages totaling approximately \$3 billion (2004 USD). Greene County experienced between 5 and 7 inches of rain.

In Greene County, the impacts of this event fell primarily within the Batavia Kill watershed. The Greene County Soil Conservation Service indicated that the storm was devastating to the Town of Windham, producing in excess of \$750,000 in damages (1960 USD) to over 75 residences, 27 businesses, utilities, seven bridges, and multiple state, county, and town roads. Damages also occurred to the Windham Country Club, two churches, and the Windham Ashland School.

July 10, 1989 (Northeastern U.S. Tornado Outbreak): This event was a series of tornadoes which caused more than \$130 million (1989 USD) in damage across the northeastern U.S. The storm system produced severe weather events that included hail up to 2.5 inches in diameter, thunderstorm winds up to 90 mph, and 17 tornadoes. More than 150 people were injured and one fatality occurred as a result of the tornado outbreak and one fatality occurred as a result of winds.

In New York State, the tornado outbreak reportedly devastated areas from Montgomery County to Greene County, injuring 20 people and causing \$20 million in property damages. Although the SPC archives state that this outbreak was a single tornado, other sources indicate that it was actually three or more tornadoes, each ranking F3 or F4 on the F-Scale. The first tornado to hit the area touched ground three miles east of Ames (Montgomery County), moving southeast. It then passed through the Towns of Carlisle, Howe Caverns, Central Bridge, and Schoharie before lifting. The storm continued traveling southeast for 10 miles, and produced another tornado briefly near Rensselaerville. After another 10 miles, a third tornado touched down in Greenville and Surprise (Greene County). Greene County experienced wind and hail damage. According to SHELDUS, Greene County had approximately \$1.25 million in property damages, \$125,000 in crop damages, and five injuries.

July 14-15, 1995 (“The Ontario-Adirondack Derecho”): On the evening of July 14, thunderstorms producing severe weather occurred over upper Michigan and adjacent portions of Ontario near Sault Saint Marie. By late evening, the storms developed into a bowing line just northwest of the Mackinac Bridge. The thunderstorm gust front hit the bridge and a gust of 90 mph was measured. Sustained winds above 80 mph continued on the bridge for several minutes, which was the beginning of the



“Ontario-Adirondacks Derecho.” This system caused hundreds of millions of dollars in damage, several deaths, and many injuries as it moved from the Great Lakes region to the Atlantic coast.

As the “Ontario-Adirondacks Derecho” entered New York State on July 15, severe wind damage continued in this area. Winds were estimated to be 100 mph or greater at several points along a band from Jefferson and western St. Lawrence counties. In the Adirondack Mountain region, over 30 campers and hikers in the area had to be removed by helicopter since their paths out of the forest were blocked by thousands of fallen trees. The NYS DEC estimated about 900,000 acres of forest were damaged with a value loss of timber over \$200 million. In the more populated areas of central and eastern New York State, almost \$190 million in damage was done to structures and vehicles. Many mobile homes were overturned and numerous homes and businesses were damaged. Several hundred thousands of people were without power due to the powerful derecho winds. Overall, New York State had five deaths, 11 injuries and nearly \$400 million in damages.

According to NCDC and SHELDUS, Greene County suffered approximately \$66,000 in property damages due to winds from the derecho. The most damage was seen in Coxsackie, Greenville, Haines Falls (Hunter), and New Albany.

January 18-20, 1996 (FEMA DR-1095): Unseasonably warm air ahead of a storm overspread the Northeast on January 18th and 19th. Temperatures reached the mid-50s to the mid and upper-60s. Melting snow and ice break-up during the evening of the 18th caused ice jam flooding across scattered areas of western Pennsylvania and western New York State. The storm brought over two inches of rain from northern West Virginia through Central Pennsylvania and over the Catskill Mountains in New York State. The worst of the flooding began on the 19th, due to the heavy rains causing rapid snow melt. Many drainage basins were overwhelmed and widespread flooding broke out. Thousands of people were forced to evacuate their homes in parts of Ohio, Pennsylvania, West Virginia, New Jersey, Maryland, and New York.

The storm produced damaging winds across eastern New York State, resulting in reports of downed trees, limbs, and power lines, producing \$120,000 in property damage. Overall, this event claimed 10 lives, stranded hundreds of people, damaged or destroyed thousands of homes and businesses, and closed hundreds of roads. The most severely affected region was the Catskill Mountains. More than 4.5 inches of rain fell on at least 45 inches of snow in the Catskill Mountain region during this event and caused major flooding throughout the southeastern section of New York State.

In Greene County, the severe storms downed large limbs in Surprise (Greenville).. According to SHELDUS, Greene County had another \$8,000 in property damage due to wind. The majority of damage was due to flooding along the major waterways of the county. Overall, according to NCDC and SHELDUS, Greene County experienced approximately \$10 million in total property damages from this event.

This storm resulted in a FEMA Disaster Declaration (FEMA DR-1095) on January 24, 1996. Through this declaration, 41 counties were declared eligible for Federal and State disaster funds, including Greene County. Greene County received \$916,839 in IA and \$4.4 million in PA funding (1997 USD).



June 4-8, 1996: Severe thunderstorms entered the region on June 4 as a cold front moved east. Up to one-inch diameter hail fell on several parts of New York State. The storm produced strong winds, downing trees and causing minor damage to homes. On the 5th, unstable weather was reported throughout the New England states. The storms continued on the 8th, bringing three-quarter inch diameter hail and damaging winds to Greene and Dutchess counties due to thunderstorms. Damage in Greene County included lightning in Palenville and wind and lightning in Coxsackie, resulting in \$29,000 in property damage.

September 16-17, 1999 (Hurricane/Tropical Storm Floyd) (FEMA DR-1296): According to the National Hurricane Center, this event was a large and intense storm that pounded the central and northern Bahama islands, seriously threatened Florida, struck near the coast of North Carolina and moved up the east coast of the U.S. into New England as a tropical storm. It neared the threshold of a Category 5 on the Saffir/Simpson Hurricane Scale as it approached the Bahamas, and caused a flood disaster of immense proportions in the eastern U.S., particularly from the eastern coast of North Carolina through New Jersey. Much of Floyd's impact was due to heavy rainfall, creating major losses from floodwaters throughout the eastern U.S. Common rainfall totals ranged between 4 and 12 inches. Ten states were declared major disaster areas, including New York.

As the remnants of Floyd passed by eastern New York State, strong winds pummeled the region with numerous reports of power outages and downed trees. Some of the reported downed trees were the result of the soft ground due to the excessive amount of rain. According to NWS, rainfall totals for Greene County ranged between 6.9 inches (Prattsville) to 12.21 inches (Cairo). Greene County's damage was mainly a result of flooding.

This storm resulted in a FEMA Disaster Declaration (FEMA DR-1296) on September 19, 1999. Through this declaration, 15 New York counties were declared eligible for Federal and State disaster funds, including Greene County.

May through September 2000 (FEMA DR-1335): Between May and September 2000, multiple severe storm events occurred throughout New York State, resulting in significant flooding and over \$34.6 million in damage throughout the state.

The first series of storms began on May 18, 2000. A strong cold front crossed eastern New York State, bringing very strong winds. This system spawned a line of thunderstorms, producing the largest outbreak of severe weather across eastern New York State in nearly two years. The vast majority of damage was from thunderstorm winds, along with hail damage and two confirmed tornadoes. Thunderstorm winds knocked down large trees and powerlines in multiple counties, including Greene County. In Greene County, shingles were blown off a roof in Cairo. According to NCDC and SHELDUS, Greene County had approximately \$110,000 in property damage due to this storm.

The second series of storms hit the area on June 2, 2000. A powerful cold front moved across eastern New York State, bringing an unstable air mass in front of a cold front. This generated straight line thunderstorm winds and hail and caused widespread severe weather damage. In Greene County, one-



inch diameter hail was reported in Catskill. According to NCDC and SHEL DUS, Greene County had approximately \$23,000 in property damage from this storm.

On June 6, 2000, an area of low pressure developed over the Delmarva Peninsula. The storm tracked up the coast and became a full-blown Nor'Easter. Tropical moisture was trapped and produced a very heavy rainstorm across eastern New York State, mainly from Albany southward. Albany had a total of 3.5 inches fall on June 6, while heavier rain fell across the Catskills with as much as 5.77 inches falling in East Jewett (Greene County). Many roads and bridges were closed throughout Greene County due to flooding. According to NCDC and SHEL DUS, Greene County had approximately \$115,000 in property damage from this storm, mainly related to flooding.

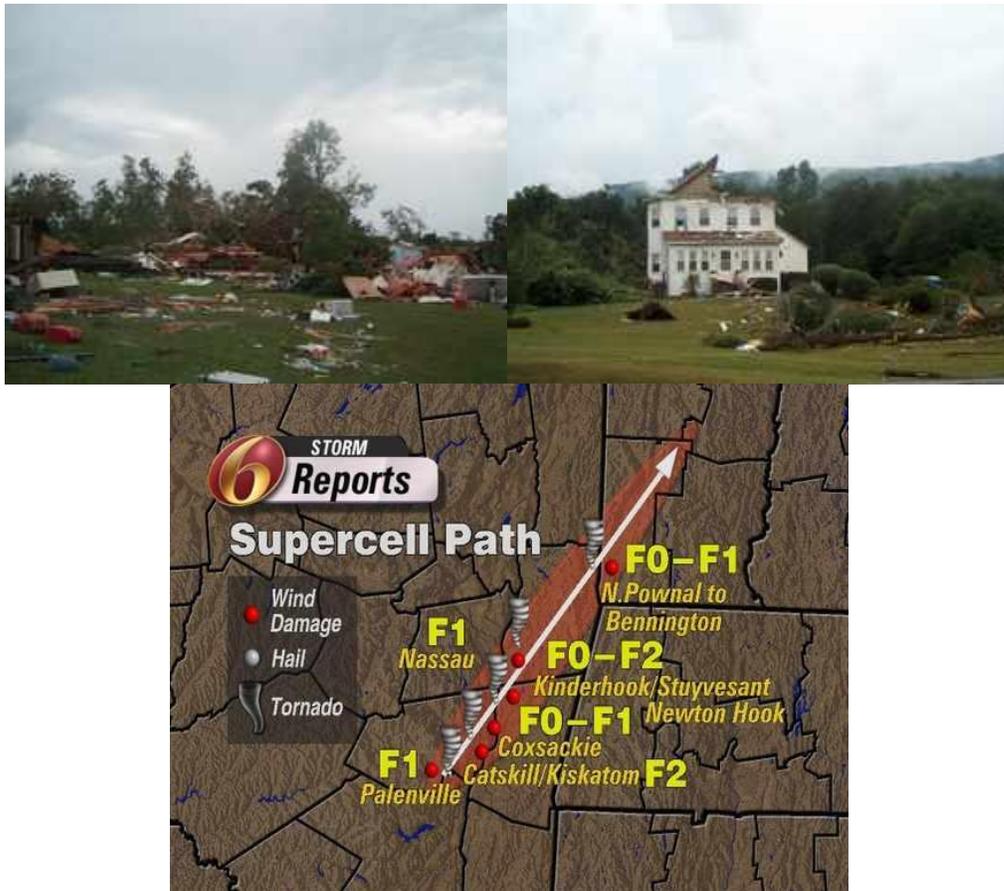
On August 3, 2000, numerous thunderstorms developed, producing dime size hail to a couple of New York State counties, including Greene County. Many other reports were in relation to wind damage. Many trees and power lines were down in several counties. In Greene County, a man was struck by lightning at the Earlton Hill Campground in Coxsackie. Cost estimates of property damage in Greene County were unavailable in the materials reviewed to develop this plan.

These storms resulted in a FEMA Declaration Disaster (FEMA DR-1335) on July 21, 2000. Through this declaration, 27 counties were declared eligible for Federal and State disaster funds, including Greene County. According to the Schoharie Creek SMP, Greene County received approximately \$176,596 in disaster aid from this event.

July 21-August 13, 2003 (FEMA DR-1486): A series of slow-moving thunderstorms accompanied by torrential rainfall caused a tornado outbreak and flash flooding throughout much of New York State, including Greene County. This system produced a significant severe weather outbreak and the largest tornado outbreak since May 1998.

The first line of thunderstorms worked across the region during the afternoon of July 21. This line of storms produced spotty wind damage and downed trees and wires across several New York counties, including Greene County. The heavy rainfall caused torrential rains and flash flooding in some areas. During the evening hours of July 21, a stronger line of storms moved east from central to eastern New York State. One cell broke loose from the line of thunderstorms and became a supercell as it reached the mid-Hudson Valley, spawning a significant tornado. The tornado initially touched down in southeastern Greene County and produced a discontinuous path of 17 miles in the County. The tornado left a swath of destruction, including hundreds of trees uprooted and power and telephone wires down. Many roads in the county were impassable due to debris.

As the storm moved into Greene County, an F1 tornado (about 50 yards wide and a half-mile long) touched down in Palenville, near Pennsylvania Avenue. The tornado then touched down in the hamlet of Kiskatom in the town of Catskill. The storm damage in Kiskatom was rated F2, with a path width of 100 yards and a length of over one mile. Several houses were damaged beyond repair and several mobile homes were destroyed. Seven people were injured as a result of this tornado in Kiskatom.



(Source: Greene County Emergency Services)

Figure A-Error! No text of specified style in document.: 2003 Tornado in Greene County

The tornado path continued into Athens, where it was rated between an F0 and an F1. It had a path width of 50 yards and a length of one-half mile. In Coxsackie, the tornado was an F1 and caused damage to trees and a manufactured home. The total discontinuous path length of tornadic damage in Greene County was approximately 17 miles. At the height of the storm, 6,000 residents in Greene County were without power. The areas that saw the most damage from this storm was Pennsylvania Avenue in Palenville; Route 23 in Kiskatom; the flats at Lasher’s Farm on Cauterskill Road; Paul Saxe Road; and Vedder Road. In Catskill, firefighters responded to reports of downed wires and trees, some on Woodland Avenue. According to NCDC and SHELDUS, Greene County had over \$1.1 million in property damage due to the storms.

On August 2, the area experienced another severe weather event when isolated thunderstorms affected the Catskill region. Approximately 4 to 5 inches of rain fell in less than two hours throughout eastern Greene County. This heavy rainfall resulted in flooded roads in both Leeds and Catskill. In Catskill, the Catskill Creek overflowed onto State Highway 23B and a mudslide was reported on Sandy Plain Road. The Poltic Creek overflowed its banks and washed away a small bridge. Homes in the



cities of Catskill and Athens took on significant water in their basements. According to NCDC and SHELDUS, Greene County had approximately \$60,000 in property damage due to the storms.

Another slow-moving series of thunderstorms developed in the area on August 11, producing flooding rains. A first batch of storms caused flooding in Greene County, washing out portions of Route 296 in Hensonville (Greene County). Flooding was also noted on Route 23 near Cairo, also in Greene County.

April 2-4, 2005 (FEMA DR-1589): A slow moving storm moved up through the Appalachians and into the northeast U.S. The heavy rainfall from this event produced flooding in parts of New York, New Jersey, and Pennsylvania. Prior to this storm, the rivers and streams in the area already had high flow-rates due to a previous rainstorm on March 28 and a snowmelt; therefore, flooding increased substantially and created additional damage as a result of this April storm.

In New York State, the heaviest rain and worst flooding reportedly occurred in Ulster and Greene Counties. The NYS HMP indicated that the State experienced approximately \$66.2 million in damages from this event. Rainfall totals for Greene County ranged between 1.5 inches in New Baltimore to 5.54 inches in East Jewett. According to NCDC and SHELDUS, Greene County experienced approximately \$1.3 million in flood damages from this event. The flood impact and losses of this event are further discussed in more detail in Section 5.4.1 (2009 plan) (Flood).

This storm resulted in a FEMA Disaster Declaration (DR-1589) on April 19, 2005. Through this declaration, 20 counties were declared eligible for Federal and State disaster funds, including Greene County. In a September 14, 2005 Press Release, FEMA indicated that nearly \$35 million in disaster aid was made available to all declared counties as result of this event. In this press release, FEMA approved \$1.1 million in Public Assistance (PA) reimbursements for the Towns of Cairo, Coxsackie, Durham, Greenville, Halcott, Hunter, Jewett, Lexington, New Baltimore, Prattsville and Windham; the Villages of Catskill, Hunter and Tannersville; and the East Durham, Lexington and Palenville fire departments. However, documentation provided by FEMA to Greene County Department of Emergency Services indicated that as of June 1, 2005, the County was approved for over \$2.2 million in PA reimbursements. Aid was provided for various restoration and mitigation project costs generated as a result of flood damages during this event; particularly in the Towns of Hunter, Jewett, and Tannersville.

June 26-July 10, 2006 (FEMA DR-1650): This severe storm event resulted in a significant flood that affected much of the Mid-Atlantic region. The flooding was widespread, affecting numerous rivers, lakes, and communities from upstate New York to North Carolina. Rain totals across the affected states ranged between 2 and 16.67 inches. Overall, the storm resulted in over 16 deaths and millions in damages throughout the affected states.

Some sources indicated that this flooding event was the largest and most costly natural disaster that New York State has encountered since Hurricane Agnes in 1972. The NYS HMP indicated that the counties affected throughout the state experienced approximately \$246.3 million in damages during this flood.



In Greene County, precipitation totals averaged between 3 to 10 inches of rain, with largest accumulations generated in the south central portion of the county. Rain totals from June 26 through June 30, 2006 included: Tannersville (12.20 inches), East Jewett (8.3 inches), Catskill (4.43 inches), and Windham (3.14 inches). The heavy rain led to widespread flooding throughout the county.

April 14-18, 2007 (FEMA DR-1692): An intense and powerful Nor'Easter brought flooding rains and heavy wet snowfall to the northeast U.S. Rainfall totals of six to eight inches were reported across the eastern Catskill Mountains, mid-Hudson Valley and western New England, resulting in widespread flooding. Snowfall accumulations of one to 1 1/2 feet were reported across the southern Adirondacks, eastern Catskills, Berkshires, and southern Green Mountains. The combined effects of high winds and heavy rainfall during this event led to flooding, storm damages, power outages and evacuations, and disrupted traffic and commerce.

Various counties in the eastern Catskills and Mid-Hudson Region of New York State were impacted by several inches of rain during this event. New York State experienced between \$12.8 and \$60 million in damages from this event. In Greene County, the heavy rains led to widespread flooding of small streams and creeks across the county. Rainfall totals ranged from 3.97 inches in Cairo to 7.9 inches in Tannersville.

August 28, 2011- Hurricane Irene (FEMA DR-4020) – Catastrophic flooding was reported throughout Greene County during Hurricane Irene, especially in the Catskill areas. Evacuations and rescues were widespread, along with widespread road closures and damage and houses that were swept away. Record flooding most likely occurred on the Schoharie Creek at Prattsville before the gage was lost in the flood. One death occurred in Maplecrest when a woman drowned when the house she was in was swept away by floodwaters. The combination of strong winds and extremely saturated soil led to numerous downed trees and power lines across the region and widespread, prolonged power outages. Approximately 18,000 people in Greene County were affected by power outages.

October 29, 2012 – Superstorm Sandy (FEMA DR-4085) – Superstorm Sandy moved northward off the eastern seaboard of the United States during the last week of October 2012. Due to a very strong blocking ridge of high pressure over the Atlantic Ocean, the storm turned back to the northwest and rapidly strengthened as it moved toward the mid-Atlantic coast.

Although less than an inch of rain fell in valley areas, higher terrain areas of the northern and eastern Catskills received over an inch of rain. It was reported that 3.25 inches of rain fell in the Borough of Halcott Center, Greene County. Wind gusts of 40 to 60 mph were common from the afternoon of October 29 until the early morning hours of October 30. Wind gusts reached 50 mph in Greene County. Numerous trees were reported down throughout Halcott Center due to high winds.

The powerful storm also caused a storm surge that moved up the Hudson River from the New York City area. Record flooding occurred on the Hudson River at Poughkeepsie as the river reached 9.54 feet. The surge of water moved all the way up to Albany. Flooding occurred along the Hudson River in Greene County, causing damage to homes and businesses near the river.



Businesses were flooded from tidal flooding near the confluence of Hudson River and Catskill Creek in Catskill.

FEMA approved more than \$384,000 in Hurricane Sandy assistance to fund emergency efforts and help repair and rebuild public infrastructure in Greene County.

Severe Winter Storms

Description

For the purpose of this plan severe winter storm hazards include heavy snow, blizzards, sleet, freezing rain, ice, and extreme cold. Since most extra-tropical cyclones, particularly northeasters (or Nor'Easters), generally take place during the winter weather months (with some exceptions), Nor'Easters have also been grouped as a type of severe winter weather storm in this section. In addition, for the purpose of this plan and as consistent with the New York State HMP, extreme cold temperature events were grouped into this hazard profile as well. These types of winter events or conditions are further defined below.

Heavy Snow: According to NWS, heavy snow is generally snowfall accumulating to 4 inches or more in depth in 12 hours or less; or snowfall accumulating to 6 inches or more in depth in 24 hours or less. A snow squall is an intense, but limited duration period of moderate to heavy snowfall (e.g., snowstorm), accompanied by strong, gusty surface winds and possibly lightning (generally moderate to heavy snow showers). Snowstorms are complex phenomena involving heavy snow and winds, whose impact can be affected by a great many factors, including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, and occurrence during the course of the day, weekday versus weekend, and time of season.

Blizzard: Blizzards are characterized by low temperatures, wind gusts of 35 miles per hour (mph) or more and falling and/or blowing snow that reduces visibility to 0.25 miles or less for an extended period of time (three or more hours).

Sleet or Freezing Rain Storm: Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Freezing rain is rain that falls as a liquid but freezes into glaze upon contact with the ground. Both types of precipitation, even in small accumulations, can cause significant hazards to a community.

Ice Storm: An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous, and can create extreme hazards to motorists and pedestrians.



Nor'Easter: Nor'Easters, named for the strong northeasterly winds blowing in ahead of the storm, are also referred to as a type of extra-tropical cyclone. A Nor'Easter is a macro-scale extra-tropical storm whose winds come from the northeast, especially in the coastal areas of the Northeastern U.S. and Atlantic Canada. More specifically, it describes a low pressure area whose center of rotation is just off the coast and whose leading winds in the left forward quadrant rotate onto land from the northeast. Wind gusts associated with these storms can exceed hurricane force in intensity. Unlike tropical cyclones that form in the tropics and have warm cores (including tropical depressions, tropical storms, and hurricanes), Nor'Easters contain a cold core of low barometric pressure that forms in the mid-latitudes. Their strongest winds are close to the earth's surface and they often measure several hundred miles across. Nor'Easters may occur at any time of the year but are most common during the fall and winter months (September through April).

Nor'Easters can cause heavy snow, rain, gale force winds, and storm surge that can cause beach erosion, coastal flooding, structural damage, power outages, and unsafe human conditions. If a Nor'Easter stays just offshore, the results are much more devastating than if the cyclone meanders up the coast on an inland track. Nor'Easters that stay inland are generally weaker and only cause strong wind and rain. Those that stay offshore can bring heavy snow, blizzards, ice, strong winds, high waves, and severe beach erosion. In these storms, the warmer air is aloft. Precipitation falling from this warm air moves into the colder air at the surface, causing crippling sleet or freezing rain.

If a significant pressure drop occurs within a Nor'Easter, this change can turn a simple extra-tropical storm into what is known as a "bomb." "Bombs" are characterized by a pressure drop of at least 24 millibars within 24 hours (similar to a rapidly-intensifying hurricane). Even though "bombs" occasionally share some characteristics with hurricanes, the two storms have several differences. "Bombs" are extra-tropical, and therefore, are associated with fronts, higher latitudes, and cold cores. They require strong upper-level winds, which would destroy a hurricane.

Extreme Cold: Extreme cold events are when temperatures drop well below normal in an area. Extremely cold temperatures often accompany a winter storm, so individuals may have to cope with power failures and icy roads. Although staying indoors as much as possible can help reduce the risk of car crashes and falls on the ice, individuals may also face indoor hazards. Many homes will be too cold—either due to a power failure or because the heating system is not adequate for the weather. When people must use space heaters and fireplaces to stay warm, the risk of household fires and carbon monoxide poisoning increases.

What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." Exposure to cold temperatures, whether indoors or outside, can lead to serious or life-threatening health problems such as hypothermia, cold stress, frostbite, or freezing of the exposed extremities such as fingers, toes, nose and ear lobes.

According to the NOAA National Severe Storms Laboratory (NSSL), every year winter weather indirectly and deceptively kills hundreds of people in the U.S., primarily from automobile accidents, overexertion, and exposure. Winter storms are often accompanied by strong winds creating blizzard



conditions with blinding wind-driven snow, drifting snow, extreme cold temperatures, and dangerous wind chill. They are considered deceptive killers because most deaths and other impacts or losses are indirectly related to the storm. People can die in traffic accidents on icy roads, heart attacks while shoveling snow, or of hypothermia from prolonged exposure to cold. Wind Chill is not the actual temperature but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, driving down body temperature. Animals are also affected by wind chill; however, cars, plants, and other objects are not. Heavy accumulations of ice can bring down trees and power lines, disabling electric power and communications for days or weeks. Heavy snow can immobilize a region and paralyze a city, shutting down all air and rail transportation and disrupting medical and emergency services. Storms near the coast can cause coastal flooding and beach erosion as well as sink ships at sea. The economic impact of winter weather each year is huge, with costs for snow removal, damage, and loss of business in the millions.

Also, winter storms can generate coastal flooding, ice jams, and snow melt, resulting in significant damage and loss of life:

- Coastal Floods: Winds generated from intense winter storms can cause widespread tidal flooding and severe beach erosion along coastal areas.
- Ice Jams: Long cold spells can cause rivers and lakes to freeze. A rise in the water level or a thaw breaks the ice into large chunks that become jammed at manmade and natural obstructions. Ice jams can act as a dam, resulting in severe flooding.
- Snowmelt: Sudden thaw of a heavy snow pack often leads to flooding.

Previous Occurrences (prior to 2016)

March 11-14, 1888 (“Blizzard of ’88” or “Great White Hurricane”): The “Blizzard of ’88,” remains perhaps the most infamous and unpredictable of all Northeast snowstorms. This event paralyzed the east coast of the United States and Atlantic Canada from the Chesapeake Bay to Maine, and including the Maritime Provinces of Eastern Canada. Telegraph infrastructure was disabled, isolating New York City, Boston, Philadelphia, Baltimore, and Washington, D.C. for days. Two hundred ships were grounded and at least 100 seamen died. Fire stations were immobilized; property losses from fire alone were estimated at \$25 million. Overall, more than 400 deaths were reported. Sources vary, but NWS estimated that 40 inches of snow covered New York and New Jersey. Winds blew up to 48 mph, creating snowdrifts 40 to 50 feet high. It was identified that over 20 to 50 inches of snow had accumulated within various locations of Greene County. Cost estimates of property damage in Greene County were unavailable in the materials reviewed to develop this plan.

February 2-5, 1961: This 1961 storm produced a maximum of 40 inches of snow in central New York. A large area of 1 to 2 feet of snow accumulated across central New York and northeast Pennsylvania. In Greene County, 10 to 20 inches of snow fell during this event, resulting in over \$80,000 in property damages.

October 4, 1987 (FEMA DR-801): This northeastern coastal storm broke records by dumping heavy, wet snow over eastern New York, Vermont, and western portions of Connecticut and



Massachusetts. From the Catskills and Berkshires of upstate New York to the Green and White Mountains of Vermont and New Hampshire, the snow transformed the landscape, isolating entire communities. This event was the earliest snow for the season on record in eastern New York since 1870. Throughout the four state area, the snow brought down power lines, resulting in a loss of electricity to about 333,000 customers, closed roads and airports, and brought down an untold number of trees and tree limbs that were still in full leaf. Many vehicles were damaged by the falling trees and limbs and many weather related traffic accidents resulted in death and injury.

In New York State, leaf-laden trees caught falling snow and the weight snapped branches and toppled trees across power lines and roads. Many highways and a 26-mile stretch of the Thomas E. Dewey Thruway were closed, and power failures hit 230,000 homes in New York State. Many traffic accidents were reported throughout the region and motorists were warned to stay off roads. Emergencies were declared in some communities in the Hudson Valley, and thousands of people were stranded at homes and weekend retreats. Crops of apples, peppers, eggplant, and sweet corn were reported damaged. The heaviest snow, 20 inches, was reported at East Jewett, in Greene County. Elsewhere in New York State, NWS reported accumulations of up to 15 inches in Ulster County, 13 inches in Rensselaer County, 12 inches in the Catskills, and 10 inches in Columbia County. Overall, New York State experienced approximately \$13.5 million in eligible damages. Cost estimates of property damage in Greene County were unavailable in the materials reviewed to develop this plan.

This storm resulted in a FEMA Disaster Declaration (FEMA DR-801) on November 10, 1987. Through this declaration, nine counties were declared eligible for federal and State disaster funds including Greene County. Disaster aid for Greene County has not been disclosed in the materials reviewed to develop this plan.

March 12-15, 1993 (“Superstorm of 1993,” “Storm of the Century,” or “Great Storm of 1993”) (FEMA EM-3107): This storm was identified as both a Nor’Easter and a blizzard by many sources. It was a massive storm complex, affecting at least 26 states and much of eastern Canada. The March 1993 storm is listed among the NOAA Top Billion Dollar Weather Disasters, reportedly causing a total of \$6.6 billion in damages along the eastern coast of the U.S. and resulting in over 270 fatalities (23 fatalities in New York State). According to the NYS HMP and NYSEMO, this blizzard resulted in total eligible damages of approximately \$8.5 million through New York State.

Achieving a NESIS rating of 12.52, the "Storm Of The Century" ranks as an “Extreme” snow event. With a total area impacting, at its peak, from Maine to Florida, a final total of 5 to 50 inches of snowfall, along with hurricane force winds, this storm ground most of the Eastern seaboard to a halt for days. Total snowfall accumulations for Greene County were between 20 and 40 inches, with Prattsville receiving over 36 inches of snow. Cost estimates of property damage or losses in Greene County were unavailable in the materials reviewed to develop this plan.

This storm resulted in a FEMA Emergency Declaration (FEMA EM-3107) on March 17, 1993. Through this declaration, multiple counties were declared eligible for federal and State disaster public assistance funds. Disaster aid for Greene County has not been disclosed in the materials reviewed to develop this plan.



January 6-9, 1996 (FEMA DR-1083) (“Blizzard of ‘96”): Much of the eastern U.S. seaboard, from Tennessee to Maine, was affected by this blizzard. Many areas received between 1 and 3 feet of snow during this storm. This blizzard achieved a NESIS rating of 11.54, placing the storm in the “Extreme category.” A total of 4 to 40 inches of snow fell along the storm’s path, with the highest accumulations in the states of Pennsylvania, New Jersey, New York, Maryland, Virginia, and West Virginia.

The major effects from this storm in New York State were felt across the southeastern sections of the state, resulting in property damages ranging from \$21.3 to \$70 million. The Albany NWS forecast office reported that snowfalls ranged from half an inch at Albany to isolated amounts over 30 inches in Dutchess and Berkshire counties. Snowfalls ranged from 10 to 20 inches with 6- to 10-foot drifts in Berkshire County, Massachusetts; Litchfield County, Connecticut; and Greene, Columbia, Delaware, Ulster, Sullivan, and Dutchess counties in New York. States of Emergency were declared in Litchfield, Pittsfield, Berkshire, Dutchess, Columbia, and Ulster counties. Some sources indicate that Greene County experienced as much as 30 inches of snow during the blizzard. The county also experienced extreme cold temperatures during the blizzard, ranging from -2 to -20 degrees Fahrenheit, mostly in the Towns of Lexington and Prattsville. Greene County experienced approximately \$160,000 in property damages during this event.

This storm resulted in a FEMA Disaster Declaration (FEMA DR-1083) on January 12, 1996. Through this declaration, 19 counties were declared eligible for federal and State disaster funds, including Greene County. Disaster aid for Greene County has not been disclosed in the materials reviewed to develop this plan.

March 31-April 1, 1997 (“April Fool’s Nor’Easter”): An intensifying storm off the Mid-Atlantic coast brought record-setting snow to portions of the Northeast. Snowfall amounts of 12 inches and higher covered northeast Pennsylvania, northwestern New Jersey, eastern New York, and central New England. Snowfall amounts of 24 inches and higher covered the northern Catskill Mountain region of New York and central and eastern Massachusetts. The storm also brought high winds, with peak winds between 30 and 50 mph. The storm achieved a NESIS rating of 2.37, placing the storm in the ‘Notable’ category. The wet snow and strong winds brought down many trees and caused widespread power outages throughout the New York State counties affected. Overall, the affected counties of the state experienced over \$7.8 million in property damages from this storm. Snow accumulations totaled 20 to 40 inches in Greene County, with East Jewett receiving 37 inches of snow; the highest accumulations recorded in the state. Additionally, Windham received 30 inches and Prattsville received 29 inches of snow. Over 30,000 customers within Greene County lost power during this event. A State of Emergency was declared in Greene, Schoharie, and Dutchess counties. Greene County experienced approximately \$709,090 in property damages during this event.

March 4-7, 2001: A major snowstorm caused snow to fall at a rate of one inch per hour, respectively, throughout the northeastern U.S. over a 2-day period of time. High winds caused snowdrifts and whiteout conditions in many parts of southern and central New York State. Achieving a NESIS rating of 3.53, this event places itself in the ‘Significant’ category.



The heaviest snowfall from this event fell across Pennsylvania, New York State, and New England. Snowfall totals for Greene County ranged from 10 to 30 inches. Prattsville received 25 inches, Windham received 26 inches, and East Jewett received 21 inches of snow. Cost estimates of property damage or losses throughout the state, including Greene County, were unavailable in the materials reviewed to develop this plan.

December 24-26, 2002 and January 2-4, 2003 (FEMA EM-3173): Two major storm systems extending through the northeastern U.S. on December 25-26, 2002 and January 3-4, 2003. The first storm, December 25-26, 2002, began as light snow and later on, heavy snow began to fall across central NY. Snowfall rates were several inches an hour, resulting in snow amounts ranging from 8 inches to 3 feet. Many New York counties declared state of emergencies, including Greene County. Snowfall totals in Greene County ranged between 10 to 40 inches during the December event. Snowfall totals for certain locations in Greene County included: Prattsville (29 inches), Ashland (16 inches), Catskill (16 inches), Platte Cove (23.2 inches), Windham (20 inches), and Cairo (18.3 inches) (NOAA, 2002). Achieving a NESIS rating of 4.42, this event placed itself in the 'Major' category (Figure 5.4.3-13) (Kocin and Uccellini, 2004).

March 12, 2010 – A low pressure system developed over the mid-Atlantic region on Friday night, March 12, and then moved gradually northward to the Delmarva region over the weekend. A very strong low-level jet developed to the north of the low and trapped abundant moisture. Easterly winds of 20 to 30 mph occurred, with gusts of up to approximately 50 mph. The easterly winds enhanced the precipitation across the eastern Catskills and Taconics due to upslope effects. Complicating the event, colder air drained southward into the region, resulting in a heavy snowfall across the higher terrain of the central and southeastern Catskills Saturday night into Sunday morning.

The National Weather Service reports say that precipitation ranged from approximately 0.25 to 0.5 inch in the mid-Hudson Valley, with 6 to 12 inches of heavy wet snow accumulations above 1,000 feet. Greene County has records that go well beyond these estimates, approximately 4'-7' of snowfall across the County.

The strong and gusty winds led to numerous power outages, especially across the central and southeastern Catskills where the heavy wet snow fell. One man was found dead and another man was rescued from Blackhead Mountain in the eastern Catskills on Sunday night, March 14.

March 18, 2013 – During the afternoon of Monday, March 18, an area of low pressure moved towards the eastern Ohio Valley. Precipitation well ahead of the storm's warm front moved from southwest to northeast across the region. With enough cold air in place, the precipitation fell in the form of snow during the evening hours. By just after midnight on Tuesday, March 19, the steady precipitation ended or changed to patchy areas of freezing drizzle or sleet from the Mohawk River southward. Meanwhile, steady snowfall continued across the Adirondacks and the Lake George-Saratoga region for the rest of the overnight hours.

At the end of the storm, snowfall amounts ranged from 2 to 5 inches across parts of the mid-Hudson Valley and Taconics to 10 to 15 inches across the Sacandaga and Saratoga Regions. Most areas in the eastern Catskills and Capital Region received 5 to 9 inches of snow.



January 1, 2014 – A long-lasting snowstorm affected eastern upstate New York between the evening of New Year’s Day and the morning of January 3, 2014.

A slow-moving frontal boundary situated over the mid-Atlantic Region was in place on Wednesday, January 1. An area of high pressure over southern Quebec allowed Arctic air to move down into the region. As a weak wave of low pressure developed along the front, moisture moved up and over the frontal boundary into the region. As a result, light snow broke out and gradually spread from south to north between the evening of Wednesday, January 1, and the early morning hours of Thursday, January 2. The snow evolved into a moderate snow over portions of the Mohawk Valley, Schoharie Valley, and Capital Region during the morning hours of January 2 and continued through much of the day. Farther south, there was a brief break in the steady snowfall during the daytime on January 2, but it remained quite cold, with temperatures in the single digits over much of the region.

On the evening of Thursday, January 2, a new area of low pressure began to form on the mid-Atlantic coast and brought moisture from the Atlantic Ocean into the region. A moderate snowfall developed over the entire area. The snow gradually tapered off to light snow and snow showers from west to east overnight as the low pressure area tracked east-northeast away from the region. By the morning hours of Friday, January 3, 6 to 12 inches of snow had fallen over much of the region, with lighter amounts across the far western Adirondacks and the mid-Hudson Valley. A few spots in the high terrain of the northern Catskills and Helderbergs had approximately 15 inches. Temperatures remained very cold, and with a cold northwest wind, wind chill values were 0 to -20°F.

February 15, 2015 – Behind a rapidly developing coastal storm, an extremely frigid Arctic air mass poured into the region from the north, beginning during the late morning hours on Sunday, February 15, 2015. With the developing storm just east of the region, a strong pressure gradient allowed for very strong winds. Northwest winds frequently gusted over 30 mph, with some gusts as high as 46 mph through the evening hours.

Temperatures fell quickly throughout the day and dropped below 0°F on Sunday night into the morning of Monday, February 16. The temperature dropped to as low as were as cold as -30°F. Wind gusts continued during the night and morning hours, and wind chill values dropped to as low as -15 to -45°F.

Because most of February had extreme cold temperatures, many towns and cities kept warming shelters open. There were many reports of bursts water mains and pipes due to the frigid temperatures penetrating deep into the ground, especially in areas with older infrastructure.

By the afternoon of Monday, February 16, wind chill values had risen to above dangerous levels, although it remained rather cold through the remainder of the day.



Potential Funding Sources for Mitigation Actions

Below is a list of local, state and federal funding sources that are available to aid communities in implementing mitigation actions.

Funding Source	Details	Agency	Project URL
Local Funding Sources			
Schoharie Watershed Program	Guided by stream stewardship principles, the Schoharie Watershed Program offers assistance to local communities, residents, and organizations to advance recommendations from Schoharie Basin Stream Management Plans. Categories of funding include: Recreation and Stream Habitat Improvements, Education on Watershed Protection, Highway and Infrastructure Improvement, Planning & Assessment, Landowner Stream Assistance, and Creative Stormwater Practices & Critical Area Seeding.	GCSWCD	https://www.gcswcd.com/swp/smp/smip
Catskill Streams Buffer Initiative (CSBI)	The overall goal of the Catskill Streams Buffer Initiative (CSBI) is to inform and assist landowners in better stewardship of their riparian (streamside) area through protection, enhancement, management, or restoration. The Department of Environmental Protection and its partners (County Soil & Water Conservation Districts and Cornell Cooperative Extension) will assist private, riparian landowners throughout the West of Hudson Watershed	Catskill Streams	http://www.catskillstreams.org/pdfs/CSBIguidelines.pdf



Funding Source	Details	Agency	Project URL
Catskill Watershed Corporation Grant Programs	The 1997 New York City Watershed Memorandum of Agreement required the development of 14 city-funded environmental protection and economic development programs in the Watershed West of the Hudson River as part of a pact that allowed the City to avoid filtering its Catskill-Delaware Water Supply. In November 2002, a renewed five-year Filtration Avoidance Determination was granted to the City by the US Environmental Protection Agency, permitting a continued exemption from building a filtration plant for the Catskill-Delaware Supply. The 2002 FAD was predicated on a long-term Watershed Protection Plan submitted by the City to the EPA outlining several water quality programs to be developed, continued or expanded by the CWC. In 2007, a new 10 year FAD was based on an updated Watershed Protection Plan.	Catskill Watershed Corp.	https://cwconline.org/
State Funding Sources			
NYSDEC NYC Watershed Protection Program	The New York City Watershed Protection Program provides financial assistance for projects as a part of the watershed program for protection and enhancement of the quality of source waters of the New York City water supply system. New York State (NYS) and the federal government provide funding grants for these projects. The funds are administered by the NYS DEC through the Water Quality Improvement Program (WQIP).	NYDEC	https://www.dec.ny.gov/lands/25599.html



Funding Source	Details	Agency	Project URL
BridgeNY	The BridgeNY program provides assistance for local governments to rehab and replace bridges and culverts. BridgeNY helps communities deliver safe, transformative, and innovative bridge/culvert rehabilitation and replacement projects	NYSDOT	https://www.govgrantshelp.com/grants/2822-bridge-ny-bridge-grant-program/
Climate Smart Communities	State Support for Local Climate Action Climate Smart Communities (CSC) is a New York State program that helps local governments take action to reduce greenhouse gas emissions and adapt to a changing climate. Registered communities have made a commitment to act by passing the CSC pledge. Certified communities are the foremost leaders in the state; they have gone beyond the CSC pledge by completing and documenting a suite of actions that mitigate and adapt to climate change at the local level. Program includes competitive grants program for which all NYS local governments are eligible.	NYSDEC	https://climatesmart.ny.gov/
DEC Grants	Competitive grants for environmental protection and improvement are available for municipalities, community organizations, not-for-profit organizations and others.	NYSDEC	https://www.dec.ny.gov/pubs/grants.html
Environmental Research Program-Climate	Environmental Research Program Topic: (1) Climate Adaptation Program - looks at the impacts of energy use on humans and the environment. (2) Air Quality and Health, (3) Ecosystems	NYSERDA	https://www.nyserda.ny.gov/All-Programs/Programs/Environmental-Research



Funding Source	Details	Agency	Project URL
Adaptation Program			
Flood Protection Program	DEC works with communities throughout the state to find ways to reduce or protect against loss of life and property damage caused by flooding. DEC has a flood protection program that focuses on structural and nonstructural flood damage reduction methods in coordination with the Army Corp of Engineers	NYSDEC	https://www.dec.ny.gov/chemical/92064.html
Local Government Efficiency (LGE) Program	The Local Government Efficiency (LGe) Grant Program provides technical assistance and competitive grants to local governments for the development of projects that will achieve savings and improve municipal efficiency through shared services, cooperative agreements, mergers, consolidations and dissolutions. With the creation of the LGe program, New York State is committed to working with local governments to control costs while maintaining the quality service delivery provided by New York's local governments. The Department of State continues to be well positioned to coordinate the joint provision of state services, promote state and local cost efficiencies.	NYSDOS	http://www.dos.ny.gov/LG/lge-grant.html .
Environmental Protection and	Technical assistance grants to community groups with significant threat sites of environmental concern;	NYSDEC	http://www.dec.ny.gov/regulations/2590.html



Funding Source	Details	Agency	Project URL
Improvement Grants	available for community organizations, not-for-profit organizations and others		
Green Innovation Grant Program (GIGP)	Competitive grant program supports projects that utilize unique stormwater infrastructure design and create cutting-edge green technologies, innovative stormwater management in such areas as preserving and restoration natural landscape features such as floodplains and wetlands for flood protection	NYSDEC	https://www.efc.ny.gov/Default.aspx?tabid=461
NYS Environmental Protection Fund; Water Resources Board	This is a source of funding for capital projects that protect the environment and enhance communities. Capital projects are usually large projects that purchase land or construct facilities. Most projects that receive grants of EPF money combine it with other funding sources that require matching funds.	NYSDEC	http://www.dec.ny.gov/about/92815.html
The New York State Emergency Services Revolving Loan	Repair of firefighting apparatus, ambulances, or rescue vehicles; renovation, rehabilitation, or repair of facilities that house firefighting equipment, ambulances, rescue vehicles, and related equipment	NYS DHSES	http://www.dhSES.ny.gov/ofpc/services/loan/
Grant & Bid Opportunities	Grant, bid, and funding opportunities including Local Waterfront Revitalization Program, and Watershed Protection	NYS DOS	http://www.dos.ny.gov/funding



Funding Source	Details	Agency	Project URL
Local Government Records Management Improvement Fund (LGRMIF) Disaster Recovery Grant	Grants for disaster recovery projects related to damage caused by a sudden, unexpected event involving fire, water, man-made or natural phenomena where a timely response is necessary to prevent loss of vital or archival records, or to ensure timely access to vital records	NYSSED	http://www.archives.nysed.gov/grants/grants_lgrmif.shtml
Environmental Protection Fund (EPF)	Matching grants for the acquisition, planning, development and improvement of parks, historic properties	NYSOPRHP	http://www.nysparks.com/grants
Recreational Trails Program (RTP)	Matching grants for the acquisition, development, rehabilitation and maintenance of trails and trail-related projects	NYSOPRHP	http://www.nysparks.com/grants
New York Land Protection Program & Conservation Finance Program	Direct acquisition and conservation easements; grants and short-term, low-cost bridge loans for land transactions in selected landscapes in the eastern United States	OSI	http://www.osiny.org/site/PageServer?pagename=Program_NYLand
DHSES Grant Programs	Centralized listing of various Homeland Security grants	DHSES	http://www.dhSES.ny.gov/grants
Federal Funding Sources			



Funding Source	Details	Agency	Project URL
Homeland Security Grant Program	Supports efforts to build and sustain core capabilities across the five mission areas of Prevention, Protection, Mitigation, Response, and Recovery based on allowable costs.	DHS	https://www.fema.gov/homeland-security-grant-program
Emergency Management Performance Grant (EMPG) Program	Assists local, tribal, territorial, and state governments in enhancing and sustaining all-hazards emergency management capabilities	DHS	https://www.fema.gov/emergency-management-performance-grant-program
Beneficial Uses of Dredged Materials	Direct assistance for projects that protect, restore, and create aquatic and ecological habitats, including connection with dredging an authorized Federal wetlands, in navigation projects	EPA	https://www.epa.gov/cwa-404/beneficial-use-dredged-material
Water Grants	A variety of grants related to water and wastewater infrastructure projects, including a catalog of federal funding for watershed protection projects	EPA	https://www.epa.gov/nps/watershed-funding
Building Resilient Infrastructure and Communities (BRIC)	Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation;	FEMA	https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities



Funding Source	Details	Agency	Project URL
	promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.		
Federal Grant and Assistance Programs for Governments	Catalog of federal disaster assistance and hazard-related grants and assistance	FEMA	https://www.cfda.gov/index?s=program&mode=list&tab=list
Hazard Mitigation Assistance (HMA)	Grants to provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages “ [includes FMA, HMGP, PDM, below]	FEMA	http://www.fema.gov/hazard-mitigation-assistance
Flood Mitigation Assistance (FMA) Program	Grants to states and communities for pre-disaster mitigation planning and projects to help reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program	FEMA	http://www.fema.gov/flood-mitigation-assistance-program
Hazard Mitigation Grant Program (HMGP)	Grants to states and communities for planning and projects providing long-term hazard mitigation measures following a major disaster declaration	FEMA	http://www.fema.gov/hazard-mitigation-grant-program
Pre-Disaster Mitigation (PDM)	Grants to states and communities for planning and projects that provide long-term hazard pre-disaster mitigation measures	FEMA	http://www.fema.gov/pre-disaster-mitigation-grant-program



Funding Source	Details	Agency	Project URL
Competitive Grant Program			
Public Assistance: Hazard Mitigation Funding under Section 406	Hazard mitigation discretionary funding available under Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act following a federally-declared disaster	FEMA	https://www.fema.gov/95261-hazard-mitigation-funding-under-section-406-stafford-act
Assistance to Firefighters Grant Program	Assists in local funding for fire equipment, staffing, facility construction and emergency response costs	FEMA	https://www.fema.gov/welcome-assistance-firefighters-grant-program
Community Development Block Grant (CDBG)	Grants to states and local governments to develop viable communities (e.g., housing, suitable living environment, expanded economic opportunities) and recover from federally declared disasters; principally for low- and moderate-income areas	HUD	http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs
Disaster Housing Assistance Program	Emergency assistance for housing, including minor repair of home to establish livable conditions, mortgage and rental assistance	HUD	https://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/publications/dhap



Funding Source	Details	Agency	Project URL
HUD Disaster Resources	Grants and a variety of disaster assistance related to housing, including mortgage assistance	HUD	https://portal.hud.gov/hudportal/HUD?src=/info/disasterresources
Emergency Watershed Protection (WP) Program	Provides assistance to relieve imminent hazards to life and property caused by floods, fires, drought, windstorms, and other natural occurrences	NRCS	https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ewp/
Economic Injury Disaster Loans	Low-interest disaster loans to businesses of all sizes, private non-profit organizations, homeowners, and renters. SBA disaster loans can be used to repair or replace the following damaged property, equipment, inventory or other business assets.	SBA	https://www.sba.gov/loans-grants/see-what-sba-offers/sba-loan-programs/disaster-loans
Aquatic Ecosystem Restoration	Direct support for carrying out aquatic ecosystem restoration projects, such as wetlands, repairing and other floodplain and aquatic systems, that will improve the quality of the environment; Regulatory and adaptation planning initiatives for Climate Change	USACE	http://www.nae.usace.army.mil/Missions/Public-Services/Ecosystem-Restoration-Authorities/
Missions and Appropriations	Federal budget and funding to support missions including research, feasibility studies, construction and disaster relief	USACE	http://www.usace.army.mil/Missions/Emergency-Operations/
Emergency Loan Program	USDA's Farm Service Agency (FSA) provides emergency loans to help producers recovery from production and physical losses due to drought, flooding, other natural disasters or quarantine	USDA	https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/emergency-farm-loans/



Funding Source	Details	Agency	Project URL
Land & Water Conservation Fund	Funding allows 4 federal agencies to acquire and develop private lands for public outdoor recreation areas and facilities; and congressional appropriate for matching funds for state and local government land acquisition projects	USDOJ	http://www.lwcfcoalition.org/
Partners for Fish and Wildlife	Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats	USFWS	http://www.fws.gov/partners

GREENE COUNTY

EMERGENCY SHELTER PLAN

DRAFT



LAST UPDATED

July 21, 2014

GREENE COUNTY EMERGENCY SERVICES
25 VOLUNTEER DRIVE, CAIRO, NY 12413

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ATTACHMENTS TO THE PLAN

<u>Att chment #</u>	<u>Att chment Name:</u>
1	Record of Plan revisions .docx
2	Sheltering Contacts
3	Shelter Activation Procedure Flow Chart
4	Greene County Shelter List .xlxs
5	Facility/Shelter Opening & Closing Inspection .pdf
6	Shelter Inventory Form .pdf
7	Shelter Registration Form .pdf
8	Shelter Registration Form (Spanish) .pdf
9	Registration Intake Form .pdf
10	Shelter Intake Assessment form .pdf
11	Shelter Log .pdf
12	Shelter Resident Information Handout .pdf
13	Shelter Visitor Sign-in Sheet .pdf
14	Resource Record Form .pdf
15	Disaster Requisition Form (Form 6409) .pdf
16	Resource Record (Form 6455) .pdf
17	Safe and Well Registration Form .pdf
18	Safe and Well Registration Form (Spanish) .docx
19	Shelter Rules Multilingual .pdf

*The forms that will be utilized at the shelter site should be kept in a Red Cross Binder Kit. Additional forms included in that kit that are not included in the attachments are Red Cross signage and directions to the site.

EXECUTIVE SUMMARY

- The Greene County Emergency Shelter Plan is an Annex to the county's Comprehensive Emergency Management Plan (CEMP). It has been developed from the recognition that a comprehensive plan is needed to address Greene County's ability to shelter the public during an emergency or disaster. While the plan is designed to stand alone in an emergency setting, all laws, rules and coordinating factors are addressed in the CEMP.
- It is the county's intention to transition shelter operations to the American Red Cross as early as possible during an incident. This may mean that they initiate the shelter if the

situation warrants however the county is prepared to initiate and maintain shelter operations for up to 72 hours post impact.

- Greene County's Department of Social Services is charged with overseeing shelter operations and to have staff available to open and operate shelters in response to disaster for up to 72 hours. Additionally local schools and the Civil Air Patrol are positioned to assist the county with shelter operations.
- This plan will provide a guide on how to open and operate shelters and allow for a smooth transition into the American Red Cross Volunteers Taking over.
- This plan is a working document subject to changes based on community needs and experiences from exercises and emergencies.

PLAN STORAGE & DISTRIBUTION

- Up-to-date versions (electronic and hard copy) of this plan will be stored in locations as follow:
 - Greene County Emergency Services
 - Web EOC (All Greene County Responders will have access to the plan through the Web EOC system)
- The plan will be distributed to agencies that participate in emergency sheltering as necessary.

EVALUATION AND UPDATE CYCLE

- The plan will be revised and updated as new or additional information becomes available.
- A record of revisions will be kept using **Attachment 1** (Record of Revisions .docx)

LEGAL AUTHORITY TO ADMINISTER THE PLAN

- New York State Executive Law Article 2-B states that it is each municipality's responsibility to conduct emergency sheltering.
- The local chief executive may declare a state of emergency and must provide for "the establishment or designation of emergency shelters, emergency medical shelters, and in consultation with the state commissioner of health, alternate medical care sites." This also includes having a plan for "coordinated evacuation procedures, including the establishment of temporary housing and other necessary facilities; utilization and coordination of programs to assist individuals with household pets and service animals following a disaster, with particular attention to means of evacuation, shelter and transportation options." (New York State Executive Law Article 2-B).

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- The Pets Evacuation and Transportation Standards Act of 2006 requires that the State and local emergency preparedness officials include how they will accommodate households with pets or service animals when presenting shelter plans to FEMA (Federal Emergency Management Agency). This law is important because past disasters, like Hurricane Katrina, demonstrated that many people will choose to risk their own lives in order to remain with their pets.
- The following laws require emergency shelters to accommodate people with functional support service needs (these services to be explained further in the plan) and integrate those populations into general population shelters:
 - Americans with Disabilities Act (ADA)
 - The Rehabilitation Act of 1973
 - The Civil Rights Act of 1968
 - The Architectural Barriers Act of 1968
 - The Homeland Security Act of 2002
 - The Post-Katrina Emergency Management Reform Act
 - Older Americans Act (OAA), Sections 306(b)3, 306(a), 306(a)17, 307(a), 307(a)30
 - Pandemic and All-Hazards Preparedness Act (PAHPA), 2006

VULNERABILITIES

- There are various emergencies for which emergency shelters may be required, including but not limited to:
 - Prolonged power outages due to snow or ice storms
 - Flooding
 - Fires
 - Hurricanes/Severe Weather
 - Hazardous Materials Release
 - Contaminated Water Supply (Including Well Water)
 - Attacks using or potentially using chemical, biological, radiological, or nuclear weapons or explosives

ASSUMPTIONS

- Greene County is responsible for the opening and operation of the shelters for up to the first 72 hours of activation of this plan until American Red Cross Volunteers take over the shelter operations.

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- The American Red Cross will provide a contact to work with the Greene County Emergency Services in time of Disaster in order to coordinate the collaboration of the agencies. This representative will maintain a presence in the Emergency Operations Center when one has been activated.
- In the immediate days after a major disaster, local organizations and congregations without MOUs may emerge and provide services to those affected by the disaster.
- Some degree of aid from Local, State, and Federal areas unaffected by the incident will be provided if available. These resources will be coordinated through the county Emergency Operations Center.
- Many evacuees will seek shelter with friends or relatives rather than go to a public shelter.

CONCEPT OF OPERATIONS

- Greene County will work with the American Red Cross to ensure proper shelter operations, paperwork and forms are filled out to allow for a smooth transition.
- Greene County Emergency Services will be the location of coordination for the emergency response in the county, including shelter operations. (Shelter Activation Procedure Flow Chart (**Attachment 3**) will guide how to activate the opening of shelters)
- At Red Cross operated shelters, the county will support and provide resources for medical/health personnel, communications personnel, and security staff as needed.
- Requests for additional shelter support will be made through the Emergency Operations Center.
- Public and private providers of institutions (medical and residential) remain responsible for having shelter plans for their populations
- Greene County assumes no responsibility for shelters opened that do not have a Memorandum of Agreement with Greene County.
- Within the first 72 hours, the Greene County Emergency Services Office, in cooperation with shelter managers, will devise a shelter demobilization plan. Shelters will not demobilize without the county's consent.

PARTNERSHIP WITH THE AMERICAN RED CROSS

Greene County will:

- Follow American Red Cross Operational Guidelines during shelter operations to allow for smooth transitions.
- Work with the American Red Cross to identify and update shelter facilities

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- Ensure that Agreements (Memorandums of Understanding) are in place
- Train Staff to Operate Disaster Shelters; The Red Cross will provide shelter training to county employees and local volunteers who will staff (and especially manage) disaster shelters.
- Remain in contact with the American Red Cross throughout the duration of the disaster.

The American Red Cross will:

- Provide training and exercises to keep disaster response methods fresh
- Participate in county exercises
- Provide cots and blankets if available
- Make themselves available to representatives of the county
- Keep a representative in the Emergency Operations Center throughout the duration of an event

TYPES AND MODELS OF SHELTERS

There are two main types of shelters:

- **Post-Impact Shelters**, usually opened on more long term basis. Their capacity is approximately 40 square feet per person. [See Red Cross handbook for all specifics on shelter sizing.](#)
- **Evacuation Shelter**, utilized to remove people from immediate harm. Their capacity is approximately 20 square feet per person.

The American Red Cross has classified several types of emergency shelters. These include:

- **Red Cross Managed Shelters**, which are run, staffed, and supplied by the American Red Cross
- **Red Cross Partner Shelters**, at which staff specific to the site must open and run the shelter, but the American Red Cross fund, carries liability, and enters into an MOU with the shelter.
- **Red Cross Supported Shelters**, which are supported by American Red Cross resources such as supplies or staff.
- **Independent Shelters**, which have no affiliation with the American Red Cross.

***Greene County will be setting up Red Cross Supported Shelters and transferring to Red Cross Managed Shelters. ***

SETTING UP A SHELTER (QUICK GUIDE FOR EOC)

- Greene County in time of disaster or if in need of a shelter will contact The Red Cross in order to start the process. Contact either local shelter representative or Red Cross headquarters. See attachment 2 for a list of contact numbers.
- Discuss with contact whether or not a “Shelter in Place” response would be applicable
- If shelter in place is not applicable, decide with the Red Cross Contact which shelter(s) to open.
- If The Red Cross cannot get staff to immediately open the shelter, contact the Department of Social Service to open up the Shelter.
 - In order to open up a shelter, you would need at least a supervisor and two workers/service associates. When contacting Red Cross or DSS staff, make sure there is at least the minimum amount of staff going to each shelter site.
- Contact the Shelter Site (**Attachment 4**) for their availability
 - If available, put in request for cots, blankets, and other supplies through the County Emergency Operations Center who will first attempt to gain the resources from the Red Cross.
- Locate the Red Cross Sheltering boxes or use print outs of the attached forms and opening instructions and provide to the assigned shelter supervisor in order to set up the shelter and start the registration.

OPENING THE SHELTER

After getting into contact with the shelter, utilize the provided forms to evaluate the safety and condition of the shelter.

- Check the Shelter’s condition (**Attachment 5**)
- Check supplies and document them to make sure that all that is needed is there. (**Attachment 6**) Contact Emergency Services Contact if additional supplies are needed.
- Make sure signage is in place so residents will be aware of where the shelter is as well as different locations are within the facility (**Red Cross Shelter Opening Binder Kit**)
- Communication: update Shelter Command contact with the status of the shelter.

REGISTRATION

Register each person housed in the shelter, including both their dates of arrival and departure. This information is the only documentation for the jurisdiction of who is in the shelter. It also helps the jurisdiction to locate missing family members.

- Document all occupants. (This task can be done by volunteers if needed)
- Registration Data- Keep at least a simple record on a plain 3x5 note cards of every person, or use **Attachment 7**. Information needed on the note cards is as follows:

- Family Last Name (at the top of the card)
- First, and middle names for the family heads of household (include maiden names if applicable)
- Names and ages of all other family members
- Pre-disaster address
- Note any health concerns or special needs
- Date arrived in the shelter, date departed shelter
- Post disaster address

*These cards should be stored in alphabetical order in a file

Utilizing **Attachment 10** will address some liability issues such as: do the clients need to register with a government agency for any reason, and asks client to signify agreement to shelter rules. This will allow for the shelter managers to find a location for those who need to register with a government agency and will cover liability of the shelter if the person falsely reports the need to register.

- Special Needs- Use the registration as an opportunity to allow people to self-identify any medical, dietary, medication, or accommodation needs
- Sign-in/sign-out policy- Establish a policy that requires residents to sign in and out for any period. This helps to keep an accurate shelter population head count.
- RIMS Reporting Needs- Shelter personnel will provide the following registration information to the Shelter Command Contact, as per the Regional Information Management System (RIMS).
 - Number of Shelters open
 - Number of persons displaced
 - Number of persons in shelters
 - Number of persons not sheltered

FOOD SERVICES

There is a food provision and ordering system in place to feed shelter residents. The Shelter Manager shall coordinate food requests through the County Emergency Operations Center.

Option One - Catered or Fast Food. The simplest strategy for feeding the shelter population is to have food catered or brought in from the outside.

- Fast Food Outlets - Given the confusion immediately following the disaster (or until mass feeding operations can be organized), it may be easiest to initially use 24- hour restaurants or fast food outlets in obtaining meals for shelter residents. Later it will become easier to prepare hot meals.

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- Restaurant Caterers - Identify local commercial suppliers – restaurants, catering firms, hotels, etc. – and make pre-planned arrangements for suppliers to provide meals to persons in shelters.
- Institutional Suppliers – Price Chopper and other Supermarkets can be a great help in time of disaster. Price Chopper has an agreement with the Red Cross currently to provide food and other supplies in time of Disaster.
- Option Two - Designate a Central Kitchen. An alternative strategy is to designate one large, central institutional kitchen within the local jurisdiction as the site to prepare and provide meals for each shelter operating within the jurisdiction.
 - Bulk Food Donations - Utilize the Logistics Section of the Red Cross to obtain large bulk food items from local sources and then direct supplies to the central kitchen.
 - Shelter Delivered Meals - Once meals are prepared, they can be delivered to local shelters (similar to a meals on wheels operation).
- Option Three - On Site Meal Preparation. A third strategy, assuming the shelter site contains kitchen or cafeteria facilities, is to prepare meals on site.
 - Cafeteria Staff - If a school is used for the shelter facility, shelter personnel may have the use of food services staff who normally operate the cafeteria.
 - Food Preparation and Cleanup Volunteers - Shelter residents can also assist as part of food preparation and cleanup crews. All Board of Health standards must be adhered to. The Red Cross will provide training for those who will be working with the food to make sure that they are meeting these standards.
 - Basic Menu Planning Tips - Plan menus in terms of foods available. Use perishable foods first. Prepare sufficient food to provide second servings, if possible.
- Meeting Special Diet Needs - Consider special dietary needs, including ethnic, vegetarian and infant considerations. Strive to meet as many special diet requests as possible, although resources to do so may be limited immediately following a disaster.
 - Low Salt/Sugar - If meals are prepared through an on-site or central kitchen, use low salt and low sugar guidelines in consideration of persons with restrictions.
 - Infant Nutrition - Determine the need for infant formulas or baby foods.
 - Hospital Dietary Departments - For other persons on special diets (such as a person with diabetes, heart, or kidney disease), shelter personnel

may need to consult with medical staff or have meals catered from local hospitals.

- NIMS Reporting Needs – shelter personnel are responsible for a daily count of people fed within each shelter and must report the following data to the Red Cross.
 - Number of fixed feeding sites
 - Number of mobile feeding sites
 - Number of persons fed in the past 24 hours
 - Number of persons projected to be fed in the next 24 hours.

HEALTH CARE SERVICES

A well-run shelter will protect the health of residents, prevent disease, and provide first aid as needed.

- First Aid - Shelter personnel must plan to have basic first aid assistance available at the shelter. People will come to the shelter with minor injuries.
 - Identify Staff with First Aid Training - Inventory employees as to disaster skills and have employees with first aid skills assigned to shelter teams.
 - Use Trained Shelter Residents - Residents within the shelter may include persons with first aid, nursing, or medical backgrounds.
 - Medical Emergencies – In case of a medical emergency in a shelter call 911 immediately and attempt to assist the patient as appropriate until help arrives. When time permits, make a report to the County Emergency Operations Center about the event.
- Role of the County Public Health Department – shelter personnel should plan to call upon County Public Health through the County Emergency Operations Center when needed to perform the following.
 - Health & Sanitation Inspections - To provide periodic health inspections of the shelter, including a sanitary inspection.
 - Public Health Nurses - To provide public health nursing services to shelter residents.
 - Prevent Communicable Disease - To monitor/evaluate the health status of the shelter population and prevent the spread of communicable disease.
 - Contagious Disease Concerns & Medically Fragile Persons
 - Separation to Reduce Spreading - Plan to provide for the separation of persons with suspected communicable diseases that can range from common colds to more severe influenza and intestinal infections.
 - Temporary Infirmary - If necessary, set aside a part of the shelter as a section for the privacy and isolation of ill persons. In addition, use this

area to provide a higher level of care for persons who are more medically fragile.

- Alternative Facilities - Setup an alternate shelter facility and coordinate support through the Op Area given the following. If a large number of persons have a communicable disease in the shelter, or if a large population needs ongoing medical assistance (such as an evacuation of residents from a medical care facility).
- Prescription Drug Management - Some persons within the shelter will have very individualized medication regimes that cannot be interrupted without consequences.
 - Storage of Medication - Plan for the storage of medications; refrigeration is required for some medications (e.g., insulin and some HIV antibiotics).
 - Prescription Refills - Plan to refill prescriptions; establish vendor agreements with local pharmacies and clarify how to obtain medications post-disaster (e.g., with a current prescription, with a prescription phoned in by a licensed physician, with a prescription validated by another pharmacy, or with a prescription bottle). **Note that the Red Cross does have an agreement with a pharmacy to provide medications as necessary, utilize them whenever possible. In cases where Medication assistance cannot be conducted through the Red Cross, Greene County Public Health and the department of Social Services have mechanisms to get emergency medications.**
- Other
 - Identifying Concerns - Plan to use the registration process as an opportunity for shelter residents to identify any medical problems or medication needs.
 - Documentation - Maintain records on all health incidents and related actions taken.

MENTAL HEALTH SERVICES

The mental health impact of disasters ranges from emotional stress and anger to severe trauma and depression. The potential for drug and alcohol abuse increases. Mental health support for shelter residents is very important in helping people to deal with their losses and begin the recovery process. It will also help people to manage feelings of post-traumatic stress.

- Enlist Mental Health Counselors - Work with the County Emergency Operations Center to obtain as many qualified personnel as possible to provide counseling, and to support disaster victims with their emotional needs.

- Community Counseling Resources - In addition to County Mental Health (see below), develop a resource list of community mental health providers or services to call upon if needed. These resources include:
 1. Community Based Organizations that provide crisis counseling
 2. Ecumenical or Pastoral Counseling Services (congregations and faith-based organizations often provide counseling services)
 3. Volunteers from the community who are trained as licensed therapists
- Role of County Mental Health Services
 - The County Mental Health department shall be the lead for all Mental Health related matters during an incident. Staff from that office will be part of the County Emergency Operations Center.
 - Assess Mental Health Needs - To assess and activate responses to mental health issues resulting from the disaster.
 - Provide Crisis Support - To provide crisis support services for shelter and community residents traumatized by the disaster.
- Organizing Additional Support
 - Debriefing- The county Mental Health staff may be utilized to engage in debriefing activities and they may coordinate for additional Mental Health support.
 - Children - Consider activities to help children express their feelings about the disaster and consider enlisting the assistance from the county Human Services office (Youth Bureau)

TRANSPORTATION

During the period in which the shelter is in operation, some persons will require transportation to the shelter, as well as door-to-door transportation from the shelter to medical and other appointments. In addition, people with mobility disabilities will need para-transit assistance.

- Coordination through the Shelter Manager—**County government agencies** and local volunteers may be asked to assist in locating those in need of transportation. (When the Red Cross takes over control of the shelter, they will still look to the County to make transportation arrangements).
 - Transportation Resources - Aside from local government and county resources, other transportation resources for moving people may include school buses and commercial shuttle vans.

- Para-transit Resources - Identify local para-transit resources for the transport of persons using wheelchairs. In addition, identify local taxi service to support the transportation needs of frail elderly persons.
- Transportation in an Evacuation - Consider plans for moving large numbers of people if there is a need for a mass evacuation of community residents to disaster shelters
- Transporting Supplies & Resources - The movement of shelter supplies and resources will also require transportation resources.

INFORMATION SERVICES

The collection, communication and distribution of shelter information is vital. This includes information about the disaster, about relief services available to shelter residents, as well as information to help reunite separated family members.

- Public Shelter Messages - As the jurisdiction puts out public messages about shelter locations, stress that residents going to disaster shelters bring a go-kit with blanket or sleeping bag, change of clothes, personal hygiene items and prescription medications.
- Bulletin Boards - Set-up bulletin boards near the shelter registration area as a means for disseminating information to the shelter population.
 - News Postings - Post daily updated news on the response to the disaster, along with news and information about shelter activities for the day.
 - Recovery Services - Provide information on recovery services available through disaster relief organizations such as the American Red Cross, Salvation Army, and FEMA, along with other government disaster assistance programs.
 - CBO Relief Assistance - In addition, include information on any active community-based or faith-based relief and assistance programs.
 - Special Needs Communications - Consider the information needs of persons who are deaf, or blind, or non-English speaking [see Section 5: Assisting Persons with Special Needs in Disasters for further information].
- Shelter Meetings - Hold daily shelter meetings as another way to share information and dispel false rumors that may be circulating within the shelter population.
- Disaster Welfare Inquiries - Respond to disaster welfare inquiries (seeking to locate persons who are presently unaccounted) by referring to shelter registrations. Please be aware that residents should contact the person making the inquiry. Due to confidentiality, shelter workers are **not** allowed to share the whereabouts of a resident. An example response of a shelter worker to a person inquiring if someone is in the shelter would include saying that they cannot confirm or deny if the person they are looking for is present. The shelter fundamental training provides training on how to approach this situation.

- Central Shelter Registration Log – Consider implementing a central shelter registration log to combine registrations from all shelter locations.
- Coordination with Red Cross - Coordinate family reunification support with the American Red Cross, which operates a regional Disaster Welfare Inquiry system.
- Communication - Telephones are the primary communication link between shelter facilities and the County Emergency Operations Center. If telephones are not functional, amateur radio operators for ham radio communications. As a last resort, use runners to relay messages.
- Additional Telephone Resources - Plan for additional telephones to facilitate communication between shelter residents and family members outside the area.

SOCIAL AND PERSONAL NEEDS

Given a significant disaster event, residents will begin to work toward recovery while in the shelter. Shelter personnel should plan to coordinate with external agencies and services through the County Emergency Operations Center to help meet the personal recovery needs of shelter residents.

- Child Care - If a shelter remains open for more than a day or two, plans should be initiated to provide child care services to support parents with child supervision and care needs.
 - Staff Support – **All child care services will be provided through Red Cross approved staff even if the county has not yet turned shelter operations over to the Red Cross. In extreme circumstances where no Red Cross staff is available, anyone wishing to work with Children must undergo a full background check conducted through the Sheriff's Office or State Police before being allowed to care for children.**
- Clothing - Emergency clothing becomes a need when possessions are lost in a disaster.
 - Community Action of Greene County coordinates Donations as well as maintains a supply of clothing and other basic resources.
- Comfort Kits - Shelter residents will need basic hygienic items such as soap, a washcloth, toothbrush, toothpaste, a razor, and a comb. The Red Cross can supply comfort kits for the shelters. If a shelter is in need of the comfort kits, make a request through the County Emergency Operations Center.
 - Local Suppliers - Plan to obtain these items either through commercial vendors, or through donations from local businesses.
- Long Term Housing Assistance

- Greene County Department of Social Services coordinates long term housing assistance. Shelter Managers can request that a DSS staff member be assigned to the shelter to assist residents with the process.
- Transitional Support Needs - Collaborate with family services providers and county social workers to support shelter residents in their transition from the shelter into temporary or longer-term housing.
- Language Translation - Consider the following options for bilingual support.
 - Bilingual Shelter Residents - Ask bilingual shelter occupants to volunteer and assist non-English speaking shelter occupants.
 - Bilingual Volunteers - Seek out disaster volunteers with bilingual skills.
 - Language Line- The county departments of Public Health as well as the department of Human Services have access to a commercial “language line” which can be utilized in times of disaster.
 - Community Based Organizations with Ethnic Specific Services - Coordinate with CBOs that specialize in serving specific ethnic communities and have bilingual staff.
- Recovery Services - Shelter residents will need assistance in identifying where to go for services to meet their specific disaster recovery needs. Disaster relief organizations such as the Salvation Army, Red Cross and FEMA, along with other government, faith and community-based relief programs, may all initiate recovery services for disaster victims.
 - Distribute Resource Lists - Develop resource lists with contact information and a description of available relief and recovery services for disaster victims.
 - Information and Referral Services – shelter personnel can work in coordination with community-based Information and Referral service programs that are in turn linked with hundreds of human service providers. (local Libraries are an additional Information and Referral resource)
 - In most cases Disaster Recovery Centers (DRC’s) will be established following a disaster. Shelter staff may need to coordinate transportation to and from the DRC’s
- Replacement Equipment - Elderly persons and people with disabilities will need help to replace personal supplies and equipment, if lost or damaged in the disaster (e.g., items like orthopedic braces, wheelchairs, or hearing aids).
 - Local Vendors – Local pharmacies and home care service companies
 - Loan Closet- The county Public Health has access to a stockpile of various medical devices.

- Recreation - If large numbers of persons are housed in the shelter, and if the shelter operation is prolonged, provide recreation opportunities for shelter residents.
 - Recreational Supplies - Recreational supplies include videos, newspapers, books, games, and TV sets. Consider engaging the services of local youth and/or elderly activities staff from local establishments.

ANIMAL SERVICES

Other than service animals, which legally must remain with their owner at all times, shelter personnel are advised not to allow animals inside due to health and safety concerns for other shelter occupants. Unless given prior notification, pet owners who evacuate to disaster shelters will likely arrive at the shelter with their pet and the options on how to respond to that are as follows:

- Option One – Offsite Care – Greene County has a pet sheltering plan with pre-identified potential pet shelter locations. Wherever possible, these shelters are located near an evacuation or long term shelter.
 - Communicate the Pet Policy - Clearly state and post the pet policy. “Pets are not able to be housed with their owners in a shelter out of safety concerns for everyone in the shelter. While we understand that this is a traumatic time for both you and your pet(s), this anxiety can manifest as an unintended outburst from your pet(s) which could result in harm to others. Your pets will be housed and cared for by compassionate people and you are encouraged to visit and assist with pet care as the situation warrants”.
 - Reassurance - Pet owners may need constant reassurance that their pet will be safely cared for - issues are sure to arise of pet owners refusing to evacuate or go to a shelter if it means separating from their animal.
- Option Two – Onsite Holding Area – If a permanent Pet Shelter has not been established, contact the EOC to create a makeshift pet holding area outside the shelter facility. This requires the provision of food, water, and exercise for pets, and if necessary, supplies to create a pet holding area (e.g., cages or fencing).

It is the goal of both the Sheltering Plan and the Pet Sheltering Plan to keep an open line of communications between both types of shelters to ease anxiety on the part of both humans and pets.

VOLUNTEERS

Volunteers (either from the community or from the shelter population) may help to staff shelter functions.

- Sources for Volunteer Recruitment
 - Shelter Residents - Use volunteers from within the shelter population.
 - Community Residents - **Use volunteers from the community which will be coordinated through a Volunteer Reception Center.**
 - Voluntary Organizations - CBOs, faith-based organizations and local congregations are another source for voluntary support.
 - Maintain a Volunteer List - The jurisdiction may want to train a cadre of local volunteers, in advance of a disaster, to provide support at disaster shelters.
- Areas for Volunteer Involvement. The following are some of the roles for volunteers within the shelter.
 - Reception - Meet and greet arriving shelter residents and provide comfort.
 - Registration - Help newly arrived shelter residents to fill out registration forms.
 - Runners - Help in obtaining goods and services or acting as “runners”.
 - General Operations - Support with shelter operations such as shelter set up, food services, shelter maintenance, etc.
 - Health and Human Services - Support with more specialized services such as first aid, mental health, child care, recreation and personal assistance services from support to seniors and people with disabilities, to help with language translation.

SAFETY AND SECURITY

To operate shelter facilities in a manner that promotes the safety and security of each resident within the shelter, the shelter manager must establish and post clearly understood rules so all shelter occupants understand what is expected of them.

- Shelter Rules
 - Provide Rules at Registration - Shelter residents must understand the rules upon registration. Plan to have rules prominently posted (or passed

out as an information sheet) and then reinforced at shelter orientation sessions. (Attached is a sheet of shelter rules)

- Translation of Rules - For non-English speaking persons have shelter rules and regulations translated into other languages (e.g., Spanish and Chinese).
- Enforcement of Rules - Use rules as a cause for dismissal if broken. Depending on the circumstances, employ a shelter committee to oversee disputes and call on local law enforcement to assist with serious disputes or rules violations.
- Policing Functions
 - Security/Safety Inspections - Plan to regularly inspect the facility (and the surrounding grounds) to ensure compliance with shelter rules, fire regulations and to spot any potential problems. Coordinate with local Law Enforcement and Fire Services for assistance when needed.
 - Private Security - **Given a large shelter population, the county may contract with a commercial security agency to provide shelter security services.**
 - Monitoring Occupant Flow - Establish one entrance and exit to the shelter and secure all other entrances and exits. This is to prevent theft from people outside the facility and to facilitate sign-in/sign-out procedures.

SHELTER MAINTENANCE AND EQUIPEMENT

Operating a shelter for a sustained period requires plans for the daily upkeep of the facility and for the ongoing acquisition of equipment and supplies. Since it is their “temporary home,” ask shelter residents to assist with housekeeping and cleaning activities. Staff normally responsible for the facility (e.g., school janitorial services) may be available to support operations. County Health Services can address food, water safety and sanitation issues in shelters.

- Shelter Supplies – The Shelter Manager will coordinate with the county EOC to obtain additional supplies and equipment such as cots, blankets, first aid supplies, cleaning equipment, and tools.
 - Initial Inventory - Conduct a pre-occupancy inventory of potential shelter sites to determine what operational supplies may already be in place.
 - On-Site Cache of Supplies - Consider pre-positioning critical shelter supplies (e.g., water, nonperishable food, cots, blankets, first aid kits, tools and other supplies) in trailers or shipping containers on the grounds of, or near, potential shelter sites.

- Vendor Agreements - Form as many agreements or vendor relationships as necessary with local businesses now, to supply goods later during shelter operations.
- Donated Goods/Services - During operations, work with Logistics to obtain donated goods and services to support shelter operations.
- Waste Management – Plan to arrange for daily garbage/waste removal.
- Portable Toilets - As necessary, arrange for the installation of additional toilets and possibly shower facilities.

TRANSITIONING FROM COUNTY RUN TO RED CROSS RUN SHELTER

As soon as the Red Cross has adequate staff to take over shelter operations, the county will transfer shelter management and staffing roles to them. In order to ensure an orderly transfer the following activities must occur.

- The Shelter Manager will fully brief the on-coming Red Cross staff of the situation.
- The Shelter Manager and staff will review all paperwork to ensure that all appropriate information is available.
- The on-coming Red Cross staff will assign a new Shelter Manager who will assume command of the shelter.
- All staff will be advised of the transfer of command.
- The Red Cross Shelter manager may request some or all county staff to stay on at the shelter as needed.
- The Red Cross Shelter Manager will coordinate all resource requests through the county Emergency Operations Center unless directed otherwise by the EOC.

Greene County Emergency Shelter Plan

Appendix F - Displaced Resident's Plan

This Annex identifies potential locations to be used as Intermediate Term temporary housing locations, where mobile homes could be placed for a period while long-term housing solutions are developed for displaced residents. Not all communities have an identified location, which is due to available land and/or geography. All identified locations are above the flood plain for the given area and have access to electricity, water, and sewer services.

As each situation is unique, the best housing solution may lie outside of the resident's home jurisdiction. Recovery staff should consider all factors affecting the population before deciding on a location. Specifically, the following items should be evaluated.

1. Access to recovery services for the residents.
2. School district- attempt to keep children in their same school district
3. Ease of utility connections
4. Public Transportation Routes- If affected population usually utilize public transportation, attempt to keep the temporary housing location along public transportation routes.
5. If affected population is comprised of specific Cultural or religious or ethnic groups, attempts should be made to ensure those groups remain together in the temporary housing solution.

Locations for temporary housing by community

Ashland	93.00-2-31 (13.5 acres) Ashland Wastewater treatment plant	
Athens-Town	Treetopia Campground, 1446 Leeds Athens Rd, Catskill NY 12414	Camp Catskills RV Park, 1226 Schoharie Tpke, Catskill NY 12414
Athens-Village		
Cairo	Angelo Canna Town Park, Joseph Spenser Lane, Cairo NY 12413	Whip-O- Will Campground, 644 CR 31 Purling NY 12470
	Doherty's Mountain View Campground, 1077 Joseph Chadderdon Rd, Acra NY 12405	Lynch's Pot O' Gold, 373 Old Rte 23 Acra NY 12405
Catskill-Town	Brookside Campground, 4952 NY-32, Catskill NY	Brookside Mobile Home Park, 86 Brookside Dr, South Cairo NY 12482
Catskill-Village	Elliot Park-172.05-2-35	Community Life Church 10 West Main Street, Catskill NY 12414

Coxsackie-Town	Coxsackie Senior Center, 127 Mansion Street - 1.75 acres	Earlton Hill Campground 594 Meadway-Earlton Rd, Easrlton NY 12058
	Deidricks Mobile Home Park, 12319 Rte 9W W.Coxsackie NY 12192	
Coxsackie-Village	DM Hamilton Firehouse parking lot, 117 Mansion Street	Molly White Drive 3rd parcel in from Sutton Pl- 2.8 acre
Durham	Durham School -21.00-5-11, 21 Acres	Blackthorne Resort, 348 Sunside Rd, East Durham NY 12423
	Tuscan Meadows MHP, NY-81 Oak Hill NY 12460	
Greenville	Greenville Town Park- 12.00-2-26, 156 acres	
Halcott		
Hunter-Town	North/ South Lake Campground (State owned) 874 N. Lake Rd Haines Falls NY 12436	
Hunter-Village		
Hunter-Tannersville		
Jewett		
Lexington		
New Baltimore	Town of New Baltimore District 1 (Joseph Wyche) park, 214 New Baltimore Road	Town of New Baltimore District 2 (Cecil Hallock) Park, 1502 County Route 54
	Town Of New Baltimore District 3 (Silver Lake Park), 303 Old Kings Road	
Prattsville		
Windham	Tax ID# 78.00-5-2 10.90 acres Water,Sewer and Electric on site. Fire # 105 County Route 21,	



Repetitive Loss Properties in Greene County as of October 2015 (best data available)

Repetitive loss properties are excellent candidates for mitigation. Below is a tally of how many properties are located in the county. Other details like addresses of these properties are protected by Privacy Act.

Repetitive Loss (RL) Properties by Jurisdiction

Jurisdiction	Total Number of Properties	Number of SF Residences	Number of Other Residences*	Number of Non-Residences	Total Amount of Claims Payments
Town of Ashland	1	1	--	--	\$ 21,686.40
Town of Athens	0	--	--	--	--
Town of Cairo	4	2	1	1	\$ 220,805.65
Town of Catskill	7	5	1	1	\$ 2,851,768.16
Town of Coxsackie	0	--	--	--	--
Town of Durham	1	--	1	--	\$ 9,021.83
Town of Greenville	0	--	--	--	--
Town of Halcott	0	--	--	--	--
Town of Hunter	6	4	1	1	\$88,195
Town of Jewett	5	5	--	--	\$ 105,088.69
Town of Lexington	9	7	--	2	\$742,453
Town of New Baltimore	0	--	--	--	--
Town of Prattsville	6	4	2	--	\$759,981
Town of Windham	0	--	--	--	--
Village of Athens	3	3	--	--	\$262,593
Village of Catskill	5	1	--	4	\$ 1,248,984.34
Village of Coxsackie	3	3	--	--	\$215,687
Village of Hunter	2	2	--	--	\$ 72,438.38
Village of Tannersville	0	--	--	--	--
TOTAL	52	37	6	9	\$6,598,703

*2-4 Family or Condo

Source: FEMA Region II.

Proj. #	Project Name	Mitigation Action Worksheet added to Annex?	Goal being met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	EHP Issues	Est. Timeframe	Lead Agency	Estimated Costs	Est. Benefits	Potential Funding Sources	Priority
GC 1 - Old #1	Emergency Communications Infrastructure Mitigation Program	Yes	1, 2, 3	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Greene County's emergency communications system is susceptible to natural hazards (flooding, snow storms, severe storms, landslides, fires). Communications between the 911 center and emergency responders at risk; residents, second home owners and tourists are all affected by any compromise in the system.	New radio transmission system to ensure continuity of critical services through installation of dedicated redundant communication lines between the 911 center and each tower. The system will enhance the reliability and resilience of communications infrastructure by increasing the number of towers to maximize coverage within the county. Dedicated fiber optic lines will provide additional redundancy. The system will also enhance weather monitoring which will help improve early warning capabilities.	Yes	No	Est. 2026 or 2027	Greene County Emergency Services	\$6 million	Reduce loss of communication at the 911 center and among emergency responders. Reduce risk of delayed response by first responders.	DHS-OIEC	High
GC 2 - Old #2	Public Awareness Campaign	No	1, 2, 3, 4	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Improved awareness of the potential damages that can be caused by a natural disaster. Interest and awareness about hazard mitigation may lose momentum after big storms and after the plan update process wraps up, so the County will continue efforts to bring up the topic.	Reach out to towns and villages (and for distribution of information to general public) through their Planning Board meetings, workshops that happen after their meetings and Workshops; radio interviews (similar to the ones done in 2015), public access channel piece. Greene County will look into billboards and inviting FEMA/NYS DHSES to meetings.	No	No	One event/action every summer and every winter	Greene County Emergency Services	Staff time	Improve public awareness of natural hazards	PDM	High
GC 3 - Old #4	County Road 2 Relocation, Town of Lexington, Greene County	No	1, 2, 3	Flood	County Route 2 between the Falke Quarry (privately owned soil mining operation) and the Mosquito Point Bridge (connecting CR 2 to State Route 23A) is located within the 100 year flood plain of the Schoharie Creek. It is the only practical access to the primary source for soil materials for the construction industry in the western section of Greene County. The highway has been damaged in a number of storms including Hurricane Irene.	Relocate 2900 feet of two lane County highway section to current County standards. This will include replacement of a 12 foot box culvert carrying a small tributary to the Schoharie creek, storm water detention or retention practices, new subgrade, full depth asphaltic road surface and guardrail as warranted. This project will remove this often damaged highway section outside the 100 year flood plain thus avoiding future effort and cost to repair it.	No	No	Culvert to be replaced in Spring 2023 rest of project is on hold until funding secured	Greene County Highway Department	\$2.5 million	Replacing culvert will reduce flooding	PDM/HMGP	High
GC 4 - Old #6	Relocate Building 3 in Ashland	No	1, 2	Flood	Building 3 is a maintenance sub residency quarters for the Greene County Highway Department. It is located in the Town of Ashland within the 100 year flood plain of the Batavia Kill a major tributary of the Schoharie Creek. The building was severely damaged during Hurricane Irene. It is cost effective to relocating the building to a less vulnerable location than elevating it more than four feet. In addition, the opportunity exists to co-create a facility to provide emergency community sheltering for an area comprising over 4000 residents in four townships. This would augment two other shelters and become the prime public shelter.	Provide new building above 500 year flood plain using an abandoned soil mine area currently privately owned, proximate to County Route 17. Building will contain garaging, vehicle mechanical repair space, parts storage and a small office area. Make existing County property available to the New York City Watershed. Make unused quarry property available to the Watershed as well. Provide additional storage facilities to support the use of the structure as a community shelter in the event of severe weather or other emergencies. Provide backup power and communications, hardened for severe events. Use FEMA 361 guidelines for building design. Town will complete a local flood analysis (LFA) in 2016 funded by GCSWCD Stream Management Implementation Program. That will make them eligible for flood hazard mitigation funds through NYCDPEP.	Yes	No	TBD-still in discussions with GCSWC and NYC DEP	Greene County Highway Department	TBD	Remove structure from 100 year flood and create an emergency shelter for residents	HMGP, CWC, NYCDPEP	High
GCS - Old #7	Relocate garage in Ashland	No	2, 3	Flood	County Highway garage in Ashland is vulnerable to flood risk	Relocate the Ashland County Highway garage out of the 500-year floodplain. This project has been expanded to include the Hunter-Tannersville Central School District (HTCSD) bus system as well.	Yes	No	TBD-still in discussions with GCSWC and NYC DEP	Greene County Highway Department	TBD	Remove the CF from the 500 year floodplain	HMGP, CWC, NYCDPEP	High
GC 6 - Old #8	Replacement of Temporary Bailey Bridge	No	1, 2, 3	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	The current bridge is a single lane structure with limited capacity, difficult ingress/egress, and a risk of failure which would result in an extended loss of a significant transportation corridor.	Replace current "temporary" Bailey Bridge which is bearing on a deteriorating stone arch bridge with risk of failure.	No	No	TBD-Town of Durham submitted a request for a feasibility study from an engineering firm to develop options to replace existing structure.	Greene County Highway Department	TBD	Prevent failure of the bridge which would create a loss of a significant transportation corridor.	NYSOT	Medium
GC 7 - Old #9	Replace Timber Lake Bridge over the Broad Street Hollow Creek, Greene County	No	1, 2, 3	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	This one span bridge structure, BIN 3201240, carries Timber Lake Road over the Broad Street Hollow Brook Kill in the Town of Lexington. Timber Lake Road is the sole access to several dozen properties, including residents and a major private sports recreation camp. There is no other feasible alternative access to these properties in the event of emergency bridge closure. Built in 1987, the bridge is rated structurally deficient by NYSDOT and FHWA. The bridge often traps debris during storms. Given the importance of maintaining access to properties with no alternatives, replacement of the bridge and its immediate approaches to current hydraulic and structural requirements is highly desirable.	Replace bridge and approaches to current standards in accordance with NYSDOT Bridge Design Standards. This would include establishing a temporary crossing for the construction period, providing a pile or rock - keyed foundation and new approaches. This project will ensure that emergency access can be maintained to this area under the most difficult conditions.	No	No	Spring 2023	Greene County Highway Department	High	This project will ensure that emergency access can be maintained to this area under the most difficult conditions.	DOT	Medium
GC 8 - Old #10	Culvert Replacements	No	1, 2, 3	Flood	Undersized culverts contributes to flooding on roadways during high flows.	<ul style="list-style-type: none"> •County Route 2 over Unnamed Tributary to Schoharie Creek Bridge Design (Prattsville) •Bounty Route 2 over Unnamed Tributary to Schoharie Creek Culvert Replacement (Prattsville or Lexington?) •Construct Rappleyea Road Culvert Replacement Project slated for 2022 (Lexington) •Replace three culverts in Village of Hunter on Mad Brook at Main St., Mad Brook at Glen Ave., and Ski Bowl Rd. at Shanty Hollow following full hydraulic analysis •Replace culverts in Jewett at CR 23C next to town hall and Beaches Corner Rd. (town road). Installing 16 ft wide x 4 ft. high culvert at 23C is recommended. •When due for replacement conduct thorough hydraulic and hydrologic (H & H) analysis for crossing under 23A at Wright's Creek (Jewett) •Replace Main St. bridge on Rt 23, at Mitchell Hollow Creek and implement floodplain bench (requires acquisition of three structures), Windham •Replace Bridge St. bridge in Village of Hunter (county bridge) and implement floodplain reclamation above bridge 	No	No	2022-2026	Greene County Soil & Water Conservation District/Highway Department	Various	Reduce flooding and keep roadways open at all times.	HMGP, SMIP (NYCDEP/GCSWCD), NYSDOT, GC Highway Capital Improvement, CWC	High
GC 9 - Old #11	Catskill Streams Buffer Initiative	No	4	Flood, Severe Storm/Wind Event	Protect, enhance, manage and restore riparian buffers within the west of Hudson NYC watershed area of Greene County.	The GCSWCD and NYCDPEP will work with landowners in the NYC watershed to protect, enhance, manage and restore riparian buffers within the WOH watershed. GCSWCD staff will conduct site visits to determine eligibility for funding through the CSB. In addition to site visits, recruitment may also include outreach mechanisms such as press releases, targeted mailings, presentations to organizations, and Riparian Corridor Management Plan development.	No	No	Ongoing	Greene County Soil & Water Conservation District	Various	Protect the watershed from future disturbance or encroachment	Contract with NYCDPEP	High

Serial No.	Lead	Project Title	Description of Problem
3	Greene County Emergency Services	Hazardous Cargo Plan	Concern about hazardous cargo and potential for spills on CSX line
5	Greene County Highway Department	Bridge replacement	Town water supply wells are at risk. A previous mitigation project was implemented with NRCS
12	Greene County Soil & Water Conservation District	Creative Stormwater Practices and Critical Area Seeding	In order to reduce runoff and protect groundwater resources in the basin, the GCSWCD and NYCDEP support promoting the infiltration of stormwater through erosion and sediment control techniques such as hydroseeding of open ditches, stormwater techniques to infiltrate water into the ground, wetland enhancement, filter strips, and creation of rain gardens and bioswales to manage stormwater.
17	Emergency Services and Health Dept	Natural Disaster Preparedness Training	Residents need additional training on sheltering in place.
18	GCSWCD	Local Flood Analyses (LFAs) for Valley Towns/Villages	Use the latest flood information and modeling techniques to evaluate flooding issues in population centers, and provide a scientifically-driven process to develop and implement solutions.
22	Greene County Emergency Services	Temporary Housing sites	Need to identify temporary housing sites for post-disaster

1	All County Departments and All Towns and Villages	Integrate with Existing Planning	Hazard mitigation principles and projects need to be integrated into existing planning for 1) implementation, 2) to ensure future development is located out of hazard prone areas, and 3) to plan for increased frequency and severity of hazards as more information becomes available.
1	Town of Ashland	Local Flood Analysis	Need Local Flood Analysis
2	Town of Ashland	Backup Power	Support the implementation of a Back up Power Source for EMS/Fire local NIMS structure
3	Town of Ashland	Emergency Center in Town Hall	Need a community center for help, supplies and shelter during an emergency
5	Town of Athens	Emergency Communications Upgrade	The Town of Athens lacks full communications interoperability during emergency situation as existing radio units cannot always communicate with one another and outside agencies.
6	Town of Athens	Box culvert replacement	The existing culvert on Schoharie Turnpike is undersized -- leading to localized flooding and sometimes, some road damage during heavy rain/spring runoff events.
7	Town of Athens	Automatic standby generator	The Town of Athens highway garage -- a facility that must remain operable during emergency situations -- has insufficient back up power supply capabilities. Presently, the shop only has a pto driven portable generator that currently runs when the powers out after we hook it up. The Town Garage experiences 1-2 outages per year with duration last from several minutes to, in the case of a 12/2009 ice storm, several days. Generators have been rented in the past at a unknown cost.

8	Town of Cairo	Moorehouse Road Elevation Program	Low lying basin area that floods during heavy rain events. Road becomes impassable to 17 residential properties restricting ingress and egress for but not limited to residents, emergency vehicles, etc.
10	Town of Catskill	Game Farm Road	Game Farm Road – undersized bridge, flooding damage to road.
11	Town of Catskill	Snake Road	Snake Road- Undersized culverts, erosion endangering a house.
12	Town of Catskill	Bogart Road	Bogart Road- Undersized 4' diameter culvert, flood damage to road.
18	Town of Durham	Culvert Replacement	Replace current double culvert with a single arched bottomless culvert. Current Culvert: two (2) 8' X 40'
19	Town of Greenville	WWTP & Sewer District Improvements, Sewer District Extension	The Town of Greenville, located in the north eastern corner of the Catskill Mountains, is proceeding with a plan to 'harden' its waste water infrastructure in the face of recent severe weather events, most notably Hurricane Irene. The Town, located on the Basic Creek which is a tributary to the Catskill Creek Watershed, is peppered with dozens of failed septic systems from the last century. The inflow and infiltration issues in the existing waste water treatment facility have resulted in a DEC negotiated Order on Consent. Retaining walls associated with storm water management are failing and have been partially stabilized with FEMA PA support. New culverts are required for increased storm water management in three sections of the Town's road infrastructure. From FEMA Narrative: The Town of Greenville in Greene County, New York maintains an existing waste water treatment system that was originally built to serve subdivision development in the 1980's.

21	Town of Halcott	Retrofit Halcott Town Recycle Station	Tropical Storm Irene was only the latest in a series of serious rainstorms that have flooded our recycling center in ever-increasing intensity, washing tin cans, plastic milk jugs, broken glass downstream in the torrent. Paper goods, if left behind, are waterlogged beyond saving. The cost of restoring the recycle center from this storm alone was \$9472.00. Former storm damage costs have been absorbed by the Town. The Town of Halcott is small, with only 258 residents. It is located on the edge of Greene County and is at least 45 minutes away from our County transfer station, making it virtually inaccessible to the homeowner with no truck or time to make the journey. Townspeople who do not use a hauler or who find our small recycle center full, "stockpile" their solid waste and recyclables until they can take the time to drive them to a dump.
29	Town of Jewett	Mitigate Town Hall	Needs shower, Red Cross Shelter, Generator
36	Town of Lexington	Building Elevations on Spruceton Road and Route 42 in 500-yr Flood Zone	Elevate buildings in 500-yr Flood Zone
40	Town of New Baltimore	Staff Training	Staff training needing in hazard mitigation.
41	Town of New Baltimore	Medway Grapeville Fire Station Backup Power	The current standby generator is unrepairable if it should go down again due to its age. This is a very high priority as this generator provides electrical power to the fire station during power outages which is part of our critical infrastructure and is used as an emergency shelter for the western portion of the Town.
42	Town of New Baltimore	Replacement of Wastewater Treatment Plant	Upgrade of wastewater treatment plant needed.

43	Town of Prattsville	Made in Prattsville Business Recovery Park	<p>The Town of Prattsville experienced unprecedented flood damage from Hurricane Irene on August 28, 2011. The Town sustained millions of dollars of worth of damage to its Main Street business and residential district. A flood study was conducted addressing the watershed hydrology, existing riverine morphology, existing channel hydraulics and floodwater elevations along a one mile stretch of the Schoharie Creek that parallels Prattsville's business district.</p> <p>A detailed hydraulic engineering study was done after the flood to identify options for reducing floodwater elevations and subsequent damage to infrastructure. One recommendation is to allow more floodway capacity by reclaiming land in the floodway and floodplain. The largest parcel in the study area is a twelve-acre anchor business that is considering a FEMA buyout (HMGP disaster # 4020). The business was substantially damaged by Irene. The buyout in itself however is not enough for the owner to relocate.</p>
44	Town of Prattsville	Made in Prattsville Business Recovery Park	<p>A relocation strategy needs to include purchasing a large enough parcel to relocate to, infrastructure investment (water, sewage, utilities), highway access, permitting, and design, and possible site remediation of the existing parcel if hazardous material is found (due to past usage this is a possibility).</p> <p>Prior to the flood, the business, Dimensional Hardwoods, was manufacturing furniture parts and some of the highest grade baseball bat billets in the country. In fact, 20 – 30% of the professional grade billets that left the bat factory made their way to the major leagues. The factory produced rough split and lathed wooden dowels that were then vacuum dry kilned. The state-of-the-art kilns were developed with grants and research from SUNY Environmental Science and Forestry and Watershed Agricultural Council (WAC). The company's product was packaged and shipped to baseball bat factories in 15 states and six countries.</p>

45	Town of Prattsville	Made in Prattsville Business Recovery Park	The flooding from Tropical Storm Irene wiped out the factory, equipment, and the kilns. Looking ahead, the bat factory is cultivating a "Made in Prattsville" strategy that will capture the heart of baseball fans while at the same time drive energy independence and help to jump start Prattsville's community recovery. The company's focus is to produce wood products and promote the local and regional forestry industry throughout the state of New York. By utilizing all of the waste products to convert into useable cellulosic ethanol and wood pellets, the "Made in Prattsville" concept would provide discounted energy and fuel to the entire community and add lesser dependence on foreign petroleum. Additionally, the project will include a wood crafts open market and retail shop, river walk overlook, river walk trail, and ice cream stand.
46	Town of Prattsville	Berm and Floodplain Alteration	Flooding of homes near Route 23
48	Town of Prattsville	Route 23 Bridge Replacement	Replace the Route 23 Bridge with a larger span to pass higher flood flows
49	Town of Windham	Culvert Replacement	This culvert four-foot undersized corrugated metal pipe culvert needs to be replaced to provide additional capacity to reduce local flooding impacts.
50	Town of Windham	Back-up Power	Provide for emergency generators at Town of Windham emergency shelters. These shelters will be used in the event of evacuation of people within the inundation zone, associated with a flash flooding event resulting from a dam failure.
51	Town of Windham	WWTP and Water Systems	Protect WWTP & Water systems

54	Town of Windham	Mad (Pratt) Brook stream bank restoration alternatives	Stream bank restoration needed.
56	Village of Athens	Culvert Replacement	Culvert replacement needed.
61	Village of Athens	Relocate Department of Public Works Building	Consider relocation of Public Works Building. The Department of Public works Building is on the Hudson River and houses the Department of Public Works and their equipment. The building is in a flood zone and all equipment needs to be removed during a heavy rain event because of flooding (the machinery shed is a particular concern). However, the problem of cost for this project remains an issue.
62	Village of Catskill	Wastewater Treatment Plant Flood Mitigation	Flooding of the Wastewater Treatment Plant Control and pump facility due to storm surge or heavy rain. When flooded the building and the motors and pumps that pump raw sewage into the treatment process are at risk. We have experienced flooding at the plant during Hurricane Irene and Storm Surge Sandy. We suffered approximately \$62,000.00 of damage to the plant during Storm Surge Sandy.
63	Village of Catskill	Implementation of Resilient Catskill Plan	
64	Village of Coxsackie	Rt 385/CSX underpass	Repetitive flooding of the NYS Route 385/CSX underpass. Repetitive flooding frequently results in closure of the main route into and out of the village.
65	Village of Coxsackie	Wastewater Treatment Plant for Infrastructure	Wastewater Treatment Plant built in 1973
66	Village of Coxsackie	West Coxsackie Sewer Trunk Line	Eliminate repetitive flooding problems and overloading to the West Coxsackie sewer pump station

67	Village of Cossackie	Drainage from Apple Blossom Lane and east to Matthew Lane and Luke Ave.	Complete drainage assessment and design/implementation of drainage improvements to remedy a repetitive flooding problem at the development known as Flach Development on Apple Blossom Lane, and the avenues of Matthew, Mark, and Luke and Howard Drive.
68	Village of Cossackie	Flood attenuation basins	Reduce flooding along the Cossackie creek.
69	Village of Cossackie	Riverside Avenue retaining wall to address slope failure	17 - 27 Riverside Avenue: The two houses and road are vulnerable to ground failure by river.
70	Village of Cossackie	Stabilize Kings Road	Slope failure has occurred and southbound lane is collapsing.
71	Village of Cossackie	Retaining wall and drainage on New Street	Rebuild retaining wall and install drainage to prevent wall failure and avoid danger of collapse of the four houses that are 14' below the wall on New Street between 44 and 52 on northbound lane.
72	Village of Cossackie	Drainage on lower Church St., Franklin St. and South River St.	Complete drainage assessment and design/implementation of drainage improvements to remedy a repetitive flooding problem.
73	Village of Cossackie	Church Street stabilization	North side of road has been collapsing for 30 years and is sliding down embankment.
74	Village of Cossackie	Mansion Street drainage	Improve drainage between Getty station and rescue squad on Mansion street to avoid mosquito breeding and flooding in local cellars.

75	Village of Coxsackie	Drainage Assessment and Improvements for Noble Street	Need to remedy drainage and sliding problems to prevent road failure and avoid danger of collapse on north side of Noble Street.
78	Village of Coxsackie	Pipe connecting the two reservoirs	The Village monitors and maintains the creek between the two reservoirs. Contaminants currently enter the water system as water flows between them, requiring more chemicals to provide safe drinking levels
80	Village of Coxsackie	Water Line Replacement	Aging water distribution system and sewer lines consisting of mains, valves, hydrants, etc.
82	Village of Hunter	LFA	Local Flood Analysis is needed to assess feasibility of flood mitigation projects.
83	Village of Tannersville	LFA	Local Flood Analysis is needed to assess feasibility of flood mitigation projects.
85	Village of Tannersville	Reservoir #3 Mitigation	It would also destroy our water plant which would effect all of our water customers inside the Village and approximately 200 outside the Village. While the Reservoir has withstood Hurricane Irene and Tropical Storm Sandy, the Village would want to prevent an unfortunate disaster with the current issues at hand. In the event of failure, the dam may damage isolated homes, highways, public utilities and/or cause economic loss to the community as well as cause serious environmental damage. Recently we have spent approximately \$25,000 for the Inspection & Maintenance plan, Hydrologic/Hydraulic analysis, and Emergency Action Plan including a dam break analysis. The Village needs to retain professional engineers to perform an engineering assessment of the dam and complete remedial measures. The DEC would like the Village to have this rectified by the fall of 2014.

Proposed Mitigation Measure	Status	Priority	Timeframe	Cost Estimate
There's a County Steering Committee working with a State Steering Committee on a plan (with 20 other counties) on a plan which will go into effect in early January. The State will then provide supplies and training to assist with the implementation of the plan.		High	Plan in effect from March, 2016	Staff time
Keep access road clear, improve access, bridge replacement	Remove	High	2017	Medium
The GCSWCD will work with multiple partners to implement stormwater projects within the Schoharie Watershed.	Remove	Medium	Various	Various
Provide training and informational materials about sheltering in place to everyone in the county.		Medium	2017	Staff time
Secure funding for LFAs in valley towns/villages (outside of NYC Watershed area)	Remove	Medium	2017-2020 (Long term)	\$50k/community
Protect and enhance streamside buffers within the west of Hudson NYC watershed area of Greene County for floodplain protection		High	Medium	Low

There are 3 pieces to this action: 1) Specific hazard mitigation projects will be integrated into existing planning done by County departments , 2) Each town and village will consider adding a step of considering hazards when conducting stormwater management planning, adopting codes, etc. AND 3) Each town and village will consider increased frequency and severity of the hazards due to the effects of climate change		High	Medium	Low
Town will be conducting a local flood analysis in 2016 to identify flood vulnerabilities and potential mitigation measures (GCSWCD facilitating).	Remove	High	2016	\$50k/community
Install backup power	Remove	High	2016	Low
Enhance function of Town Hall to serve as a community center in emergencies	Remove	Medium	2017	Low
The Town of Athens seeks to update to the P25 compliance and expanded our radio communications system. Enhancing the towns public safety communications would help during a town wide emergency such as any natural disaster; for example (tornado, server storms, flooding, snow storms, etc.).	Remove	High	Medium	Medium
Replacement of covert with 6' X 5' X 35' box culvert structure will eliminate localized flooding.	Remove	High	Medium	Low
The Town seeks automatic standby generator that would power shop when needed all for 24/7/365 functionality. Esstimated cost to be around \$35,000.	Remove	High	Medium	Low

To install a larger culvert pipe as per hydrology study and raise elevation of the road.	High	Medium	Medium	Medium
Replace with precast box culvert.	Remove	Medium	Medium	\$200k
Upsize culverts, and install 2 plunge pools to stop erosion.	Remove	Medium	Medium	\$350k
Replace with box culvert.	Remove	Medium	Medium	\$150k
New Culvert : one (1) 24' X 40' Regrade, re-set and re-establish road.	Completed	High	2016-2017	\$40K
<p>The Town of Greenville is proposing:</p> <p>1) Extension of the sewer district to remove the commercial hamlet and denser residential areas from septic use, particularly those in the Basic Creek's floodplain and the Catskill Creek Watershed as a whole.</p> <p>2) Slip lining the existing sewer lines to eliminate inflow and infiltration. Usually, the plant processes 18,000 gallons of effluent per day. During Superstorm Sandy, the groundwater infiltration peaked at 50,000 gallons per day. The plant's permitting only allows for 55,000 gallons per day.</p> <p>3) Stabilization and replacement of stormwater management infrastructure, including fieldstone retaining walls (with steel girder walls), culverts and improved drainage.</p> <p>The project has been listed with the state's CWSRF and is currently being considered for federal interest-rate subsidy.</p> <p>From FEMA Narrative: 1) Increase of capacity at the waste water treatment plant to handle increased storm water inflows to the system, 2) Fortify existing retaining walls along the Catskill Creek Watershed areas in the Town to support related waste water collections infrastructure,</p>	Completed	High	Short	Medium

<p>We propose to retrofit our current recyclable center and expand it to include a solid waste collection option. As per the recommendations of our Code Enforcement Officer and Flood Plain Manager, we would lift the floor of the recycle center 10" off its concrete platform, allowing flood waters to pass underneath, harmless and unimpeded. Collection bins will be designed specifically to hold objects securely, employing steel netting as opposed to the current metal barrels that tip over easily. The platform would be surrounded with heavy lattice in frames to further protect the containers. The recycle center site would be enlarged to include a garbage disposal option with a bear-proof dumpster provided by Greene County, and placed beyond the flood plain, and an "E" shed, a disposal site for recyclable electronics. These three options would form a mini transfer-station (MTS) for the Town. Greene County Solid Waste will transport the full dumpster to the transfer station according to a negotiated agreement with the Town. This program would allow our people to easily, quickly and legally rid themselves of their personal waste. The site will be protected from further flooding. The new center will employ one part-time worker to oversee collection and proper disposal.</p>	Remove	High	Medium	Medium
	Remove	High	Long term	\$20k
<p>Elevate buildings in 500-yr Flood Zone on Spruceton Road (3 including Community Hall) and 1 on Route 42</p>	Remove	High	Medium	Low
<p>Train all staff including code enforcement and building department regarding hazard mitigation.</p>	Remove	High	2016-2017 (TBD based on funding)	Low
<p>Replacement of emergency standby generator</p>	Remove	High	2016-2017	\$30k
<p>Replacement of wastewater treatment plant.</p>	Remove	High	2017	\$2.5 million

<p>Reclaiming 12 acres of floodplain on the Schoharie Creek in Prattsville's Business District, relocating the Huntersfield Creek outlet (a tributary to Schoharie), removing berms, and select channel dredging are preliminary recommendations in the local flood analysis conducted for Prattsville (April 2012, Malone & MacBroom). In order to successfully relocate Dimensional Hardwoods, the anchor business, out of the floodplain and remain a viable business for the town, a relocation strategy needs to be developed drawing on many different funding sources – NY Rising, Community Reconstruction Zone program (Prattsville is a target community), FEMA HMGP Acquisition (disaster # 4020), Community Development Block Grant, and this round of Hazard Mitigation Grant Funding. This application will add leverage to the other programs, and vice versa, and allow each to contribute to a rebuilding strategy starting with this core anchor business and developing other businesses that have the potential to create local jobs and add value-added economic activity that would complement the emergence of a bio-fuels crop industry and support sustainable agriculture in the Prattsville region.</p>	Remove	High	Short term	Medium
	Remove			

	Remove			
Survey lowering berm below State 23 bridge to determine flood reduction to nearby homes. This should be done in combination with floodplain vegetation clearing.	Remove	High	Medium	Low
Replacement of the Route 23 bridge based on modeling performed for the local flood analysis (2014).	Remove	High	Long term	Medium
Upgrade drainage infrastructure along CR 56 in the area of CR 56 to improve stormwater runoff with a six foot by six foot box culvert. This project will expand capacity, improve mobility, ensure access to the dam, and reduce localized flooding impacts. This is a NYCR project, consultant (MMI), expected to complete summer 2016.	Remove	Medium	2016 (summer)	300,000
Emergency generators at Town of Windham emergency shelters needed. These shelters will be used in the event of evacuation of people within the inundation zone, associated with a flash flooding event resulting from a dam failure. This is a NYCR project, CT Male consultant	Remove	Medium	2016	100,000
Consolidation with Ski Windham complete	Remove	High	Medium	Medium

Continue to support the study of Mad (Pratt) Brook stream bank restoration alternatives. Part of MMI scope of work, NYCR - 2016 project	Remove	High	2016-2017	Medium
Replace culvert and widen roadway on Union Street.	Remove	Medium	2016	\$150,000
The Department of Public Works should have a new building erected outside of the flood zone near the fire department building.	Remove	High	2016-2018	\$1.5 Million
Extend the height of the concrete wall surrounding the entrance to the wet well and pump gallery. This will enable the building to sustain higher flood levels. Install aluminum plates on all the glass doors and windows of the building to prevent a breach at any of those locations during a flood event. Install outward opening doors on the wetwell and drywell outside entrances to prevent a breach of those doors during a flood event.	Remove	High	Medium	Medium
	Remove			Various
Complete drainage assessment and design/implement improvements to remedy repetitive flooding of the NYS Route 385/CSX underpass. Remedies would include improvements to conveyance system and reconfiguration of SW outfall to eliminate back water effect when Cocksackie creek is at flood stage	Remove	High	2016-2017	2 Million
Replace Wastewater Treatment Plant	Remove	High	2017-2019	10 million
Relocation of West Cocksackie sewer trunk line along the Cocksackie Creek to eliminate repetitive flooding problems and overloading to the West Cocksackie sewer pump station	Remove	High	2017-2020	\$500k - \$750k

Design and install drain piping. Replace approximately 70 water meters with remote read models	Remove	High (4)	2016-2017	\$500k - \$700k
Work cooperatively with the Town of Coxsackie to undertake the design and implementation of a series of shallow flood attenuation basins to reduce flooding along the Coxsackie creek. Initial assessments indicate that 4-6 structures placed on strategic waterways feeding the Coxsackie creek would have an immediate benefit. Such structures would be similar to an existing structure already constructed by the Greene IDA on an unnamed tributary located east of NYS Route 81. Basins would be designed as wetland cells and would provide secondary benefits due to wetland creation as well as habitat value for endangered species known to be in this area. Potential sites include former farm land located on the grounds of Coxsackie and Greene Correctional facilities	Remove	Medium (7)	2017-2020	\$500k
Install retaining wall or sheet pilings to stop slope failure.	Remove	Medium (8)	2017-2020	
Stabilize west side of Kings Road.	Remove	Medium (9)	2017-2020	\$500k - \$700k
Rebuild retaining wall and provide drainage in wall to prevent wall failure and avoid danger of collapse of the four houses that are 14' below the wall on New Street between 44 and 52 on northbound lane.	Remove	High (1)	2017-2020	\$300k - \$500k
Design and install corrective measures.	Remove	Low (14)	2016-2017	\$300k - \$600k
Stabilize Church Street (from 56-58 Church Street).	Remove	High (5)	2017-2020	\$500k - \$750k
Design and install corrective measures.	Remove	Medium (10)	2016-2017	\$300k - \$500k

Complete drainage assessment and design/implement improvements to remedy drainage and sliding problems to prevent road failure and avoid danger of collapse on north side of Noble Street.	Remove	Medium (11)	2017-2020	\$300k - \$500k
Install pipe between Climax and Medway Reservoirs	Remove	Low (12)	2017-2020	\$2 million
Replace nearly 40 miles of distribution system	Remove	Low (13)	2017-2020	\$40 M (\$1Million/mi)
The Village will be conducting a local flood analysis in 2016 to identify flood vulnerabilities and potential mitigation measures (GCSWCD facilitating).	Remove	High	2016	\$50k/communit y
The Village will be conducting a local flood analysis in 2016 to identify flood vulnerabilities and potential mitigation measures (GCSWCD facilitating).	Remove	High	2016	\$50k/communit y
	Remove	High	Long term	High

Funding Source	Project Status: Completed; Canceled (explain why); On Schedule (est. completion date) or Delayed	What was accomplished for this project if still in progress?	What obstacles, problems or delays did the project encounter?	Will this project be included as a Mitigation Action in the 2022 update? If so, please complete a new Mitigation Action Worksheet
NYSDEC	Completed.			no
NSYDOT	Cancelled due to change in priorities			No
NYCDEP	Cancelled - Stormwater projects are referred to the CWC SW Retrofit program			No
Emergency Services and Health Dept	Cancelled			No
FEMA/DHSES	Delay		no funding, inadequate staffing	No
Staff time	Completed			

Staff time	Completed	All communities on the mountaintop have conducted a Local Flood Analysis and implement projects as they deem appropriate. The goal of these LFAs is to identify and mitigate the flood hazards posed to public safety, private property, infrastructure, and the natural environment		
PDM Planning, SMIP (NYCDEP)	Town completed LFA in 2018 with funding from GCSWCD. Woitd Engineering and Consulting, PC conducted the analysis			Recommendations from the LFA are summarized in Mitigation Actions for 2022 update
PDM/HMGP	Complete			
CDBG/EMPG	Complete			
DHS Homeland security grant/EMPG	Completed 2018			
PDM/HMGP	Completed 2016			
PDM/HMGP	Completed 2018			

PDM/HMGP	Town did not participate in plan update process			
PDM/HMGP	On Schedule.	Awarded BridgeNY grant		No
PDM/HMGP	Unknown status			
PDM/HMGP	Completed			No
DOT/Local	Completed			No
PDM/HMGP/EPA - Application submitted, deadline was Sep 2015. Clean Water SRF grant	Completed	All work was completed		No, projects have been completed

PDM/HMGP	Project complete:	The project has become less of a priority as the method of collection now involves a County-provided dumpster that collects recycles and replaces the dumpster when full with another. Solid waste is collected weekly and placed in another lockable dumpster which is also replaced by the County when full.		No
May be generator can be funded under HMGP	Partially completed	Generator was installed. Shower not implemented	other priorities	No
FHMIP	Ongoing			Yes, ongoing, combined with #35
Staff time	Completed			
Possibly HMGP	Completed			
0% Loan through CWSRF	Completed in 2021			

PDM/CDBG/HM GP/EDA	Cancelled	Some projects implemented (bridge enlargements, berm removal) and some no longer relevant. Dimensional Hardwoods is no longer operational, landowner moved out of town, did not have interest in pursuing relocation strategy		
	Cancelled			

	Cancelled			
HMGP	Completed			
PDM/DOT/Local	Completed			
NY Community Rising PDM/HMGP	Completed			
NY Community Rising (CDBG) PDM/HMGP/CDBG, Capital Improvement Budget, HMA grant if project is part of a larger mitigation project	Completed			
Staff time	Completed			

NYRCR, Catskill Watershed Corp, Town	Completed			
Private materials donation, HMGP, PDM, NYSCWSRF	Completed: Spring 2022		Had to plan for funding over the course of approx. three years. Then materials (pipe) were delayed due	
PDM/HMGP, NYSCWSRF	Completed: Feb. 2021		Project went smoothly despite minor Covid-related supply chain delays. Didn't set us back too far.	
PDM/HMGP	Completed Nov. 2020		all listed work was installed as well as a new mechanical bar screen	
Various	Unknown status			
PDM/HMGP, NYSDOT, CSX Rail, Village of Coxsackie	State DOT project now - remove			
PDM/HMGP	Completed May 2021			
PDM/HMGP	No plan to address at this time - remove			

HMGP/other	No plans to address until \$\$ available - remove			
PDM/HMGP	No plan to address at this time - remove			
PDM/HMGP	No plan to address at this time - remove			
PDM/HMGP	No plan to address at this time - remove			
PDM/HMGP - Note: Retaining wall is difficult to be funded under FEMA	No plan to address at this time - remove			
HMGP/other	Working fine - remove			
Local or DOT	No plan to address at this time - remove			
HMGP/PDM/CDBG	No plan to address at this time - remove			

HMGP/other grants	No plan to address at this time - remove			
PDM/HMGP/NYS DEC	Long term plan - on hold for now - remove			
NY Rural Water Assoc.	No plan to address at this time - remove			
HMGP/PDM/GCS WCD/NYCDEP	Completed in 2018			
HMGP/PDM/GCS WCD/NYCDEP	Local Floodplain Analysis Completed in February 2018	Study Completed and some projects in-progress	Lack of funding or low BCA score to be competitive for FEMA money	No, new projects are noted below
	part of number 84			



Town of Ashland Annex

This section presents the jurisdictional annex for the Town of Ashland.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Richard Tompkins, Supervisor Town of Ashland 12094 State Rt. 23, PO Box 129 Ashland, NY 12407 518-734-3636	Robert Myers, Code Enforcement Officer Town of Ashland 12094 State Rt. 23, PO Box 129 Ashland, NY 12407 618-734-3636
NFIP Floodplain Manager	
Robert Myers, Code Enforcement Officer	
Additional Planning Team Contributors	
Doug Van Duesen, Town Engineer	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Ashland had a total population of 682 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	682	Median household income	\$57,143
White	87%	In civilian labor force age 16+	
Black or African American	1%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	3%	Persons under 18 years	13%
Two or more races	0%	Persons 65 years and over	27%
Hispanic or Latino	9%	Persons in poverty	12.2%
White, non-Hispanic or Latino	87%	Households with internet	
Foreign born persons	2.8%		

Location and Land Area

The Town of Ashland is located in the northwestern portion of Greene County at the northern border of the Catskill Park and at the Schoharie County line. The total land area of Ashland is 25.96 square miles.

History

Early settlements in the area were abandoned during the American Revolution but resettled in 1788. The Town was officially founded in 1848 by carving out portions of the Towns of Windham and Prattsville.



Governing Body

The Town is governed by a five-member Town Board consisting of the Town Supervisor and four Trustees. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Development trends in the last few years have seen a marked increase driven primarily by the COVID pandemic. Building permits have been up for rehabilitating existing structures and for new development.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Local law for flood damage prevention from FEMA and NYSDEC model law (passed 2008)	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Will be considered with future comp plan
Land use	Will be considered with future comp plan
Disproportionately impacted populations	Will be considered with future comp plan
Climate Change	Will be considered with future comp plan

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdictions were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being	Example of recent event for this hazard
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	highest risk)	
Flooding (riverine, flash flood, dam failure)	1	Hurricane Irene, three subsequent, unnamed events, the most recent December 25, 2020
Severe Winter Storm (heavy snow, ice storm, extreme cold, etc.)	3	2/28/2010 7 ft. snow event, snowed all week, impaired highways and buildings with snow removal
Severe Storm (hurricane, windstorm, hail, tornado, etc.)	2	Hurricane Irene (2011)

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Ashland	11	13	\$353,473.85

Source: DEC (2022)

In addition, Ashland is currently a FEMA Community Rating System (CRS) Eligible Community (Community #360147).

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
226	243

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Public Waste Water Treatment Facility	Food, Water and Shelter	1	1
Public Water Facility	Food, Water and Shelter	1	1
Tier 2 Facility	Hazardous Materials	1	1

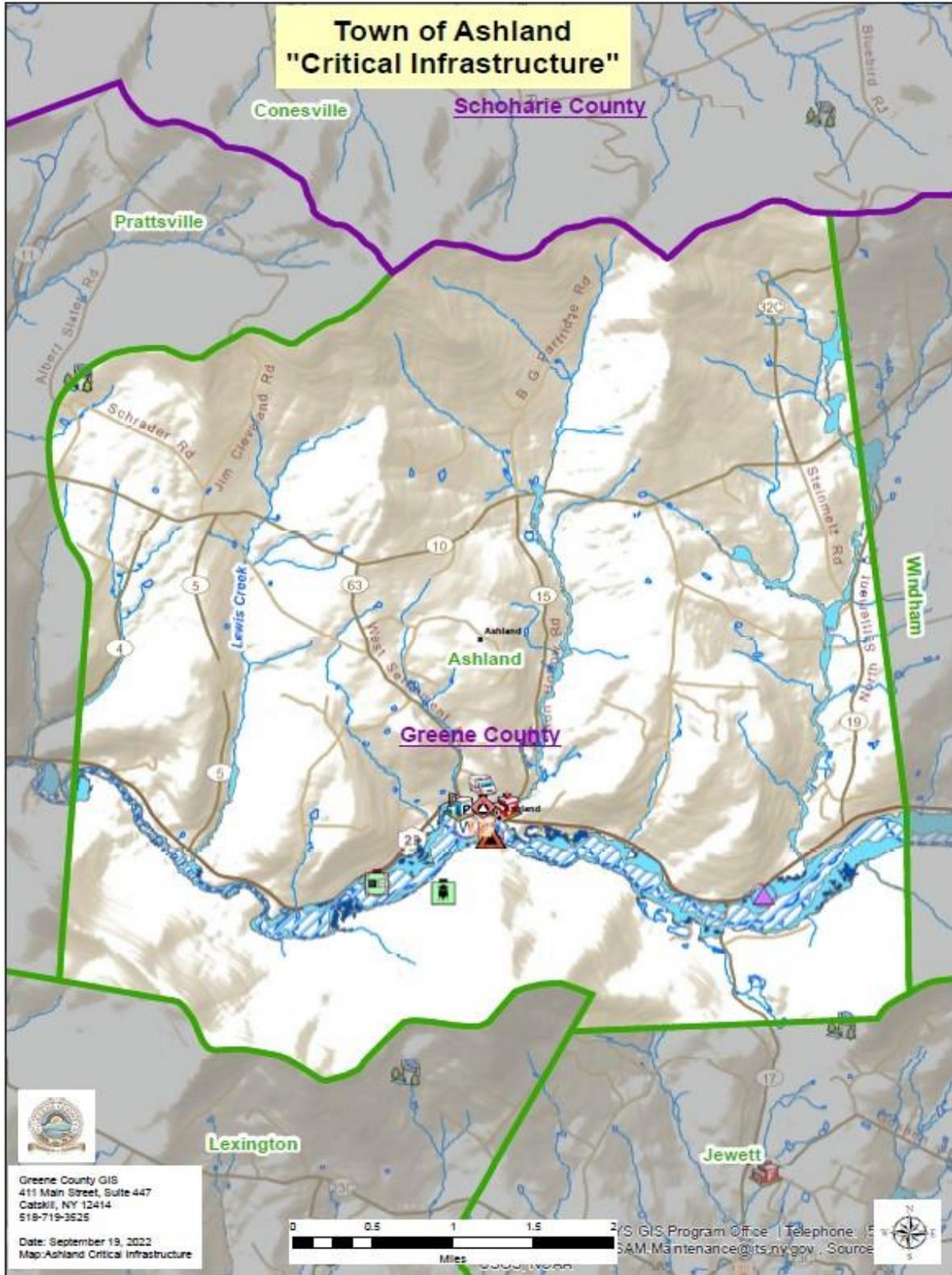
The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s Mountaintop Towns located on the north border of the Catskill Park. Because of its location in the hills, flooding is a significant concern. There a number of



parcels located in the 100-year floodplain, or 500-year floodplain as well as one repetitive loss property, based on the most current data available. In addition, there are several critical facilities located in the floodplain. These areas should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
15

Sampling of comments received from survey respondents specific to the Jurisdiction
Concerns are related to wind/ power outages, trees down on house.
Our county is mostly concerned with high populated areas of the county.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Public Meetings and use of digital media.	

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan		
Capital Improvement Plan		
Economic Development Plan		
Emergency Operations Plan		



Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis	Yes 2018	Yes, Engineering analysis that identified flood prone areas in the town, threatening public and private infrastructure, and modeled mitigation actions for flood relief. It can also be used to implement mitigation actions.
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements		
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance	Yes 2002	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other:	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official		
Code Enforcement Officer	Yes/ PT	Yes, to all.
Emergency Manager		
Community Planner		



Superintendent of Highways	Yes/ PT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?		Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	Yes, the Town has applied for these funds previously, and most recently in June 2022 to upsize the Carver Quarry bridge. This resource can be used to fund future mitigation actions.
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	Yes, to support public and private projects that reduce flood impacts within the Catskill watershed. Funded projects include property protection measures, floodplain reclamation actions, public infrastructure protection, and property buyout/relocation. Yes, this resource can be used to fund future mitigation actions.
GCSWCD Stream Management Implementation Program (SMIP)	Yes	Yes, to support public and private projects that reduce flood impacts within the Catskill watershed. Funded projects include property protection measures, floodplain reclamation actions, public infrastructure protection, and property buyout/relocation. Yes, this resource can be used to fund future mitigation actions.



Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	New York City Department of Environmental Protection's Stream Management Program has funded some previous projects and can be used for future mitigation actions.
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use,		



fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Ashland. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
1	Local Flood Analysis	Need Local Flood Analysis	Town will be conducting a local flood analysis in 2016 to identify flood vulnerabilities and potential mitigation measures (GCSWCD facilitating).	Town completed LFA in 2018 with funding from GCSWCD. Woidt Engineering and Consulting, PC conducted the analysis			No, Recommendations from the LFA are summarized in Mitigation Actions for 2022 update
2	Backup Power	Support the implementation of a Back up Power Source for EMS/Fire local NIMS structure	Install backup power	Complete			No
3	Emergency Center in Town Hall	Need a community center for help, supplies and shelter during an emergency	Enhance function of Town Hall to serve as a community center in emergencies	Complete			No



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
4	Culvert Replacement & Repair, Replace Catch Basin (Combined projects into one project)	Undersized Culverts, Repairs Needed for Culverts and Catch Basin	Implement projects identified in the Town's Stormwater Planning & Assessment Report from December 2013 including: Replacing or repairing culverts that have been determined to present potential sediment sources, culverts in poor structural condition, or culverts with erosion at the inlet or outlet should be repaired; Replace existing culvert with larger capacity to pass the 100 year storm at these locations on County Rte 10 – #'s 90, 78, 79, 77, 73; Upsize culvert to pass 100 yr. base flood at these locations on West Settlement Rd - # 16, 10; Upsize culvert to pass 100 yr. base flood at these locations on North Settlement Rd (CR 19) - # 1, 23, 31; Upsize culvert to pass 100 yr. base flood at Campbell Road - # 13; Upsize culvert to pass 100 yr. base flood at Mail Route Rd. # 26; Upsize culvert to pass 100 yr. base flood on Rte. 23 # 57; Replace catch basin on NYS Route 23-Structure 19	Ongoing		Funding and priorities	



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TASH 1 Old # 4	Town of Ashland	Culvert Replacement & Repair, Replace Catch Basin (Combined projects into one project)	1, 2, 3	Flood	Undersized Culverts, Repairs Needed for Culverts and Catch Basin	<ul style="list-style-type: none"> •Replace existing culvert with larger capacity to pass the 100 year storm at these locations on County Rte 10 – #'s 90, 78, 79, 77, 73 •Upsize culvert to pass 100 yr. base flood at these locations on West Settlement Rd - # 16, 10 •Upsize culvert to pass 100 yr. base flood at these locations on North Settlement Rd (CR 19) - # 1, 23, 31 •Upsize culvert to pass 100 yr. base flood at Campbell Road - # 13 •Upsize culvert to pass 100 yr. base flood at Mail Route Rd. # 26 •Upsize culvert to pass 100 yr. base flood on Rte. 23 # 57 •Replace catch basin on NYS Route 23-Structure 19 	No	Medium	2023-2024	\$1.5 million - need update from County on county roads	Stormwater Capital Improvement Plan, PDM/HM GP	Reduce flooding and keep the roadway open at all time.
TASH 2	Town of Ashland	Back up power for Town Highway Department	1, 2, 3, 4	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Install back up power source for Town Highway Department to be able to respond in case of emergencies	Install back up power source for Town Highway Department.	Yes	Medium	2023-2025	Medium	PDM/HM GP	Ensure CF remains functional at all times.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TASH 3	Town of Ashland	Carver Quarry Bridge	1, 2, 3	Flood	Carver Quarry Bridge: Undersized bridge and flood flows undermining the north side bridge abutment. This bridge is a critical structure in the community. It is the only access to an industrial quarry that services the tri-county region with mined construction aggregate.	1) Enlarge Carver Quarry bridge with a longer span and 2) conduct a stream analysis to determine if a new stream alignment above the bridge would reduce direct flow to the northern abutment.	No	High	2023-2024	High	PDM, HMGP, SMIP (NYCDEP /GCSWC D), CWC	Reduce flooding and ensure bridge remains open at all times.

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Ashland		
Project Name:	Back up power for Town Highway Department		
Project Number:	TASH 2		
Risk / Vulnerability			
Hazard of Concern:	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm		
Description of the Problem:	Install back up power source for Town Highway Department to be able to respond in case of emergencies		
Action or Project Intended for Implementation			
Description of the Solution:	Install back up power source for Town Highway Department.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to loss of power	Estimated Benefits (losses avoided):	Ensure CF remains functional at all times.
Useful Life:	Est. 30 years		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	2023
Estimated Time Required for Project Implementation:	2023-2025	Potential Funding Sources:	PDM, HMGP
Responsible Organization:	Town of Ashland	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
	There is no other feasible alternative action other than those listed.		
	Install back-up power source	TBD	Would ensure the ability to respond to emergencies at all times.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Ashland		
Project Name:	Carver Quarry Bridge		
Project Number:	TASH 3		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Undersized bridge and flood flows undermining the north side bridge abutment. This bridge is a critical structure in the community. It is the only access to an industrial quarry that services the tri-county region with mined construction aggregate.		
Action or Project Intended for Implementation			
Description of the Solution:	1) Enlarge Carver Quarry bridge with a longer span and 2) Conduct a stream analysis to determine if a new stream alignment above the bridge would reduce direct flow to the northern abutment.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Reduce flooding and ensure bridge remains open at all times.
Useful Life:	Est. 50+ years		
Estimated Cost:	TBD – HMGP application submitted in June 2022 for an appropriately sized bridge.		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2023
Estimated Time Required for Project Implementation:	2023-2024	Potential Funding Sources:	PDM, HMGP, SMIP (NYCDEP/GCSWCD), CWC
Responsible Organization:	Town of Ashland	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Bridge will fail
	There is no other feasible alternative action other than those listed.		
	Enlarge bridge	TBD	This critical access bridge will remain open at all times.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Athens Annex

This section presents the jurisdictional annex for the Town of Athens.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Michael Pirrone, Supervisor Town of Athens 2 First Street Athens, NY 12015 518-945-1052 x2	John J. Farrell, Highway Superintendent Town of Athens 2 First Street Athens, NY 12015 518-945-1299
NFIP Floodplain Manager	
Albert Gasparini, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Athens had a total population of 2,330 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	2,330	Median household income	\$62,054
White	83%	In civilian labor force age 16+	
Black or African American	1%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	4.5%	Persons under 18 years	15.2%
Two or more races	1.2%	Persons 65 years and over	26%
Hispanic or Latino	9.5%	Persons in poverty	11.7%
White, non-Hispanic or Latino	83%	Households with internet	
Foreign born persons	9.6%		

Location and Land Area

The Town of Athens is located along the Hudson River at the eastern end of Greene County. The total land area of Athens is 24.26 square miles, with 1.44 square miles being water.

History

The Town of Athens was established in 1815 from parts of the Towns of Catskill and Coxsackie. The Hudson-Athens Ferry service was a major influence on the Town and area until 1935 when the Rip Van Winkle Bridge opened, eliminating the need for the ferry. The Town has more than 300 buildings



that are listed on national and state historic registers; the buildings include many examples of the predominant styles of the 18th and 19th centuries.

Governing Body

The Town is governed by a Town Board composed of the Supervisor and four Council Members. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs. Each Council Member serves a 4-year term and the Supervisor serves a 2-year term.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Yes	Not that they are aware of

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Keeping aware
Land use	Planning Board aware of issues
Disproportionately impacted populations	Concern of the population issue
Climate Change	YES

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.



Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	Stream flooding over roadways.
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	3	Power outages and road closers due to heavy snow and ice from downed trees and power lines.
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	1	Power outages, road closers, and flooded roadways due to storms

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Athens	1	5	\$154,647.84

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
346	272

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

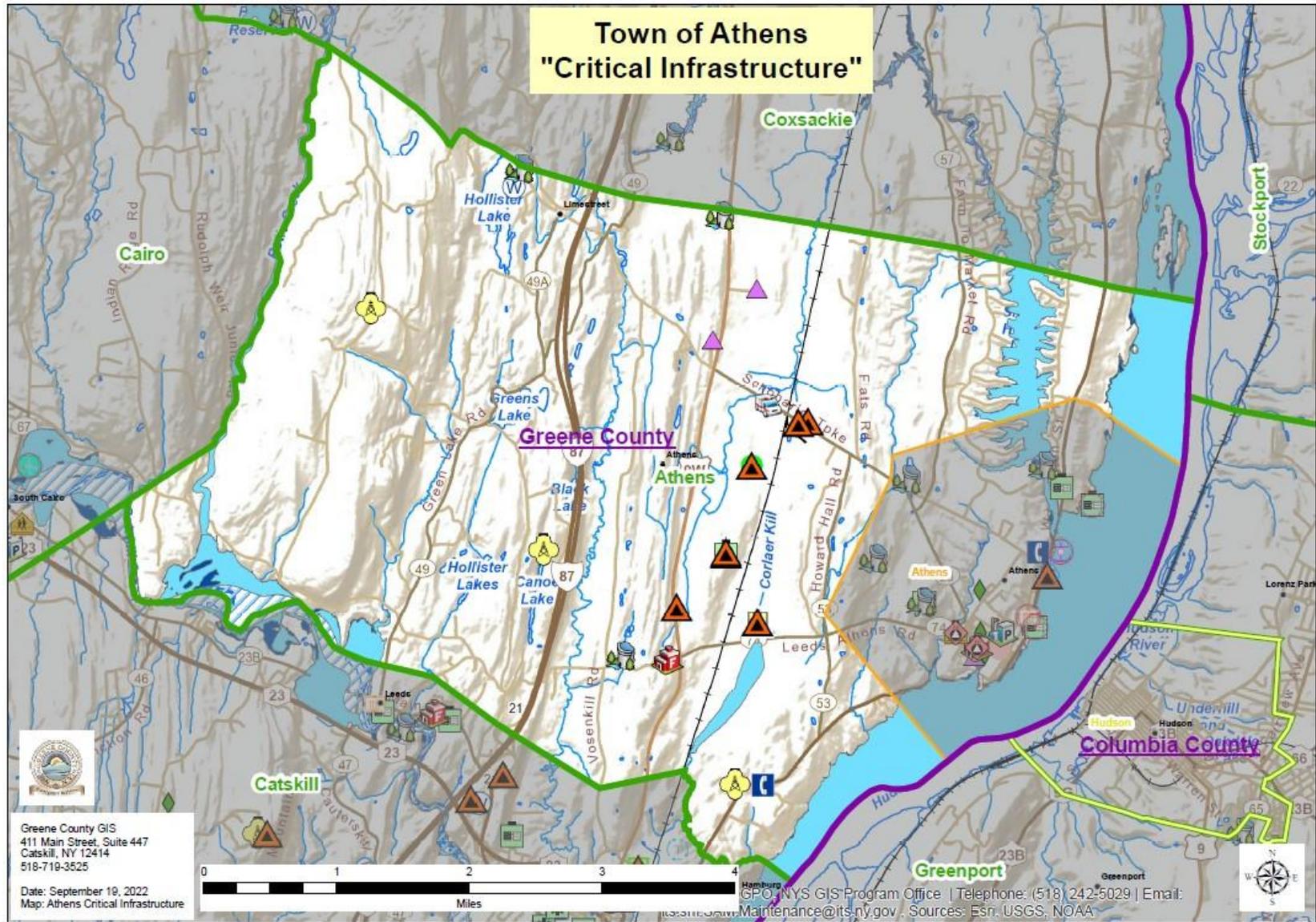
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
None			

The map below illustrates there are no critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s River Towns located along the Hudson River. Flooding occurs in low lying areas and there a number of parcels located in the 100-year floodplain, or 500-year floodplain. Fortunately, there are no critical facilities located in the floodplain. However, the areas susceptible to flooding should be the focus of the Town’s mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
29

Sampling of comments received from survey respondents specific to the Jurisdiction
Need more & better communications for those that are not computer comprehensive.
Thank you for sharing this information .
County should help local Fire Departments to make shelters like get them cots, blankets and pillows

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Will attend meetings	Once a month

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2020	Yes, is mentioned in some indirect awareness. Plan can be used to implement mitigation actions.



Capital Improvement Plan	Yes	Yes, when necessary, consideration is highlighted. Can be used to implement mitigation actions.
Economic Development Plan		
Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan	Yes	
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Growth Management Plan
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance	Yes	



Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes	
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official		



Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		



Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		



Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Athens. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
5	Emergency Communications Upgrade	The Town of Athens lacks full communications interoperability during emergency situation as existing radio units cannot always communicate with one another and outside agencies.	The Town of Athens seeks to update to the P25 compliance and expanded our radio communications system. Enhancing the towns public safety communications would help during a town wide emergency such as any natural disaster; for example (tornado, server storms, flooding, snow storms, etc.).	Completed 2018			No
6	Box culvert replacement	The existing culvert on Schoharie Turnpike is undersized -- leading to localized flooding and sometimes, some road damage during heavy rain/spring runoff events.	Replacement of covert with 6' X 5' X 35' box culvert structure will eliminate localized flooding.	Completed 2016			No
7	Automatic standby generator	The Town of Athens highway garage -- a facility that must remain operable during emergency situations -- has insufficient back up power supply capabilities. Presently, the shop only has a pto driven portable generator that currently runs when the powers out after we hook it up. The Town Garage experiences 1-2 outages per year with duration last from several minutes to, in the case of a 12/2009 ice storm, several days. Generators have been rented in the past at a unknown cost.	The Town seeks automatic standby generator that would power shop when needed all for 24/7/365 functionality. Estimated cost to be around \$35,000 .	Completed 2018			No



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THAT 1	Town of Athens	Outer Schoharie Turnpike - Replacement/Upgrade culvert	1, 2, 3	Flood	Road failure due to flooding.	Replacement/Upgrade culvert. Replacement will eliminate localized flooding and road failure.	No	Medium	Medium	\$100,000	State Aid/Town Funds	Eliminate localized flooding and road failure.
TATH 2	Town of Athens	Church St. - Replacement/Upgrade culvert	1, 2, 3	Flood	Road failure due to flooding.	Replacement/Upgrade culvert. Replacement will eliminate localized flooding and road failure.	No	High	Medium	\$60,000	State Aid/Town Funds	Eliminate localized flooding and road failure.
TATH 3	Town of Athens	Leed-Athens - Replacement/Upgrade culvert	1, 2, 3	Flood	Road failure due to flooding.	Replacement/Upgrade culvert. Replacement will eliminate localized flooding and road failure.	No	Medium	Medium	\$200,000	State Aid/Town Funds	Eliminate localized flooding and road failure.
TATH 4	Town of Athens	Schoharie Turnpike - Replacement/Upgrade culvert	1, 2, 3	Flood	Road failure due to flooding.	Replacement/Upgrade culvert. Replacement will eliminate localized flooding and road failure.	No	Medium	Medium	\$178,000	State Aid/Town Funds	Eliminate localized flooding and road failure.

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Athens		
Project Name:	Church St. - Replacement/Upgrade culvert		
Project Number:	TATH 2		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Road failure due to flooding.		
Action or Project Intended for Implementation			
Description of the Solution:	Replacement/Upgrade culvert. Replacement will eliminate localized flooding and road failure.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 100-year flood	Estimated Benefits (losses avoided):	Eliminate localized flooding and road failure.
Useful Life:	Est. 25+ years		
Estimated Cost:	\$60,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Medium – 2025
Estimated Time Required for Project Implementation:	Medium 2025	Potential Funding Sources:	State Aid/Town Funds
Responsible Organization:	Town of Athens	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road will continue to flood and cause issues
	Continue patching road	TBD	Is not a long term fix for the issue to be mitigated
	Replace/upgrade the culver	\$60,000	Eliminate localized flooding and road failure
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Athens		
Project Name:	Outer Schoharie Turnpike - Replacement/Upgrade culvert		
Project Number:	TATH 1		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Road failure due to flooding.		
Action or Project Intended for Implementation			
Description of the Solution:	Replacement/Upgrade culvert. Replacement will eliminate localized flooding and road failure.		
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 100-year flood	Estimated Benefits (losses avoided):	Eliminate localized flooding and road failure.
Useful Life:	Est. 25+ years		
Estimated Cost:	\$100,000		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Medium – 2025
Estimated Time Required for Project Implementation:	Medium 2025	Potential Funding Sources:	State Aid/Town Funds
Responsible Organization:	Town of Athens	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road will continue to flood and cause issues
	Continue patching the road	TBD	Is not a long term fix for the issue to be mitigated
	Replace/upgrade the culver	\$60,000	Eliminate localized flooding and road failure
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Cairo Annex

This section presents the jurisdictional annex for the Town of Cairo.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Jason Watts, Supervisor Town of Cairo PO Box 728 Cairo, NY 12413 518-622-3120 x113	
NFIP Floodplain Manager	
Stacy Sprague, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Cairo had a total population of 6,644 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	6,644	Median household income	\$64,738
White	90.4%	In civilian labor force age 16+	66.2%
Black or African American	0.4%	Persons with a disability under 65	8.3%
American Indian and Alaskan Native	0.7%	Persons under 5 years	3%
Asian	1.4%	Persons under 18 years	16.1%
Two or more races	5.5%	Persons 65 years and over	19.2%
Hispanic or Latino	8.9%	Persons in poverty	7.8%
White, non-Hispanic or Latino	86.7%	Households with internet	72.2%
Foreign born persons	4.9%		

Location and Land Area

The Town of Cairo is located in the southern portion of Greene County at “the Crossroads of the Catskills,” approximately 35 miles south of the City of Albany and 10 miles west of the Hudson River. A portion of the Town is located within the Catskill Park, and the Catskill Creek flows through the Town. The total land area of Cairo is 60.08 square miles, with 0.25 square miles of that being water.

History

Most early settlement was scattered throughout the Town. However, James Barker and his wife, Elizabeth Wooser, arrived in 1765 and settled a large tract of land along the Catskill Creek. They brought 23 tenant farm families to the area from London, England. The 6000-acre settlement was named “Woodstock” after the English Manor house in which he was born. Despite hardships, the



settlement prospered. In 1801, construction of the Susquehanna Turnpike turned Cairo Village into a destination point; services and other industries flourished, though farming long remained the predominant occupation. The Town of Cairo was officially established as Canton in 1803 by carving out parts of Coxsackie, Freehold, and Catskill. The name was changed to Cairo in 1808.

Governing Body

The Town is governed by a Town Supervisor and Board comprised of four Council members. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	
Land use	
Disproportionately impacted populations	
Climate Change	

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard



Flooding (riverine, flash flood, dam failure)		
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)		
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)		

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Cairo	28	44	\$562,020.70

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
692	716

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Airport	Transportation	1	1
Communication Facility (Private)	Communications	0	1
Public Water Well	Food, Water and Shelter	1	1
Tier 2 Facility	Hazardous Materials	0	1

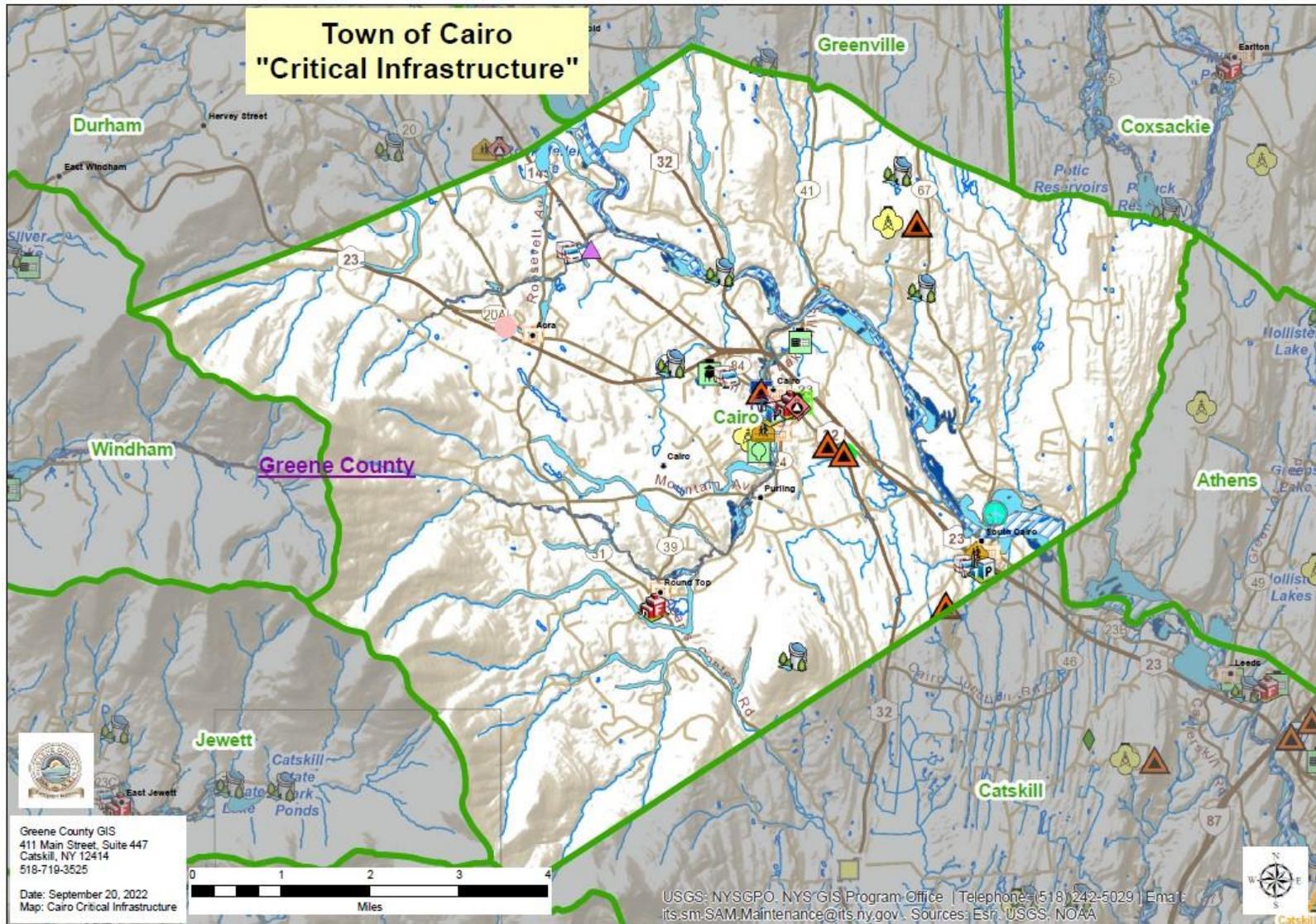
The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s Valley Towns located at the foothills of the Catskill Mountains. Flooding occurs in low lying areas and there a large number of parcels located in the 100-year floodplain, or 500-year floodplain, as well as 4 repetitive loss properties, based on the most current data available. In addition, there several critical facilities located in the floodplain. These



areas should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
79

Sampling of comments received from survey respondents specific to the Jurisdiction
Please be sure to include Wave Farm's WGXC 90.7-FM in your community partners who can help communicate information to Greene County Residents on this important topic.
Limited Internet Access, rely on using phone for alerts
Need to better inform us of disasters/climate issues, etc.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		



Economic Development Plan		
Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements		
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance	Yes	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		



Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		



Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		



Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives		



addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Cairo. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
8	Moorehouse Road Elevation Program	Low lying basin area that floods during heavy rain events. Road becomes impassable to 17 residential properties restricting ingress and egress for but not limited to residents, emergency vehicles, etc.	To install a larger culvert pipe as per hydrology study and raise elevation of the road.				

Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits



Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:			
Project Name:			
Project Number:			
Risk / Vulnerability			
Hazard of Concern:			
Description of the Problem:			
Action or Project Intended for Implementation			
Description of the Solution:			
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:		Estimated Benefits (losses avoided):	
Useful Life:			
Estimated Cost:			
Plan for Implementation			
Prioritization:		Desired Timeframe for Implementation:	
Estimated Time Required for Project Implementation:		Potential Funding Sources:	
Responsible Organization:		Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:			
Project Name:			
Project Number:			
Risk / Vulnerability			
Hazard of Concern:			
Description of the Problem:			
Action or Project Intended for Implementation			
Description of the Solution:			
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:		Estimated Benefits (losses avoided):	
Useful Life:			
Estimated Cost:			
Plan for Implementation			
Prioritization:		Desired Timeframe for Implementation:	
Estimated Time Required for Project Implementation:		Potential Funding Sources:	
Responsible Organization:		Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Catskill Annex

This section presents the jurisdictional annex for the Town of Catskill.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Patrick McCulloch, Deputy Supervisor Town of Catskill 439 Main Street Catskill, NY 518-943-2141	Dale Finch, Supervisor Town of Catskill 439 Main Street Catskill, NY 518-943-2141 x8
NFIP Floodplain Manager	
Matthew Carlile, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Catskill had a total population of 7,553 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	7,553	Median household income	\$42,200
White	85.9%	In civilian labor force age 16+	51.2%
Black or African American	6.8%	Persons with a disability under 65	9.9%
American Indian and Alaskan Native	2.5%	Persons under 5 years	4.4%
Asian	1.2%	Persons under 18 years	13.8%
Two or more races	2.2%	Persons 65 years and over	25%
Hispanic or Latino	4.5%	Persons in poverty	17.9%
White, non-Hispanic or Latino	84.1%	Households with internet	65.3%
Foreign born persons	4.6%		

Location and Land Area

The Town of Catskill is located in southeastern Greene County. The Town is partially within the Catskill Park and also has Hudson River frontage. U.S. 9W and I-87 pass through the Town. Hamlets within the Town include Palenville, Leeds, and Jefferson Heights. The total land area of Catskill is 61.30 square miles, with 3.15 square miles of that being water.

History

The area of the Town of Catskill was purchased in 1678 and settlement soon followed. When the Town was established in 1788, it was part of Albany County. The Town grew with the addition of land from the Town of Woodstock in 1800, but some land area was lost to the formation of the Towns of Cairo and Athens.



Governing Body

The Town is governed by the Supervisor and four Council members, elected to staggered terms. The Town Council sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Yes	Yes	Completion of Jefferson/Leeds Sewer system

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Yes, in the Comprehensive Plan
Land use	Yes, in the Comprehensive Plan
Disproportionately impacted populations	
Climate Change	Yes, in the Comprehensive Plan

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	Flooding on Penn Avenue and Embought Road
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	



Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	1	
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National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Catskill	47	132	\$4,734,536.79

Source: DEC (2022)

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



- Communications
- Transportation
- Hazardous Materials

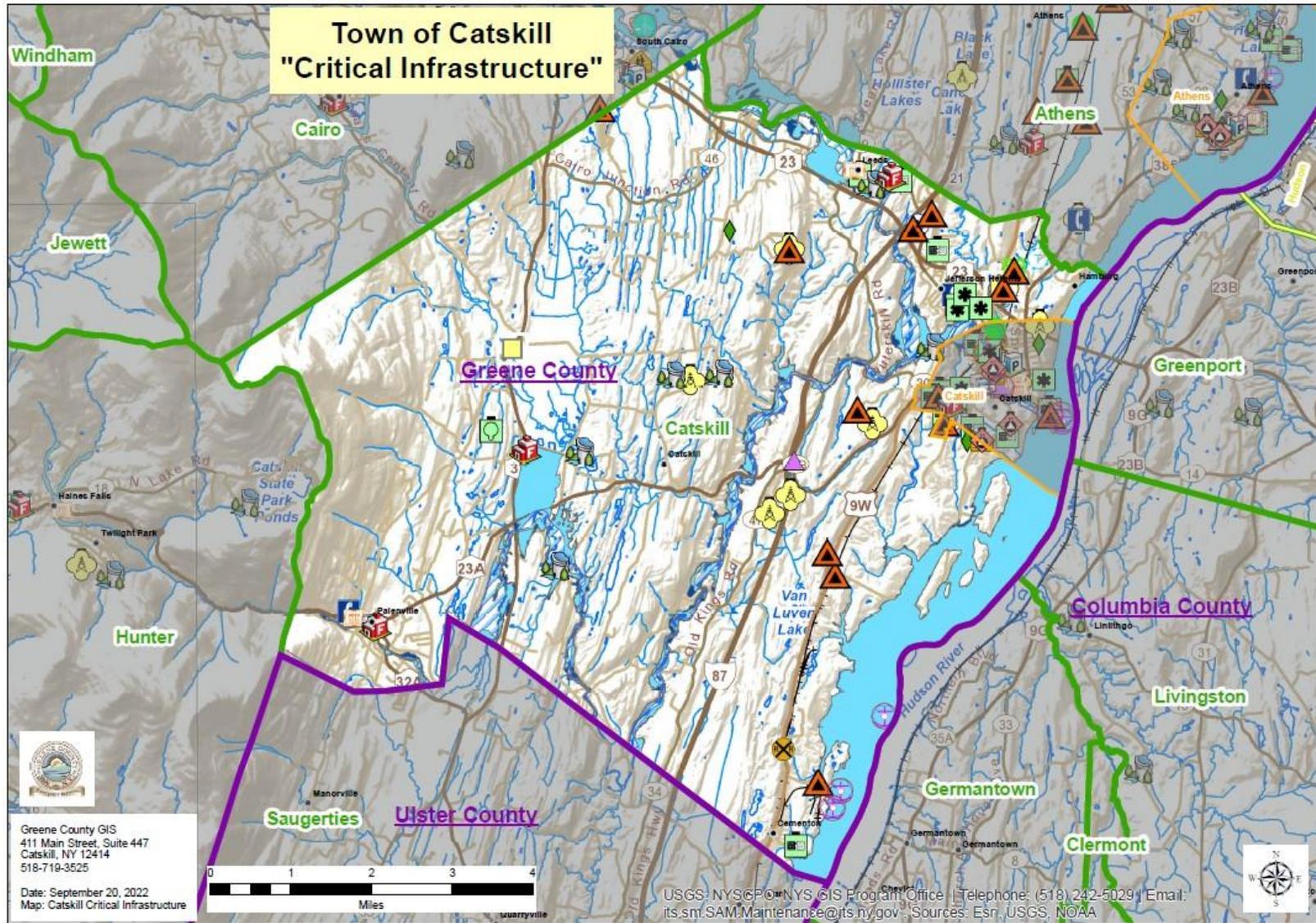
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Port	Transportation	3	3

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s River Towns located along the Hudson River. Flooding occurs in the area around the Kaaterskill Creek and the Catskill Creek. The eastern portion of the Town has areas of steep slopes with landslide potential. There are several critical facilities located in the floodplain, as well as 7 repetitive loss properties, based on the most current data available. Therefore, the areas susceptible to flooding should be the focus of the Town’s mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
63

Sampling of comments received from survey respondents specific to the Jurisdiction
Long Alley once provided much needed emergency access to homes along Kaaterskill Ave and the creek. Over the years neighbors have used the alley as a grass and leaves dump. Access ends 1/2 way through stranding homes where seniors live. Please consider fixing the alley so folks can escape if need be.
On Pennsylvania Ave we need a bridge to address the culvert issues repeatedly occurring.
The Red Cross does not adequately promote what services they offer which is unfortunate for some residents.
Concern about Climate change, tornadoes hitting places they never have before

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
The Town will communicate this plan to the public at their regular board meetings.	As often as needed.

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy?
-------	-----------------------------------	--



		Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes Updating Now	
Capital Improvement Plan		
Economic Development Plan		
Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	



Subdivision ordinance	Yes	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board		
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?



		Have skills/expertise been used to assess/mitigate risk in the past?
Building Official		
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?		Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management		



Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g.		



responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Catskill. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
9	Pennsylvania Avenue Bridge	During a routine inspection, it was determined that serious undermining of the two existing abutments had occurred during Hurricane Irene. This was undetected during the original inspections due to the depth of water at each abutment.	It is proposed to dewater each abutment base, drive sheet piles as protection to prevent further undermining, and fill the existing voids with concrete. The bridge deck will also need to be removed and replaced in order to drive the piles. The bridge spans approximately 20 feet and is approximately 24 feet wide. The existing abutments and wingwalls will be repaired and reused.	in process. Ongoing issue with culverts washing out. Applying for BridgeNY funding			Yes
10	Game Farm Road	Game Farm Road – undersized bridge, flooding damage to road.	Replace with precast box culvert.	on schedule	awarded Bridge NY grant		No, will be completed soon
11	Snake Road	Snake Road- Undersized culverts, erosion endangering a house.	Upsize culverts, and install 2 plunge pools to stop erosion.	Unknown status			No
12	Bogart Road	Bogart Road- Undersized 4’ diameter culvert, flood damage to road.	Replace with box culvert.	completed			No



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TCAT 1 Old #9	Town of Catskill	Pennsylvania Avenue Bridge	1, 2, 3	Flood	Road Flooding / Wash outs	Replacing existing culvert with a Bridge	No	High	Unknown	TBD	Applying for BridgeNY Grant	Eliminate flooding and washout on roadway and keep road open
TCAT 2	Town of Catskill	Embought Road	1, 2, 3	Flood	Road flooding	Replace existing culver with new Boxed culvert	No	Medium	TBD	\$1,000,000	BridgeNY grants	Eliminate flooding on the roadway and keep road open

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Catskill		
Project Name:	Pennsylvania Ave Bridge		
Project Number:	TCAT 1 - Old # 9		
Risk / Vulnerability			
Hazard of Concern:	Flooding		
Description of the Problem:	Road flooding / wash outs		
Action or Project Intended for Implementation			
Description of the Solution:	Replacing existing culvert with a Bridge		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Eliminate flooding and washout on roadway and keep road open
Useful Life:	Est. 50+ years		
Estimated Cost:	Unknown		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Unknown, applying for BridgeNY Grant
Estimated Time Required for Project Implementation:	Unknown, applying for BridgeNY Grant	Potential Funding Sources:	Applying for BridgeNY Grant
Responsible Organization:	Town of Catskill	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
	Continue patching road and fixing washout	Unknown	This is only a temporary fix and doesn't mitigate the problem
	Replace existing culvert with a bridge	Unknown, applying for a BridgeNY Grant	Eliminate flooding and washout on roadway and keep road open
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Catskill		
Project Name:	Embought Road		
Project Number:	TCAT 2		
Risk / Vulnerability			
Hazard of Concern:	Flooding		
Description of the Problem:	Culvert on Embought Rd continues to flood and close the road.		
Action or Project Intended for Implementation			
Description of the Solution:	Replace existing culvert with a new boxed culvert. The larger opening will allow greater flow of water.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Eliminate flooding on the roadway and keep road open
Useful Life:	Est. 50+ years		
Estimated Cost:	\$1,000,000.00		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Unknown, funding has been difficult to secure
Estimated Time Required for Project Implementation:	Unknown, funding has been difficult to secure	Potential Funding Sources:	Town has applied for BridgeNY grants and will continue to apply.
Responsible Organization:	Town of Catskill	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
	Continue to patch the culvert to keep the road open	Unknown	This is only a temporary fix and doesn't mitigate the problem
	Replace culvert with new boxed culvert	\$1,000,000.00	Larger opening will allow greater flow of water, eliminating flooding.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Coxsackie Annex

This section presents the jurisdictional annex for the Town of Coxsackie.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Richard Hanse 56 Bailey Street Coxsackie, NY 12051 518-731-2726 rhanse@coxsackie.org	Larry Ross 56 Bailey Street Coxsackie, NY 12051 518-731-6535 lross@coxsackie.org
NFIP Floodplain Manager	
Ed Pebler, Building Inspector/Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Coxsackie had a total population of 5,636 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	5,636	Median household income	\$67,792
White	78.7%	In civilian labor force age 16+	34.8%
Black or African American	18.3%	Persons with a disability under 65	13.5%
American Indian and Alaskan Native	0%	Persons under 5 years	4.5%
Asian	0.6%	Persons under 18 years	15.9%
Two or more races	2.2%	Persons 65 years and over	14.5%
Hispanic or Latino	9.1%	Persons in poverty	6.9%
White, non-Hispanic or Latino	70.6%	Households with internet	77.6%
Foreign born persons	6.6%		

Location and Land Area

The Town of Coxsackie is located along the west bank of the Hudson River in Greene County. U.S. Route 9W and I-87 run through the Town. Hamlets include Earlton and Climax. The total land area of Coxsackie is 35.82 square miles, with 1.12 square miles of that being water.

History

The settlement of the Town of Coxsackie began in the seventeenth century around 1652 as part of the development of New Netherlands. The Town of Coxsackie was founded in 1788. In 1790, land from the Town of Coxsackie became the Town of Durham and subsequently additional land went to the Towns of Cairo, Greenville, New Baltimore, and Athens when they were formed.



Governing Body

The Town is governed by the Supervisor and four Council members. The Council sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	No	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	No
Land use	Yes, solar electric generation
Disproportionately impacted populations	None to date
Climate Change	None to date

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	See below



The most significant event to affect the Town during the past five years was the July 7, 2021 microburst. A microburst is an intense, localized downdraft of air that spreads on the ground, causing rapid changes in wind direction and speed. The storm, that lasted only ten minutes, brought winds upwards of ninety miles per hour and caused much damage to trees, powerlines and homes, mostly in the eastern part of the Village of Coxsackie. Cleanup began immediately with the highway departments of the Village, Town, neighboring towns, and the County pitching in to remove the dozens of fallen trees that blocked roads. The Coxsackie Town Ambulance Service maintained three crews around the clock until electricity was restored to provide care for residents dependent on power for their oxygen and to be available to give aid to people injured while performing clean-up work.

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Coxsackie	3	3	\$11,398.88

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
588	623

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

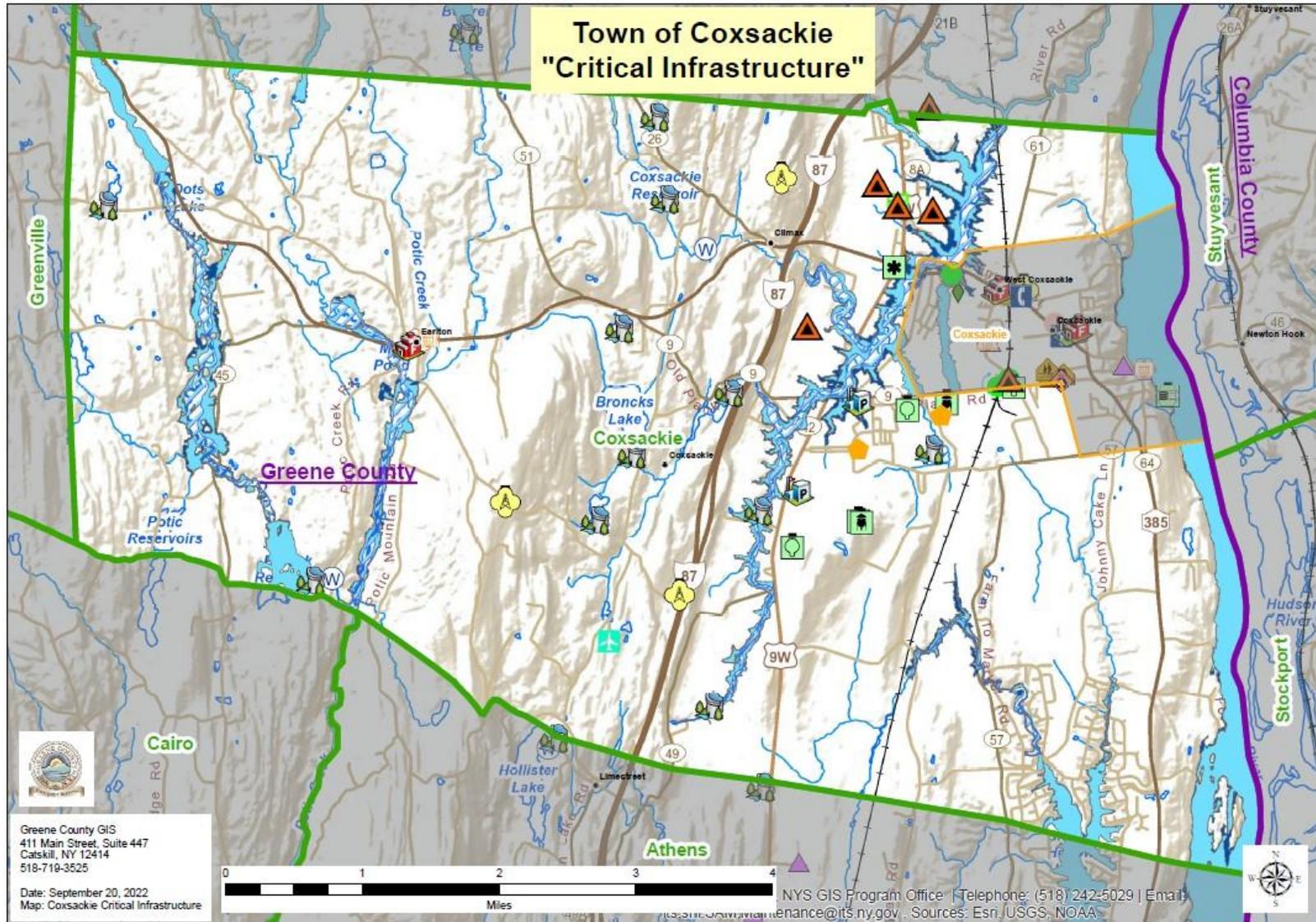
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
No Critical Facilities			
In 100- or 500-year Hazard area.			

The map below illustrates that there are no critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s River Towns located along the Hudson River. There are a number of parcels located in the 100-year or 500-year floodplain, but no critical facilities located in those areas. Therefore, the areas susceptible to flooding should be the focus of the Town’s mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
29

Sampling of comments received from survey respondents specific to the Jurisdiction
More concerned about manmade disasters than natural.
I have a generator so that helps when power is out

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Public Forums	As needed

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		
Economic Development Plan		



Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes	Natural Resource Protection Standards and NFIP Flood Damage Prevention Ordinance (2008)
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes PT	Yes, to all
Code Enforcement Officer	Yes PT	Yes, to all
Emergency Manager		
Community Planner		



Superintendent of Highways	Yes FT	Yes, to all
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Coxsackie. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
13	Potic Creek Road box culverts	There are two undersized stone box culverts near the State Route 81 side of Potic Creek Road. The culverts are undersized, narrow, and showing signs of age, Potentially washing out the small bridges and leaving many people restricted by not being able to get to their homes on Potic Creek Road. Over time, vehicular traffic on this road has increased, potential head on collisions happen more frequently. This road is also a thoroughfare for the residents of Earlton, Athens, Greenville and Coxsackie.	Install new larger culverts, widen and raise Potic Creek Road. By installing two larger culverts and raising the roadbed 2 feet higher than present elevation will provide more than adequate coverage during high flooding time during the year. Widening the box culvert will eliminate a pinch point at each crossing of Potic Creek. Thus, eliminating the possibility of two cars hitting each other head on.	Completed	The culverts were installed		No



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
14	Honey Hollow Road culverts	On Honey Hollow Road there are two metal corrugated pipes that are collapsing and will cut off Honey Hollow residents from Cocksackie and New Baltimore. Over time, the pipes have become rustier and have been failing in size. Even in the driest summers there is a constant flow water from the Grapeville Creek, The water has weakened the galvanized metal and could collapse at any time. During heavy rains and quick thaw in springtime the pipes are not able to handle all the water and therefore the water comes over the road. The two pipes are about 75% of full capacity at all times. Most of the time during heavy rains; the water pushes out along the roadside and waits until it can pass under the road.	Removal of old undersized metal squashed pipes to be replaced with concrete box culvert. Appropriate sizes for both should be at least six feet long by 20 feet wide by 5 feet in depth.	In progress			Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
15	Vandenburgh Road culvert replacement	On Vandenburgh Road, approximately 1 mile from State Route 81 the Cossackie Reservoir runs underneath the road through 5 galvanized pipes. The pipe sizes are 36". The rusted pipes can eventually collapse, and the small bridge will be not safe for vehicle travel and will be shut down. Water is always present running through the pipes. During heavy rains or a spring thaw, the water rises and the pipes become overwhelmed with water, making the entire structure weak and dangerous. The size of pipes in place are too small and have become blocked with debris which causes the water to rise faster.	Replace entire culvert with a much larger concrete box culvert or small span bridge.	In progress			Yes



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Time-line	Est. Cost	Potential Funding Sources	Est. Benefits
TCOX 1 Old #2	Town of Coxsackie	Honey Hollow Road culverts	1, 2, 3	Flood	On Honey Hollow Road there are two metal corrugated pipes that are collapsing and will cut off Honey Hollow residents from Coxsackie and New Baltimore. Over time, the pipes have become rustier and have been failing in size. Even in the driest summers there is a constant flow water from the Grapeville Creek, The water has weakened the galvanized metal and could collapse at any time. During heavy rains and quick thaw in springtime the pipes are not able to handle all the water and therefore the water comes over the road. The two pipes are about 75% of full capacity at all times. Most of the time during heavy rains; the water pushes out along the roadside and waits until it can pass under the road.	Removal of old undersized metal squashed pipes to be replaced with concrete box culvert. Appropriate sizes for both should be at least six feet long by 20 feet wide by 5 feet in depth.	No	Medium	TBD	\$35,000	PDM/HMG P/DOT/local	Reduce/eliminate the risk of the Culvert failing and losing the use of the road



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Time-line	Est. Cost	Potential Funding Sources	Est. Benefits
TCOX 2 Old #3	Town of Coxsackie	Vandenburg Road culvert replacement	1, 2, 3,	Flood	On Vandenburg Road, approximately 1 mile from State Route 81 the Coxsackie Reservoir runs underneath the road through 5 galvanized pipes. The pipe sizes are 36". The rusted pipes can eventually collapse, and the small bridge will be not safe for vehicle travel and will be shut down. Water is always present running through the pipes. During heavy rains or a spring thaw, the water rises and the pipes become overwhelmed with water, making the entire structure weak and dangerous. The size of pipes in place are too small and have become blocked with debris which causes the water to rise faster.	Replace entire culvert with a much larger concrete box culvert or small span bridge.	No	Medium	TBD	\$80,000	PDM/HMGP/DOT/Local	Reduce/eliminate the risk of the culvert failing
TCOX 3	Town of Coxsackie	Potic Creek Bridge	1, 2, 3	Flood	The Potic Creek Bridge is old and has been impacted by years of flooding and is in need of replacement before it collapses.	Replace aged bridge with a culvert to prevent collapse as well as continued impacts from flooding	No	High	High	\$100,000	PDM/HMGP/DOT/Local	Reduce/eliminate the risk of the Culvert or Bridge failing

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Coxsackie		
Project Name:	Honey Hollow Rd. Culverts		
Project Number:	TCOX 1 - Old #2		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	On Honey Hollow Road there are two metal corrugated pipes that are collapsing and will cut off Honey Hollow residents from Coxsackie and New Baltimore. Over time, the pipes have become rustier and have been failing in size. Even in the driest summers there is a constant flow water from the Grapeville Creek, The water has weakened the galvanized metal and could collapse at any time. During heavy rains and quick thaw in springtime the pipes are not able to handle all the water and therefore the water comes over the road.		
Action or Project Intended for Implementation			
Description of the Solution:	Removal of old undersized metal squashed pipes to be replaced with concrete box culvert. Appropriate sizes for both should be at least six feet long by 20 feet wide by 5 feet in depth.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	100 year flood	Estimated Benefits (losses avoided):	Reduce/ eliminate the risk of the Culvert failing and losing the use of the road
Useful Life:	Est. 50+ years		
Estimated Cost:	\$35,000		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	TBD
Estimated Time Required for Project Implementation:	TBD	Potential Funding Sources:	PDM/HMGP/DOT/local
Responsible Organization:	Town of Coxsackie	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	The culvert will fail
	Continue to patch areas	Unknown	This is not a fix to the problem and eventually the culvert and road will fail
	Replace the culverts	\$35,000	This will reduce/eliminate the culvert and road from failing
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Coxsackie		
Project Name:	Potic Creek Bridge		
Project Number:	TCOX 3		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The Potic Creek Bridge is old and has been impacted by years of flooding and is in need of replacement before it collapses.		
Action or Project Intended for Implementation			
Description of the Solution:	Replace aged bridge with a culvert to prevent collapse as well as continued impacts from flooding		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	100 year flood	Estimated Benefits (losses avoided):	Reduce/ eliminate the risk of the Culvert or Bridge failing
Useful Life:	Est. 50+ years		
Estimated Cost:	\$100,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	High - ASAP
Estimated Time Required for Project Implementation:	High - ASAP	Potential Funding Sources:	PDM/HMGP/DOT/local
Responsible Organization:	Town of Coxsackie	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	The bridge will fail
	Continue to repair and patch the road and bridge	Unknown	This is not a fix to the issue and the bridge will fail
	Replace the bridge with new culverts	\$100,000	The culverts will allow the water to flow and not impact the road
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Durham Annex

This section presents the jurisdictional annex for the Town of Durham.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Shawn Marriott, Supervisor Town of Durham 7309 State Rt. 81 East Durham, NY 12423 518-239-6122	Joe van Holsteyn, Highway Superintendent Town of Durham 7309 State Rt. 81 East Durham, NY 12423 518-239-4501
NFIP Floodplain Manager	
Mark Overbaugh, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Durham had a total population of 2,627 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	2,627	Median household income	\$54,563
White	83.5%	In civilian labor force age 16+	
Black or African American	5.1%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0.6%	Persons under 18 years	27.8%
Two or more races	6.1%	Persons 65 years and over	17.2%
Hispanic or Latino	4.3%	Persons in poverty	21.5%
White, non-Hispanic or Latino	83.5%	Households with internet	
Foreign born persons	4.6%		

Location and Land Area

The Town of Durham is located in Greene County approximately 24 miles northwest of the Village of Catskill and 30 miles south of the City of Albany. The Town’s boundaries stretch along the foothills of the Catskill Mountains and the Catskill Creek’s valley floor to the south to some of the highest terrain in the County at Mt. Pisgah to the northwest. The total land area for Durham is 49.36 square miles, with 0.04 square miles of that being water.

History

The Town was settled by people of European descent and in just 30 years grew to a population of approximately 2,900. The borders of the Town were established in 1836 when a significant portion



of the Town was carved off to form Conesville in Schoharie County. Farming was the primary way of life for the Town’s residents, though many businesses thrived, most notably several foundries.

The Susquehanna Turnpike, opened in 1801, played a major role in the Town by connecting the Village of Catskill through the Durham Valley to what was then New Durham. The Town thrived until the opening of the Erie Canal in 1825, which significantly impacted the Town. Around this time, tourism began to flourish in the Town and it, along with second homes, remains a vital economic component today.

Governing Body

The Town is governed by five elected officials comprised of a Supervisor and four Town Council members. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs. Each member serves a 2-year term.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Yes, Code reviews before issuing a building permit	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Minor
Land use	Minor
Disproportionately impacted populations	Minor
Climate Change	Yes, impacts of heavy rain occurring more often

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.



Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	Flooding on Hervey St in October 2021
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Durham	13	14	\$222,436.08

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
241	241

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

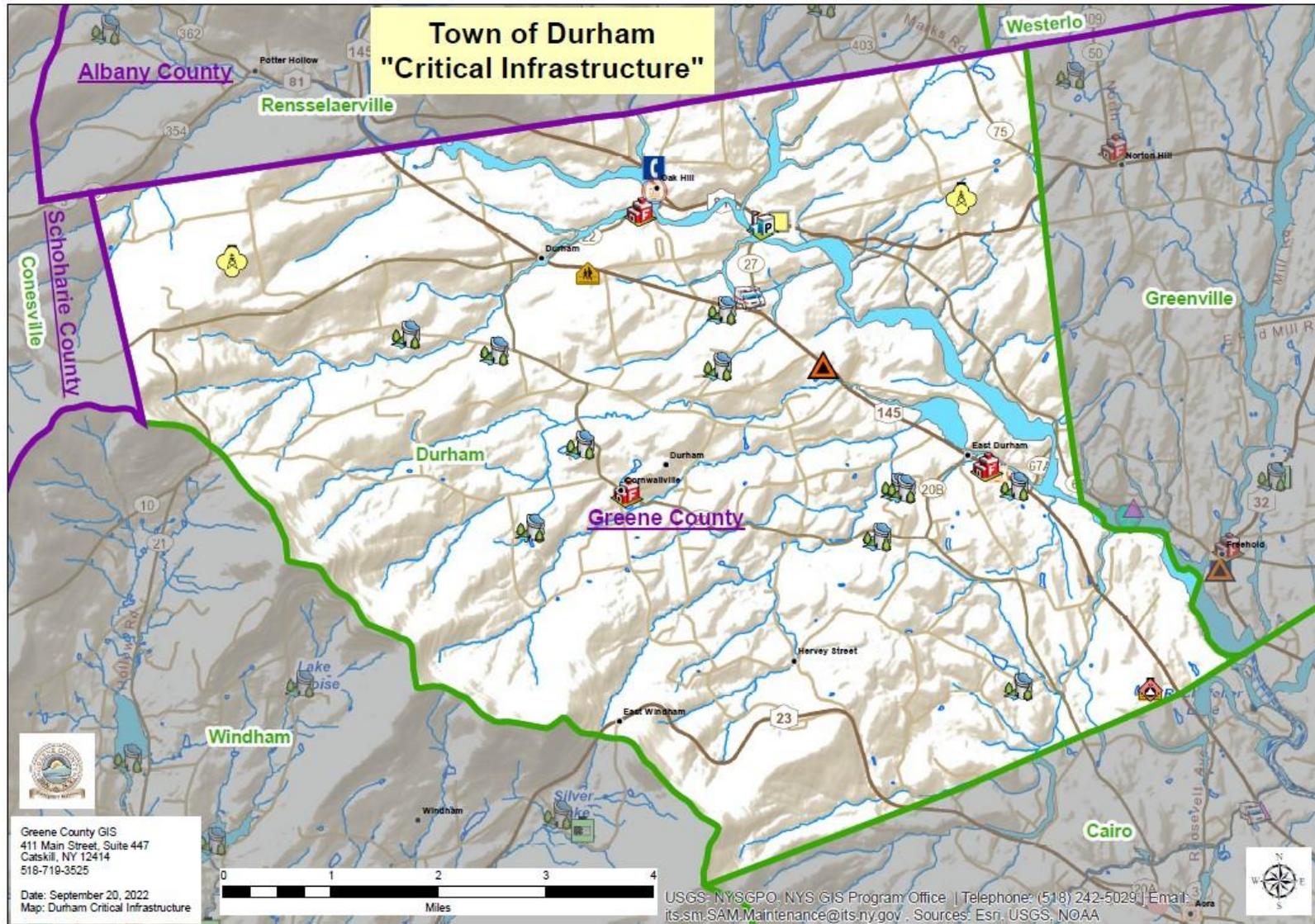
Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Government Facility	Safety and Security	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Valley Towns. There are a number of parcels located in the 100-year or 500-year floodplain, as well as 1 repetitive loss property, based on the most current data available. There is also one critical facility located in those flood zone, therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.







Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
21

Sampling of comments received from survey respondents specific to the Jurisdiction
I'd suggest offering up a plan in cases where homes/businesses become isolated, with specifics. Help would be knowing what to expect, esp. when/if communicating isn't possible. Also i/d seniors and disabled with urgent needs for help. Perhaps start with specific examples [flood, earthquake, fire] and figure out what steps will be taken in what order. That will help. Do we sit and wait or try to evacuate? Will the cavalry be coming within a day or within two weeks? Presume a worst case scenario in order to be comprehensive in your thinking.
No internet at my house

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	



Capital Improvement Plan	Yes	
Economic Development Plan	Yes	
Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan/Ordinance	Yes	
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Growth Management Plan; Floodplain Management/Basin Plan and Open Space Plan
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements		
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance	Yes	
Floodplain ordinance		



Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes	Stormwater Management Plan/Ordinance
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board		
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes FT	



Code Enforcement Officer	Yes FT	
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		



Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		



Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Durham. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
16	Generator for Town building	Replace generator	Need 220 volts, single phase diesel generator	In Progress/Ongoing			Yes
17	Culvert Replacement	Replace current double culvert with a single arched bottomless culvert. Current Culvert: two (2) 8' X 40'	New Culvert : one (1) 24' X 40' Regrade, re-set and re-establish road.	Completed			No
18	Culvert Replacement	Upgrade culvert to accommodate greater flow from larger storms.	Replace current 8' X 40' culvert with larger 20' X 40' culvert. Regrade, re-set and re-establish road.	In Progress/Ongoing			Yes



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TDUR 1 Old # 16	Town of Durham	Generator for Town building	1, 2, 4	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Generator needs to be replaced since it is not working	Need 220 volts, single phase diesel generator to replace the current, non-working generator	Yes	High	Short	\$15k	PDM/H MGP	Keep essential services at this CF operational at all times
TDUR 2 Old #18	Town of Durham	Culvert Replacement on Hervey St.	1, 2, 3	Flood	Upgrade culvert to accommodate greater flow from larger storms.	Replace current 8' X 40' culvert with larger 20' X 40' culvert. Regrade, re-set and re-establish road.	No	Medium	Short	\$800k	PDM/H MGP/DO T/Local	Reduce or eliminate flooding on the roadway to keep the road open

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Durham		
Project Name:	Generator for Town building		
Project Number:	TDUR 1 – Old #16		
Risk / Vulnerability			
Hazard of Concern:	Flood, Severe Storm/ Wind Event, Severe Winter Storm/Ice Storm		
Description of the Problem:	Generator needs to be replaced since it is not working		
Action or Project Intended for Implementation			
Description of the Solution:	Need 220 volts, single phase diesel generator to replace the current, non-working generator		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect against loss of power and to 500 year flood	Estimated Benefits (losses avoided):	Keep essential services at this CF operational at all times
Useful Life:	Est. 30 years		
Estimated Cost:	\$15K		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Short – est. 2023
Estimated Time Required for Project Implementation:	Est. 2023	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Town of Durham	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
	There is not other feasible alternative action other than those listed.		
	Replace generators that is not working	\$15,000.	A new generator would ensure essential services could continue uninterrupted
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Durham		
Project Name:	Culvert Replacement on Hervey St.		
Project Number:	TDUR 2 - Old #18		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Upgrade culvert to accommodate greater flow from larger storms.		
Action or Project Intended for Implementation			
Description of the Solution:	Replace current 8' X 40' culvert with larger 20' X 40' culvert. Regrade, re-set and re-establish road		
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Reduce or eliminate flooding on the roadway to keep the road open
Useful Life:	Est. 50+ years		
Estimated Cost:	\$800K		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Short – est. 2023
Estimated Time Required for Project Implementation:	Est.. 2023	Potential Funding Sources:	PDM/HMGP/DOT/Local
Responsible Organization:	Town of Durham	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
	Continue to patch the road following flood events	Unknown	This is not a permeant fix to the problem and will be an ongoing issue.
	Replace current culvert with larger one	\$800,000.	Will reduce or eliminate flooding on the roadway and keep the road open
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Greenville Annex

This section presents the jurisdictional annex for the Town of Greenville.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Paul Macko, Supervisor Town of Greenville 11159 State Route 32, PO Box 38 Greenville, NY 12083 518-966-5055 x2 pmackogrsuper@aol.com	Michael Dudley, Highway Superintendent Town of Greenville 11159 State Route 32, PO Box 38 Greenville, NY 12083 518-966-5055 x 8 highway@townofgreenillyen.com
NFIP Floodplain Manager	
Mark Overbaugh, Code Enforcement Officer	
Additional Planning Team Contributors	
Alan Tavenner, PE, Delaware Engineering	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Greenville had a total population of 3,741 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	3,741	Median household income	\$65,938
White	91.9%	In civilian labor force age 16+	
Black or African American	0.9%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0%	Persons under 18 years	25.1%
Two or more races	0%	Persons 65 years and over	18.2%
Hispanic or Latino	1.63%	Persons in poverty	14.7%
White, non-Hispanic or Latino	91.9%	Households with internet	
Foreign born persons	4.5 %		

Location and Land Area

The Town of Greenville is a Valley Town centrally located along the border between Greene and Albany Counties. The total land area for Greenville is 39.08 square miles, with 0.30 square miles of that being water.

History

The Town of Greenville was settled in 1774, established in 1803 as a section of the Town of Coxsackie. The Town was briefly called the Town of Freehold, but the name Greenville was finalized in 1808. Once the turnpikes were established, the Town of Greenville used the transportation routes to its advantage for the transportation of goods and services.



Governing Body

The Town is governed by an elected Supervisor and Town Board consisting of four councilmen. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Yes, Sewer District Extension Hamlet of Greenville (160 customers)		

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Yes, in Comprehensive Plan
Land use	
Disproportionately impacted populations	
Climate Change	

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	January 2010 Ice Storm



Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	
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National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Greenville	5	2	\$67,611.00

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
189	189

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

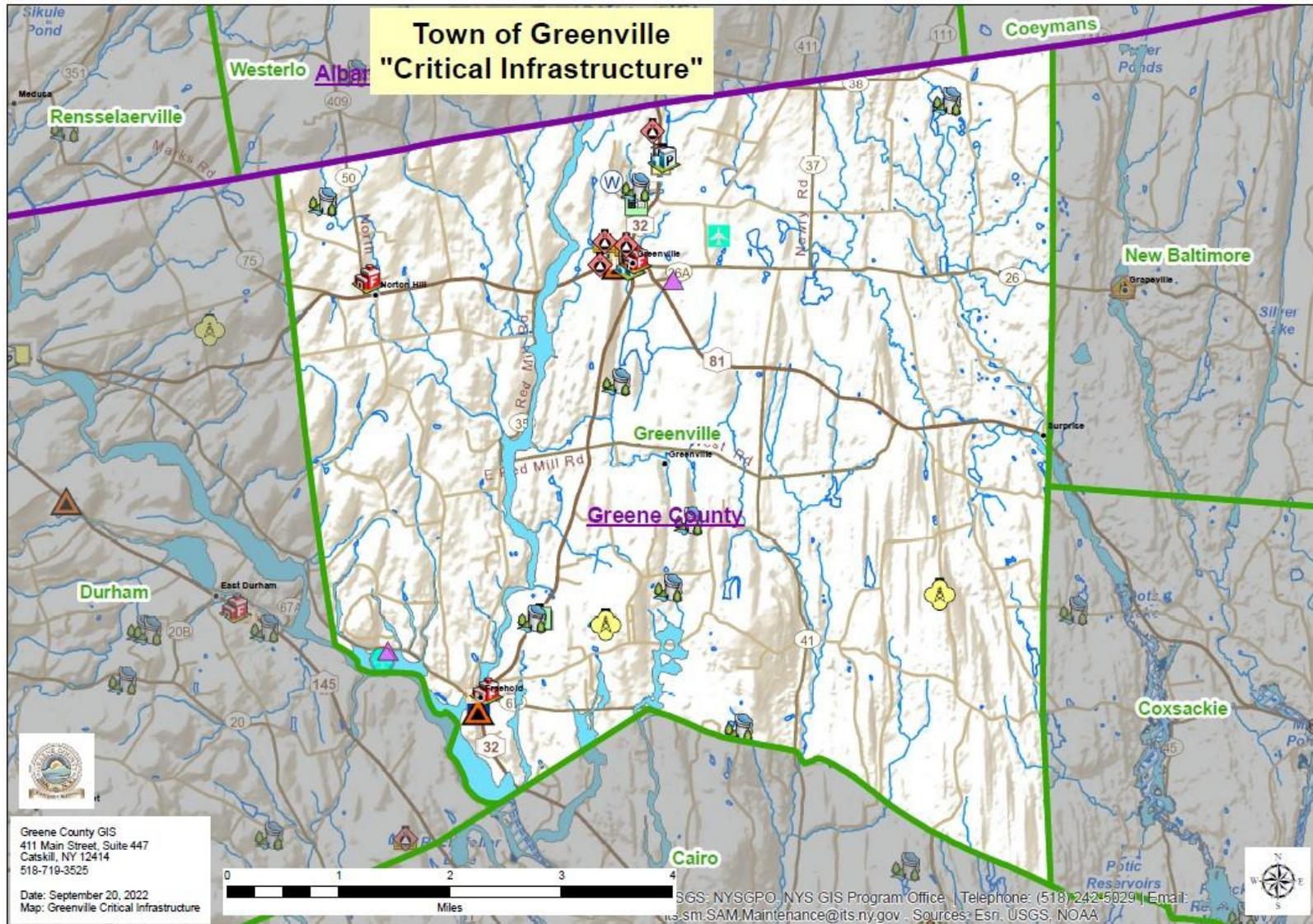
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Airport	Transportation	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Valley Towns. The primary vulnerability in the Town is flooding, which is a concern related to stormwater in particular. There are a number of parcels located in the 100-year or 500-year floodplain, and one critical facility located in those areas. Therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
22

Sampling of comments received from survey respondents specific to the Jurisdiction
Glad you are taking this survey to try to make people aware of resources.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Informational meetings	As needed
Survey's, mailings, etc.	Big part of grant applications Comprehensive Plan survey mailings

Capability Assessment

A capability assessment was conducted of the jurisdiction's authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2021	Yes, environmental resources; land management; infrastructure and wetland areas included. The plan can be used to implement mitigation actions.
Capital Improvement Plan		
Economic Development Plan		



Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes 2015	Yes, freshwater wetland and floodplain permit requirements and required setbacks along streams.
Subdivision ordinance	Yes	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes FT	
Code Enforcement Officer	Yes FT	
Emergency Manager		
Community Planner		



Superintendent of Highways	Yes FT	
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Greenville. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
19	WWTP & Sewer District Improvements, Sewer District Extension	The Town, located on the Basic Creek which is a tributary to the Catskill Creek Watershed, is peppered with dozens of failed septic systems from the last century. The inflow and infiltration issues in the existing waste water treatment facility have resulted in a DEC negotiated Order on Consent. Retaining walls associated with storm water management are failing and have been partially stabilized with FEMA PA support. New culverts are required for increased storm water management in three sections of the Town's road infrastructure. From FEMA Narrative: The Town of Greenville in Greene County, New York maintains an existing waste water treatment system that was originally built to serve subdivision development in the 1980's.	1) Extension of the sewer district to remove the commercial hamlet and denser residential areas from septic use, particularly those in the Basic Creek's floodplain and the Catskill Creek Watershed as a whole. 2) Slip lining the existing sewer lines to eliminate inflow and infiltration. Usually, the plant processes 18,000 gallons of effluent per day. During Superstorm Sandy, the groundwater infiltration peaked at 50,000 gallons per day. The plant's permitting only allows for 55,000 gallons per day. 3) Stabilization and replacement of stormwater management infrastructure, including fieldstone retaining walls (with steel girder walls), culverts and improved drainage. The project has been listed with the state's CWSRF and is currently being considered for federal interest-rate subsidy. From FEMA Narrative: 1) Increase of capacity at the waste water treatment plant to handle increased storm water inflows to the system, 2) Fortify existing retaining walls along the Catskill Creek Watershed areas in the Town to support related waste water collections infrastructure.	Completed	All work was completed		No, projects have been completed



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TGRE 1	Town of Greenville	Dredge Greenville Pond	1, 2, 3, 4	Flood	Heavy rains cause downstream flooding as there is not enough holding capacity in the pond.	Dredge Greenville Pond to remove approximately 1250 cubic yards of debris and silt which has accumulated over time. This action will provide greater capacity to hold and control the release of stormwater in the town.	No	High	Jun-23	\$100,000	Town funds and BRIC	Protect lives and property from flooding
TGRE 2	Town of Greenville	Culvert replacement at Carter Bridge and Old Plank Road	1, 2, 3	Flood	The current culvert is made up of half pipe and the other half a partial box culvert and some type of old tank that was inserted to form a culvert system. Sediment seeps between the parts and the culvert needs regular cleaning.	This project will replace the current culvert with a more resilient one.	No	medium	Third quarter of 2025	\$100,000	Town funds and BRIC	Reduce or eliminate flooding and sediment buildup

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Greenville		
Project Name:	Dredge Greenville Pond		
Project Number:	TGRE 1		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Heavy rains cause downstream flooding as there is not enough holding capacity in the pond.		
Action or Project Intended for Implementation			
Description of the Solution:	Dredge Greenville Pond to remove approximately 1250 cubic yards of debris and silt which has accumulated over time. This action will provide greater capacity to hold and control the release of stormwater in the town.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Protect lives and property from flooding
Useful Life:	Est. 20 years		
Estimated Cost:	\$100,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Early 2023
Estimated Time Required for Project Implementation:	June 2023	Potential Funding Sources:	Town funds and BRIC
Responsible Organization:	Town of Greenville	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Flooding will continue to threaten homes cover streets
	There is no other feasible action beyond those considered		
	Dredge the pond to allow for greater capacity	\$100,000	Project will eliminate/reduce home and street flooding
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Greenville		
Project Name:	Culvert replacement at Carter Bridge and Old Plank Road		
Project Number:	TGRE 2		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The current culvert is made up of half pipe and the other half a partial box culvert and some type of old tank that was inserted to form a culvert system. Sediment seeps between the parts and the culvert needs regular cleaning.		
Action or Project Intended for Implementation			
Description of the Solution:	This project will replace the current culvert with a more resilient one.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Reduce or eliminate flooding and sediment buildup
Useful Life:	Est. 25+ years		
Estimated Cost:	\$100,000		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Third quarter of 2025
Estimated Time Required for Project Implementation:	Third quarter of 2025	Potential Funding Sources:	Town funds and BRIC
Responsible Organization:	Town of Greenville	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	The culvert will eventually fail
	Continue to keep cleaning the sediment that builds up between the parts of the culvert	Unknown	This does not reduce or eliminate the problem and will eventually lead to failure
	Replace culvert with a more resilient one	\$100,000	The road will be protected from collapse and flooding
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Halcott Annex

This section presents the jurisdictional annex for Town of Halcott.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Innes Kasanof, Supervisor Town of Halcott 813 County Route 3 Halcott Center, NY 12430 518-265-4581	
NFIP Floodplain Manager	
John Mathiesen, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Halcott had a total population of 249 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	249	Median household income	\$53,639
White	73%	In civilian labor force age 16+	
Black or African American	0%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	8.4%	Persons under 18 years	31.7%
Two or more races	2.1%	Persons 65 years and over	16.2%
Hispanic or Latino	4.7%	Persons in poverty	11.8%
White, non-Hispanic or Latino	73%	Households with internet	
Foreign born persons	15.7%		

Location and Land Area

The Town of Halcott is in the southwest corner of Greene County along the Delaware County line. The Town is over an hour from Cairo or Town of Catskill by car and the drive requires traveling through Ulster and Delaware Counties. The Town is also located in the east branch of the Delaware River watershed and as such many of the environmental and related programs within Greene County do not apply to the Town because of its remote location. The Town is eligible for funding programs through the NYC Watershed. The total land area for name is 23.04 square miles, with 0.04 square miles of that being water.



History

The land that is currently the Town of Halcott was first settled in 1813. George W. Halcott helped organize the Town and in 1851 the Board of Supervisors was petitioned to create the Town. The State legislature passed the petition in 1852. Dairy farming was the primary way of life for many in the Town though commercial businesses became prevalent as more people settled in the area. The population of the Town peaked in 1860 at 504.

Governing Body

The Town is governed by a Supervisor and four Town Council members, which form the Town Board. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

The Town formed a land use code update committee which is charged with reviewing current codes, including zoning, and making recommendations consistent with the Town’s comprehensive plan, notably to preserve the rural character of Halcott. Similar to other communities, the Town has experienced an increase in real estate transactions during the COVID period.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	NYS Building Code and Halcott Land Use Code	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	None
Land use	Land Use Code now being updated
Disproportionately impacted populations	None
Climate Change	None

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains



information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Halcott	3	2	\$18,826.39

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
165	165

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released



concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Highway Facility	Transportation	1	0

The map below illustrates that one critical facility is in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

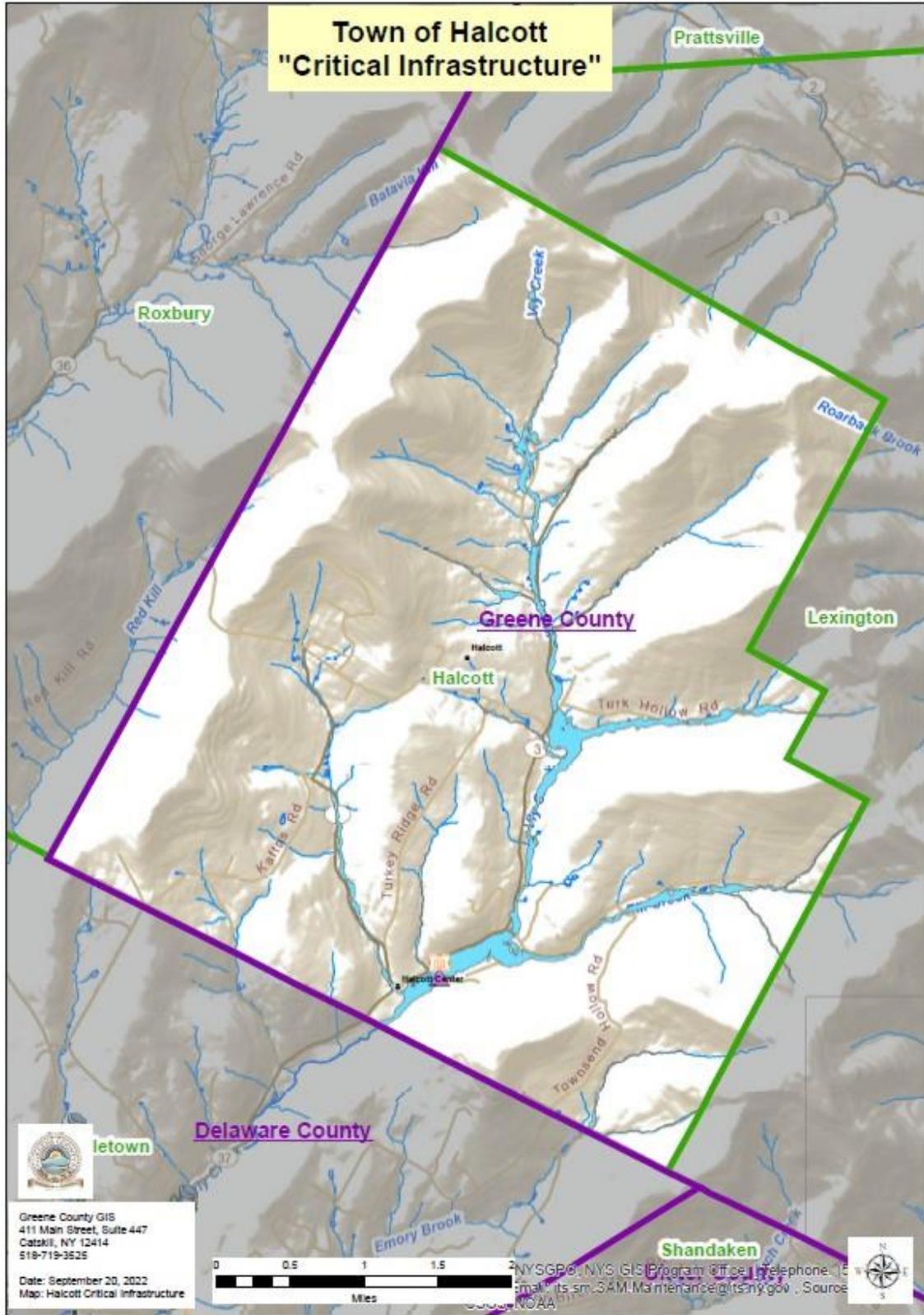
Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns. One of the Town's major challenges is the fact that the Town is very isolated during the frequent flooding events. Over the last 15 years the Town has not been able to access their fire and emergency services, located in Fleischmanns,

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Delaware County, several times. There are a number of parcels located in the 100-year or 500-year floodplain, and one critical facility located in those areas. Therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
1

Sampling of comments received from survey respondents specific to the Jurisdiction
None received

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
All town meetings are advertised and open to public.	Public may choose to attend at any time.

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		
Economic Development Plan		
Emergency Operations Plan	Yes	Yes, it includes hazards and identifies Grange Hall as the central hub and a Town email list was established as part



		of the plan. Procedures are also in place for the board to gather when a storm event is predicted. The plan can be used to implement mitigation actions.
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis	Yes	Yes, it identified priorities to mitigate against flooding and was used to help acquire funding to implement the upgrades. The analysis can be used to implement mitigation actions.
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Floodplain Management/Basin Plan
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance		



Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes	NFIP Flood Damage Prevention Ordinance (2008). Halcott Land Use Code is in the process of being updated.
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	The Town Board members and the Planning Board have professional experience in engineering, road maintenance, land development, farming, heavy equipment operation, and institutional knowledge of the natural hazards in the Town.
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?



		Have skills/expertise been used to assess/mitigate risk in the past?
Building Official		
Code Enforcement Officer	Yes FT	
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?		Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management		



Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	NY Watershed funding
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g.		



responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Halcott. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
20	Construct satellite fire truck facility	The major challenge we face on an ongoing basis is the isolation of our town during the frequent flooding events. More than five times in the last fifteen years we have been cut off from access to our fire and emergency services by flooding in Fleischmanns (Delaware County). The only remedy would be to locate a satellite fire truck facility in our town.	We have secured the property for this structure but do not have the funds to construct the building. Not a firm estimate, but this will probably require 150K.	Project still on hold as we continue to lack funding.	No progress	Lack of funds	Yes



<p>21</p>	<p>Retrofit Halcott Town Recycle Station</p>	<p>Tropical Storm Irene was only the latest in a series of serious rainstorms that have flooded our recycling center in ever-increasing intensity, washing tin cans, plastic milk jugs, broken glass downstream in the torrent. Paper goods, if left behind, are waterlogged beyond saving. The cost of restoring the recycle center from this storm alone was \$9472.00. Former storm damage costs have been absorbed by the Town. The Town of Halcott is small, with only 258 residents. It is located on the edge of Greene County and is at least 45 minutes away from our County transfer station, making it virtually inaccessible to the homeowner with no truck or time to make the journey. Townspeople who do not use a hauler or who find our small recycle center full, "stockpile" their solid waste and recyclables until they can take the time to drive them to a dump.</p>	<p>We propose to retrofit our current recyclable center and expand it to include a solid waste collection option. As per the recommendations of our Code Enforcement Officer and Flood Plain Manager, we would lift the floor of the recycle center 10" off its concrete platform, allowing flood waters to pass underneath, harmless and unimpeded. Collection bins will be designed specifically to hold objects securely, employing steel netting as opposed to the current metal barrels that tip over easily. The platform would be surrounded with heavy lattice in frames to further protect the containers. The recycle center site would be enlarged to include a garbage disposal option with a bear-proof dumpster provided by Greene County, and placed beyond the flood plain, and an "E" shed, a disposal site for recyclable electronics. These three options would form a mini transfer-station (MTS) for the Town. Greene County Solid Waste will transport the full dumpster to the transfer station according to a negotiated agreement with the Town. This program would allow our people to easily, quickly and legally rid themselves of their personal waste. The site will be protected from further flooding. The new center will employ one part-time worker to oversee collection and proper disposal.</p>	<p>Project complete:</p>	<p>The project has become less of a priority as the method of collection now involves a County-provided dumpster that collects recycles and replaces the dumpster when full with another. Solid waste is collected weekly and placed in another lockable dumpster which is also replaced by the County when full.</p>		<p>No</p>
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Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
22	Townsend Hollow Road Culvert	<p>The Townsend Hollow stream crossing of the Elk Creek has an undersized culvert. During storms, the Elk Creek overtops Townsend Hollow road, washes away the roadbed causing excessive debris to plug the culvert, back up flood waters, disturb septic systems and affects seven properties. Emergency vehicles cannot access these homes during high water events. Significant damage at this site occurred in 1996, 2002, 2005 and 2010. In October 2010 the Town was awarded a grant from Catskill Watershed Corporation to conduct a comprehensive stormwater assessment. The analysis identified Townsend Hollow stream crossing as the most critical and first priority among town roads.</p>	<p>The proposed 3-sided bridge type structure will allow appropriate range of flows at this site, thereby maintaining flow conditions upstream and downstream. Less debris will be disturbed as well as the risk of stream bank, property and infrastructure erosion will be minimized significantly. Moreover, the risk to homeowners in the event of an emergency will be greatly reduced as well.</p>	<p>We continue to seek funding for this project.</p>	<p>No progress</p>	<p>Lack of funds</p>	<p>Yes</p>



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THAL 1 Old #20	Town of Halcott	Construct satellite fire truck facility	1, 2, 3, 4	Flood	The major challenge we face on an ongoing basis is the isolation of our town during the frequent flooding events. More than five times in the last fifteen years we have been cut off from access to our fire and emergency services by flooding in Fleischmanns (Delaware County). The only remedy would be to locate a satellite fire truck facility in our town.	Improve emergency response by constructing a satellite fire truck building in Halcott on property the town already acquired.	Yes	Medium - High	As funding and staff capacity allow	TBD	HMGP	Ensure fire and emergency services are available to residents when needed without delay
THAL 2 Old #22	Town of Halcott	Upgrade Townsend Hollow Road Culvert	1, 2, 3	Flood	There is a history of failure, the culvert has extremely poor hydraulics. The only detour is a seasonal road. In October 2010 the Town was awarded a grant from Catskill Watershed Corporation to conduct a comprehensive stormwater assessment. The analysis identified Townsend Hollow stream crossing as the most critical and first priority among town roads.	Upgrade Townsend Hollow Rd culvert over Elk Creek with an adequately sized culvert to pass the 100-year flood event	No	Medium	When scheduled for replacement	Cost estimates will be derived from a hydraulic and hydrologic analysis at time of design.	HMGP, Delaware Co., SMIP, CWC	Reduce or eliminate flooding to ensure the road stays open



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THAL 3	Town of Halcott	Relocate town highway garage out of floodplain	1, 2, 3, 4	Flood	The town highway garage is in the special flood hazard area and vulnerable during flood events. As a critical community facility it should be relocated out to floodplain, possibly co-locate with the satellite fire truck building.	Relocate the town highway garage out of the floodplain and consider co-locating with the satellite fire truck building on a larger parcel.	Yes	Medium - High	As funding and staff capacity allow	TBD	HMGP, Delaware Co., SMIP, CWC	Remove this CF from the floodplain to ensure access to services at all times

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Halcott		
Project Name:	Construct a satellite fire truck facility		
Project Number:	THAL 1 - Old #20		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The major challenge we face on an ongoing basis is the isolation of our town during the frequent flooding events. More than five times in the last fifteen years we have been cut off from access to our fire and emergency services by flooding in Fleischmanns (Delaware County). The only remedy would be to locate a satellite fire truck facility in our town.		
Action or Project Intended for Implementation			
Description of the Solution:	Improve emergency response by constructing a satellite fire truck building in Halcott on property the town already acquired.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Ensure fire and emergency services are available to residents when needed without delay
Useful Life:	Est. 100+ years		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium – High	Desired Timeframe for Implementation:	As funding and staff capacity allow
Estimated Time Required for Project Implementation:	As funding and staff capacity allow	Potential Funding Sources:	HMGP
Responsible Organization:	Town of Halcott	Local Planning Mechanisms to be Used in Implementation, if any:	Emergency Response Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Emergency Response times will be delayed
	There are no other feasible alternative actions other than those listed		
	Construct a satellite fire truck facility	TBD	The project would improve emergency response at all times, but especially during natural disasters
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Halcott		
Project Name:	Relocate town highway garage out of floodplain		
Project Number:	THAL 3		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The town highway garage is in the special flood hazard area and vulnerable during flood events. As a critical community facility, it should be relocated out to floodplain, possibly co-locate with the satellite fire truck building.		
Action or Project Intended for Implementation			
Description of the Solution:	Relocate the town highway garage out of the floodplain and consider co-locating with the satellite fire truck building on a larger parcel.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 500 year flood	Estimated Benefits (losses avoided):	Remove this CF from the floodplain to ensure access to services at all times
Useful Life:	Est. 100+ years		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium – High	Desired Timeframe for Implementation:	As funding and staff capacity allow
Estimated Time Required for Project Implementation:	As funding and staff capacity allow	Potential Funding Sources:	HMGP, Delaware Co. SNIP, CWC
Responsible Organization:	Town of Halcott	Local Planning Mechanisms to be Used in Implementation, if any:	Local Flood Analysis
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	The building will continue to flood
	Elevate the property	Unknown	It is not feasible to elevate this building
	Relocate town highway garage out of flood hazard area	TBD	Moving this facility will ensure continued access to services at all times.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Hunter Annex

This section presents the jurisdictional annex for the Town of Hunter.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Sean Mahoney, Supervisor Town of Hunter 5748 Route 23a Tannersville, NY 12485 518.589.6151 x 312 smahoney@townofhuntergov.com	John G. Farrell, Highway Superintendent Town of Hunter 5748 Route 23a Tannersville, NY 12485 518.589.7017 jfarrell@townofhuntergov.com
NFIP Floodplain Manager	
Sarah Pellizzari, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Hunter had a total population of 2,606 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	2,606	Median household income	
White	99.7%	In civilian labor force age 16+	
Black or African American	0%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0%	Persons under 18 years	4.3%
Two or more races	0%	Persons 65 years and over	45.9%
Hispanic or Latino	0.3%	Persons in poverty	25.7%
White, non-Hispanic or Latino	99.7%	Households with internet	
Foreign born persons	19.8%		

Location and Land Area

The Town of Hunter is located in the south-central portion of Greene County. It contains many of the high peaks of the Catskill Mountains including Hunter Mountain, the highest mountain in the County and second highest in the Catskills. The Town line borders Ulster County, NY, along its southern and part of its eastern edge. The total land area for Hunter is 87.78 square miles, with 0.26 square miles of that being water.

History

The Town of Hunter, originally called Greenland, was formed from the territory of Windham in 1813. The Town was not officially renamed Hunter until the following year, 1814. Settlers arrived through



one of three cloves: Kaaterskill, Platte, or Stony Clove. There are two incorporated Villages in the Town of Hunter: Hunter Village, originally called Edwardsville and incorporated in 1894, and Tannersville, which was incorporated in 1895. Though the land was hilly and rocky, most settlers farmed even if just to support the needs of their family. The Town had tanneries, lumber mills along streams, furniture factories using product from the lumber mills, and quarries that shipped stone to cities for use in sidewalks. The scenery brought about a booming tourism business with boarding houses and large hotels. Among the best known were the Catskill Mountain House, Hotel Kaaterskill, and the Laurel House. The railroads brought in even more people. The Town declined after the invention of the automobile, the Great Depression, and World War II, but the development of skiing destinations brought the Town back into vibrancy. Today, Hunter and Windham Mountains are major destinations.

Governing Body

The Town is governed by a Town Board composed of the Supervisor and four Councilpersons. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Even with the passing of 18 years since the last comprehensive plan was developed for Hunter, the community still views the strengths and weaknesses facing the Town as being similar. Some of the most difficult challenges such as economic development, seasonal markets, visual appearance, lack of transportation, and lack of zoning remain as significant challenges today. In addition, new challenges have been identified, such as lack of internet and broadband, lack of year-round recreational opportunities, lack of employees, and lack of affordable housing.

In late 2015, an agreement was announced to sell Hunter Mountain. A news report from the Daily Freeman on December 1, 2015, quoted the buyer’s president and CEO as saying “Our roadmap for growth calls for a mix of organic growth and resort development as well as acquisitions that will let us build our portfolio of ski resorts in the attractive overnight and day-drive segments of the market.” Based on this information, it appears the new owners intend to expand the resort. In 2020 Hunter Mountain was sold to Vail Resorts.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Minimal	No	Not at this time

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Yes, see Comprehensive Plan



Land use	Yes, see Comprehensive Plan
Disproportionately impacted populations	Yes, see Comprehensive Plan
Climate Change	Yes, see Comprehensive Plan

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	Hurricane Irene 8/28/2011 28 Roads damaged Hurricane Sandy 10/22/2012 – 11/22/2012
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	2/28/2010 7 ft. snow event lasted all week. Snow removal difficult on roads and roofs.
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	Hurricane Irene 8/28/2011 Hurricane Sandy 10/22/2012 – 11/22/2012
Drought / Forest Fires	3	Within the past 5 years

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Hunter	14	28	\$308,311.38

Source: DEC (2022)



Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
439	462

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



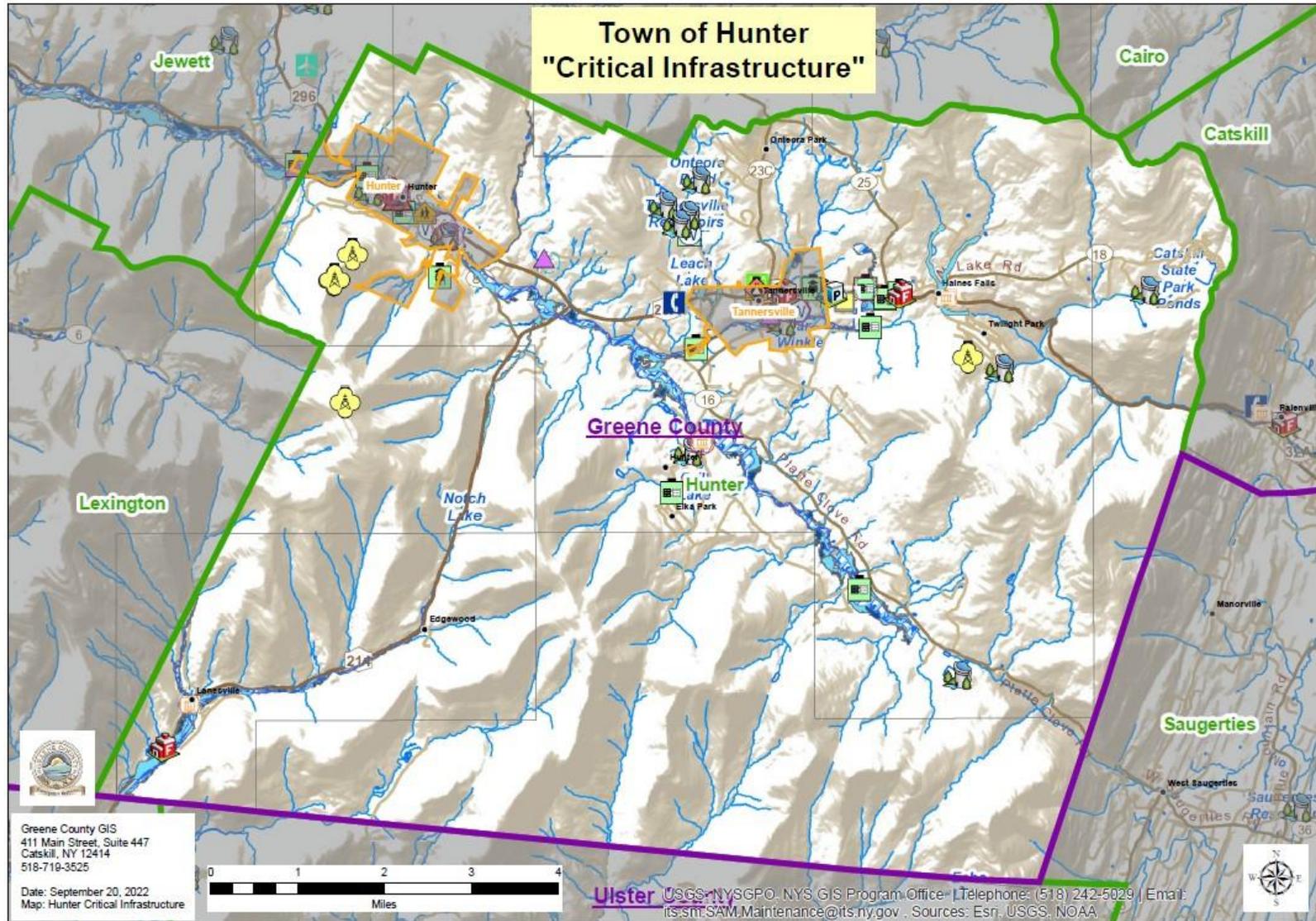
types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Government Facility	Safety and Security	1	2
Public Waste Water Pump Station	Food, Water and Shelter	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns located in the Catskill State Park. There are a large number of parcels located in the 100-year or 500-year floodplain, as well as 6 repetitive loss properties, based on the most current data available. There are also three critical facilities located in the flood plain, therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole. Many of the recommended measures to be taken can be found in the Local Flood Analysis that was completed recently.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
20

Sampling of comments received from survey respondents specific to the Jurisdiction
The community needs people who will check on seniors and help during bad weather times and all the time.
Most concerned of my Prescriptions and Drug replenishment needs not being met if Flood or disaster were to occur. Also my oxygen needs .. Need for electric to be quickly restored if interrupted.
I like the survey, I would like to see the results and know what will happen next
Purchased a generator last year. Thinking of switching from Spectrum to DISH so can get current weather news on TV during outages.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Public Meetings and use of digital media	

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?



Comprehensive/Master Plan	Yes 2018	Multiple hazard mitigation approaches were referenced within the plan and have been implemented, so the plan can be used to implement mitigation actions.
Capital Improvement Plan		
Economic Development Plan	Yes	
Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan	Yes	
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Schoharie Stream Management Plan
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance	Yes	



Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes	Floodplain Management/ Basin Plan
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes	NFIP Flood Damage Prevention Ordinance (2008) Growth Management Plan
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)	YES	Joint maintenance agreement exists between The Village of Tannersville, The Village of Hunter and The Town of Hunter. Maintenance is ongoing on tree trimming and drainage systems.
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?



Building Official	Yes FT	Yes, to all.
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes, FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	Demolition of structures in the floodplain and erosion hazard zones, and streambank stabilization. Catskill Center for Conservation and Development Riparian Buffer Acquisition Program, both of which help reduce the Town’s long-term vulnerability to flooding.
GCSWCD Stream Management Implementation Program (SMIP)	Yes	Stream and floodplain restoration, riparian buffer planting, culvert replacement/upsizing



Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	NYC Flood Buyout Program – town approved three structures in erosion hazard zones for voluntary buyout
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household		



preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Hunter. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
23	Town-wide Stormwater Analysis Study	During Tropical Storm Irene 8/28/11 - 9/5/11 we received torrential rainfall and flash flooding in local streams which caused significant infrastructural damage throughout the Town of Hunter. This incident has caused damage on over 28 roads in our town. The town needs a complete storm water analysis to identify areas where current infrastructure (culverts, bridges, conveyance channels etc) are inadequate to handle flood flows. This should include development of an action plan that identifies priority projects appropriate for hazard mitigation funding and other funding availability. All infrastructures should be identified and data updated with their GPS locations. This study was included in our Hazard Mitigation Plan Annex for the Town of Hunter. This project also includes developing local stormwater management districts with the Village of Hunter and Tannersville.	The Town has suffered through two 100 year storms in the past 5 years and the Hurricane Irene in August 2011 was a 500 year storm for most towns in the county. These 28 sites and others will continue to cost more and need to be addressed for the safety of the town's people. Due to the severity of storms the study will help us proactively prepare for these climate changes by focusing our efforts on priority sites and making repairs before the next storms.	In progress	LFA's completed for Town of Hunter and Both Villages. 28 SITES REPAIRED, OTHER STEPS IN PROGRESS	Time and money	Yes, with slight modifications based on completed items.



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
24	Scribner Hollow Road	<p>This road has a stream crossing under the road three (3) times with three culvert pipes. A hydraulic study and engineering design is a much needed and a very important hazard mitigation plan. During every heavy rain and especially Hurricane Irene the road needs repair due to these inadequate culverts. The stream in between these culverts needs to be dredged reshaped and lined. In the same location 2 private driveway pipes which are the town's responsibility need the same study and engineering design.</p> <p>The first quarter mile of this road on the right hand side going up the road is a stream that is in desperate need of stabilization on both banks. During all severe rain storms severe erosion of road and stream banks occur. The road is in danger of sliding down the embankment. Engineer work and a stream hydraulics study is needed. A study and action plan is needed as soon as possible.</p>	<p>The study and engineering plans would help us upgrade all infrastructure to prevent the damage from occurring after every heavy rain. The stream bank stabilization will help prevent loss of road and possibly lives if road collapses during storm.</p>	In progress	ENGINEER NEEDED	Time and money	Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
25	Clum Hill Road	<p>Multiple FEMA declarations and yearly repairs from improper drainage has caused road hazards and high repair costs. This road has a grade of 4% - 18% and has had numerous repair methods tried without success. A drainage runoff study and an engineered plan would greatly help prevent life threatening hazards during storms. The area is increasing in development and will benefit from the problems solved with this plan.</p> <p>The drainage runoff study and engineered stormwater drainage system with underground piping and inlets will eliminate many washout problems occurring every storm. Once the system is in place the road will need to be resurfaced with blacktop.</p>	<p>New stormwater drainage system would decrease overall cost of road repair and maintenance as well as increase safety for its inhabitants.</p>	In progress	In progress	Time and money	Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
26	Plateau Mountain Road	Two tributaries of the Schoharie Creek combine together then pass under Plateau Mt. Rd Approximately 500 LF easterly of the road intersection at route 214. NYSDEC has classified the westerly tributary as Class A and southern tributary as Class B once combined the Class is C. The existing structure is comprised of two 72" diameter steel pipes which are approx. 30' long. Flooding of the stream has caused damage to the drainage structure. The Hydraulic analysis was completed in March 2013 and showed that replacing the existing structure with an in-kind structure is not recommended, since the existing structure is undersized and comprised of multiple pipes. Undersized crossings and multiple outlets cause restrictions of natural stream flow, increased erosion due to high velocities, and intensify flooding because of clogging with debris. The engineering recommendations are: 1)Three sided culvert Clear(18'-6"x6'-0") area sf 111.0 largest passing storm event 25 yr. or Bridge (bottom 35', top 40') x 6'-0" area sf. 225 largest passing storm event 100 yr.	The design and construction will ensure structural integrity and appropriate hydraulic capacity, while protecting or restoring stream continuity(ecosystems). Stream continuity can be maintained by selecting structures which sufficiently span the stream channel bed and are either embedded or preferably open-bottom. Both above solutions will have the structural integrity to maintain access and transportation needs and decrease multiple road erosion and repair needed after every significant rain event. Thus being proactive and prepared for further climate change.	In progress	In progress		Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
27	Platte Clove Mountain Road	The problem is the road is actually on the mountains edge from West Saugerties to Platte Clove. It is an extensively used seasonal road with many drainage and safety issues. It needs engineering and plan to complete installation of new culvert pipes, water channels, retaining walls, guide rails and finally resurfacing. This road is part of our scenic byway and is used by walkers, bicyclists and tourists to view and hike our many trails and enjoy the great vistas. The locals use it frequently as well because of its ease to get down the mountain.	The mitigation would help resolve a continual problem with water runoff and road damage due to the strong storms the area has been receiving and will receive through predictions. This road is more costly due to the higher terrain and severe drops, making it more hazardous and work more difficult. The measure would increase safety and repeated damage.	In progress	Progressing well	Time and money	Yes
28	Local Stormwater management district	Stormwater management needed within the Town of Hunter, Village of Tannersville, and Village of Hunter.	Developing local stormwater management districts with the Village of Hunter and Tannersville (see Town of Hunter stormwater analysis project).	In progress			Yes



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THUN 1 Old #23	Town of Hunter	Town-wide Stormwater Analysis Study	1, 2, 3, 4	Flood	The town needs a complete storm water analysis to identify areas where current infrastructure (culverts, bridges, conveyance channels etc) are inadequate to handle flood flows. This should include development of an action plan that identifies priority projects appropriate for hazard mitigation funding and other funding availability. All infrastructures should be identified and data updated with their GPS locations. This study was included in our Hazard Mitigation Plan Annex for the Town of Hunter. This project also includes developing local stormwater management districts with the Village of Hunter and Tannersville.	Due to the severity of storms the study will help us proactively prepare for these climate changes by focusing our efforts on priority sites and making repairs before the next storms.	No	High	Medium	Medium	CDBG/PDM	Will be able to identify and address any current culverts, bridges or conveyance channels that are inadequate to handle flood flows.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THUN 2 Old #24	Town of Hunter	Scribner Hollow Road	1, 2, 3, 4	Flood	This road has a stream crossing under the road three (3) times with three culvert pipes. A hydraulic study and engineering design is a much need and very important hazard mitigation plan. During every heavy rain and especially Hurricane Irene the road needs repair due to these inadequate culverts. The stream in between these culverts needs to be dredged reshaped and lined. In the same location 2 private driveway pipes which are the town's responsibility need the same study and engineering design. The first quarter mile of this road on the right hand side going up the road is a stream that is in desperate need of stabilization on both banks. During all severe rain storms severe erosion of road and stream banks occur. The road is in danger of sliding down the embankment.	The study and engineering plans would help us upgrade all infrastructure to prevent the damage from occurring after every heavy rain. The stream bank stabilization will help prevent loss of road and possibly lives if road collapses during storm.	No	High	Medium	Medium	PDM funding for both study and construction work	Reduce or eliminate flooding to prevent loss of the road and possibly lives



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THUN 3 Old #25	Town of Hunter	Clum Hill Road	1, 2, 3, 4,	Flood	Multiple FEMA declarations and yearly repairs from improper drainage has caused road hazards and high repair costs. This road has a grade of 4% - 18% and has had numerous repair methods tried without success. A drainage runoff study and an engineered plan would greatly help prevent life threatening hazards during storms. The area is increasing in development and will benefit from the problems solved with this plan. The drainage runoff study and engineered stormwater drainage system with underground piping and inlets will eliminate many washout problems occurring every storm. Once the system is in place the road will need to resurfaced with blacktop.	New stormwater drainage system would decrease overall cost of road repair and maintenance as well as increase safety for its inhabitants.	No	Medium	Medium	Medium	PDM/H MGP/CD BG	We decrease road flooding and save costs of repeated repair and maintenance



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THUN 4 Old #26	Town of Hunter	Plateau Mountain Road	1, 2, 3, 4	Flood	Two tributaries of the Scholharie Creek combine together then pass under Plateau Mt. Rd Approximately 500 LF easterly of the road intersection at route 214. NYSDEC has classified the westerly tributary as Class A and southern tributary as Class B once combined the Class is C. The existing structure is comprised of two 72" diameter steel pipes which are approx. 30' long. Flooding of the stream has caused damage to the drainage structure. The Hydraulic analysis was completed in March 2013 and showed that replacing the existing structure with an in-kind structure is not recommended, since the existing structure is undersized and comprised of multiple pipes. Undersized crossings and multiple outlets cause restrictions of natural stream flow, increased erosion due to high velocities, and intensify flooding because of clogging with debris.	The design and construction will ensure structural integrity and appropriate hydraulic capacity, while protecting or restoring stream continuity(ecosystems). Stream continuity can be maintained by selecting structures which sufficiently span the stream channel bed and are either embedded or preferably open-bottom. Both above solutions will have the structural integrity to maintain access and transportation needs and decrease multiple road erosion and repair needed after every significant rain event. Thus being proactive and prepared for further climate change.	No	Medium	Long term	High	PDM/H MGP	Will create structural integrity to maintain access and transportation needs and decrease multiple road erosion and repair needed after every significant rain event.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
THUN 5 Old #27	Town of Hunter	Platte Clove Mountain Road	1, 2, 3, 4,	Flood	The problem is the road is actually on the mountains edge from West Saugerties to Platte Clove. It is an extensively used seasonal road with many drainage and safety issues. It needs engineering and plan to complete installation of new culvert pipes, water channels, retaining walls, guide rails and finally resurfacing. This road is part of our scenic byway and is used by walkers, bicyclists and tourists to view and hike our many trails and enjoy the great vistas. The locals use it frequently as well because of its ease to get down the mountain.	The mitigation would help resolve a continual problem with water runoff and road damage due to the strong storms the area has been receiving and will receive through predictions. This road is more costly due to the higher terrain and severe drops, making it more hazardous and work more difficult. The measure would increase safety and repeated damage.	No	Medium	Long term	Medium	PDM/H MGP	Will eliminate continued water runoff and road damage
THUN 6 Old #28	Town of Hunter	Local Stormwater management district	1, 2, 3, 4,	Flood	Stormwater management needed within the Town of Hunter, Village of Tannersville, and Village of Hunter.	Developing local stormwater management districts with the Village of Hunter and Tannersville (see Town of Hunter stormwater analysis project).	No	Medium	Long term	Medium	PDM/H MGP	Related to action THUN 1 above

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Hunter		
Project Name:	Town-wide Stormwater Analysis Study		
Project Number:	THUN 1 - Old #23		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The town needs a complete storm water analysis to identify areas where current infrastructure (culverts, bridges, conveyance channels etc) are inadequate to handle flood flows. This should include development of an action plan that identifies priority projects appropriate for hazard mitigation funding and other funding availability. All infrastructures should be identified and data updated with their GPS locations. This study was included in our Hazard Mitigation Plan Annex for the Town of Hunter. This project also includes developing local stormwater management districts with the Village of Hunter and Tannersville.		
Action or Project Intended for Implementation			
Description of the Solution:	Due to the severity of storms the study will help us proactively prepare for these climate changes by focusing our efforts on priority sites and making repairs before the next storms.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 100-year flood event	Estimated Benefits (losses avoided):	Will be able to identify and address any current culverts, bridges or conveyance channels that are inadequate to handle flood flows.
Useful Life:	Est. 25 – 30 years		
Estimated Cost:	Medium (Est. \$100K-\$500K)		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2023 and ongoing
Estimated Time Required for Project Implementation:	Medium (Est. 2025)	Potential Funding Sources:	PDM funding for both study and construction work
Responsible Organization:	Town of Hunter	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Roadways will eventually fail
	Continue patching and maintenance of roads, bridges and conveyance channels	Unknown	This is only a temporary fix and does not fix the overall issues
	Conduct analysis and address areas of concern that are identified	Est. \$100K - \$500K)	Reduce flooding to protect life and property
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Hunter		
Project Name:	Scribner Hollow Road		
Project Number:	THUN 2 - Old #24		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	During every heavy rain and especially Hurricane Irene the road needs repair due to these inadequate culverts. The stream in between these culverts needs to be dredged reshaped and lined. In the same location 2 private driveway pipes which are the town's responsibility need the same study and engineering design		
Action or Project Intended for Implementation			
Description of the Solution:	The study and engineering plans would help us upgrade all infrastructure to prevent the damage from occurring after every heavy rain. The stream bank stabilization will help prevent loss of road and possibly lives if road collapses during storm.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year or greater flood event	Estimated Benefits (losses avoided):	Reduce or eliminate flooding to prevent loss of the road and possibly lives if the road collapses.
Useful Life:	Est. 40+ years		
Estimated Cost:	Medium (\$100K-\$500K)		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2023
Estimated Time Required for Project Implementation:	Medium (Est. 2025)	Potential Funding Sources:	PDM funding for both study and construction work
Responsible Organization:	Town of Hunter	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road and driveways will eventually fail
	Continue to patch and maintain the road after flood events	Unknown	This is only a temporary fix and does not address the ongoing issues
	Upgrade current infrastructure and stabilize the stream bank	Est. \$100K-\$500K	Reduce or eliminate flooding to prevent loss of the road and possibly lives if the road collapses
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Jewett Annex

This section presents the jurisdictional annex for the Town of Jewett.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Gregory Kroyer, Supervisor Town of Jewett PO Box 132 Jewett, NY 12444 Phone: 518-263-4646 x2 / cell: 518-291-0565 Email: greg.kroyer@townofjewett.org	Robert Mallory, Highway Superintendent Town of Jewett PO Box 132 Jewett, NY 12444 518-263-3756
NFIP Floodplain Manager	
Carl Giangrande, Zoning Officer/Building Inspector	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Jewett had a total population of 879 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	879	Median household income	\$54,960
White	86.3%	In civilian labor force age 16+	
Black or African American	0%	Persons with a disability under 65	
American Indian and Alaskan Native	1.4%	Persons under 5 years	
Asian	0.1%	Persons under 18 years	7.5%
Two or more races	1.2%	Persons 65 years and over	35.2%
Hispanic or Latino	11.1%	Persons in poverty	9.7%
White, non-Hispanic or Latino	86.3%	Households with internet	
Foreign born persons	7.6%		

Location and Land Area

The Town of Jewett is a Mountaintop Town located in Greene County within the northeastern part of the Catskill Park. The total land area for Jewett is 50.52 square miles, with 0.20 square miles of that being water.

History

The Town of Jewett was formed from the Towns of Hunter and Lexington on November 14, 1849. It is named for Freeborn G. Jewett, a justice of the Supreme Court.



Governing Body

The Town is governed by a Supervisor, a Deputy Supervisor, and three Town Board members. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs. The Town Board members have staggered 4-year terms.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Not in floodplain, but new development has been on the rise in the town	Local law for flood damage prevention from FEMA and NYSDEC model law (passed 2008)	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	
Land use	Planning board review monitors this in proximity to floodplains
Disproportionately impacted populations	
Climate Change	

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard



Flooding (riverine, flash flood, dam failure)	1	December 25, 2020 portion of CR 17 washed away; worst on record Hurricane Irene (2011)
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	3	2/28/2010 – approx. 7 ft snowstorm, paralyzed the mountaintop
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	2	Hurricane Irene in 2011, major damage to public and private property

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Jewett	18	26	\$356,958.29

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
330	367

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of highway dept., police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

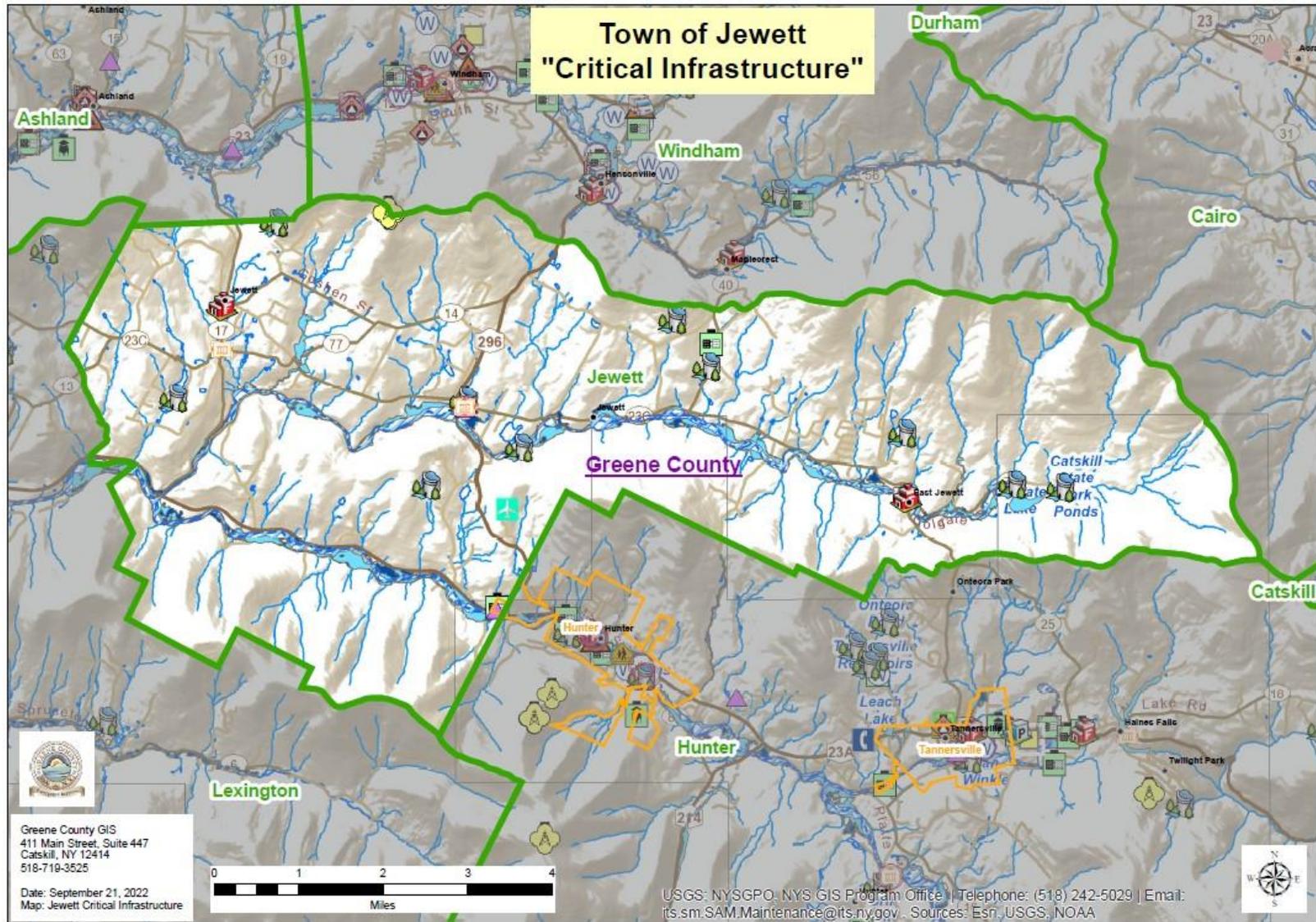
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
None			

The map below illustrates there are no critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns and is subject to significant snowfall. As such, power outages are a concern as are emergency communications, due to lack of cell phone coverage. Additionally, flooding is a major concern, with a number of parcels located in the 100-year or 500-year floodplain as well as 5 repetitive loss properties, based on the most current data available. There are no critical facilities located in the floodplain, however, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
13

Sampling of comments received from survey respondents specific to the Jurisdiction
Reopening after a disaster depends on functioning infrastructure- clear roads, internet service, etc.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Public Meetings and use of digital media.	

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		
Economic Development Plan		
Emergency Operations (Response) Plan	Yes	



Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis	Yes 2022	Engineering analysis identified flood prone areas in the town, threatening public and private infrastructure, and modeled mitigation actions for flood relief. Mitigation actions came from this plan.
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance	Yes	
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes	Floodplain Management/Basin Plan
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board		
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes FT	Yes, to all.
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		
Community Planner		



Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer	Yes	Yes, to all.
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	
GCSWCD Stream Management Implementation Program (SMIP)	Yes	
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Jewett. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
29	Mitigate Town Hall	Needs shower, Red Cross Shelter, Generator		Partially completed	Generator was installed. Shower not implemented	other priorities	No
30	Culvert Replacement on 23A - Wright Road	Mitigation needed for Wright Road. The relationship of this road and the Schoharie Creek makes full mitigation difficult and expensive even if possible and this would require enlarging the culvert under 23A controlled by the NYSDOT. See county-wide effort listed above.	Enlarge culvert under 23A	In process carry over			Yes



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TJEW 1 Old #30	Town of Jewett	Wright Road Drainage study	1, 2, 3, 4	Flood	Mitigate flood-related damages affecting town road and homes on road	Conduct a hydraulic and hydrologic (H & H) analysis for Wright Rd. drainage culverts.	No	Low - medium	2023-2025	TBD	HMGP, CWC, FHIMIP Program	Reduce or eliminate flooding of road and homes
TJEW 2	Town of Jewett	23a Culvert H&H Study	1, 2, 3, 4	Flood	Mitigate flood-related damages upstream from the 23a culvert.	Conduct a hydraulic and hydrologic (H & H) analysis for the 23a culvert draining Wright's Creek. Preliminary modeling showed upstream surface water elevations decreased with a 20 ft wide by 7 ft high four sided concrete box culvert, however, under a Schoharie Creek high tailwater condition, these mitigation benefits are shown to be substantially reduced.	No	Medium-High	2023-2025	TBD	HMGP, CWC, FHIMIP Program	Reduce or eliminate flooding on road to keep it open at all times



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TJEW 3	Town of Jewett	Beaches Corner Rd. culvert	1, 2, 3	Flood	Undersized culvert at Beaches Corner Road exacerbating flooding to town road.	A full replacement of the structure under Beaches Corner Road to span 1.25-times the estimated bankfull width of 13 feet, as suggested by NYSDEC for replacing stream crossing structures, was assessed in the LFA. A 16-foot-wide by 5-foot-high concrete box culvert was shown to convey about 620 cfs, well above the estimated 100-year storm, before getting overwhelmed. Although it might be possible to go less than 16 feet wide with a replacement culvert that passes the 100-year event, it is not advised, and consideration should be given to adhering to the culvert design criteria recommended by state and federal guidelines. Likewise, realigning the culvert to better match the stream and eliminate a sharp 90-degree bend should be explored if the culvert is to be replaced as this will further reduce energy losses at the crossing. A hydraulic and hydrologic analysis will be performed to determine exact size.	No	Medium-High	2023-2024	Cost estimates will be derived from the H and H analyses.	HMGP, SMIP (NYCDE P/GCSW CD), CWC	Reduce or eliminate flooding on road to keep it open at all times
TJEW 4	Town of Jewett	Highway garage feasibility study	1, 2, 3, 4	Flood	Mitigate flood-related damages affecting town hall offices and town highway garage.	An application to the CWC Flood Hazard Mitigation Implementation Program will be submitted to conduct a feasibility study of the highway garage for floodproofing measures including elevating the structure. If this is found to be infeasible, the town would like to explore relocating the highway garage to the south side of the property where it is higher.	Yes	High	2022-2023	Feasibility study will cost \$5,000	CWC FHMIP Program	Determine the appropriate mitigation action to eliminate flooding of CF



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TJEW 5	Town of Jewett	Stormwater assessment and implementation Town complex	1, 2, 3, 4	Flood	Mitigate Stormwater runoff from impervious surfaces affecting town hall offices and town highway garage.	Conduct stormwater drainage feasibility study to improve drainage ditch along the northern side of State Route 23C. Remove, replace, and reroute system as needed. A full rework of the drainage ditch system to the east of the town hall is recommended and rerouting stormwater drainage directly to the inlet of the replacement concrete box culvert under CR 23C (separate Mitigation Action). A hydrologic and hydraulic analysis should be conducted to determine whether the replacement concrete box culvert under CR 23C would be adequate to convey the additional stormwater drainage amounts. The analysis should also include capacity of the driveway culverts along the drainage ditch to the north of CR 23C.	Yes	High	2022-2023	Cost estimates for preliminary and final designs will be derived from a conceptual phase 1 stormwater plan, estimated at \$20,000.	CWC Stormwater Retrofit Program	Determine the appropriate mitigation action to eliminate flooding of CF and implement the action

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Jewett		
Project Name:	Highway garage feasibility study		
Project Number:	TJEW 4		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Mitigate flood-related damages affecting town hall offices and town highway garage.		
Action or Project Intended for Implementation			
Description of the Solution:	An application to the CWC Flood Hazard Mitigation Implementation Program will be submitted to conduct a feasibility study of the highway garage for floodproofing measures including elevating the structure. If this is found to be infeasible, the town would like to explore relocating the highway garage to the south side of the property where it is higher.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 500-year event based on study	Estimated Benefits (losses avoided):	Determine the appropriate mitigation action to eliminate flooding of CF
Useful Life:	Depends on the action determined based on the study		
Estimated Cost:	The feasibility study will cost \$5,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2022
Estimated Time Required for Project Implementation:	2023	Potential Funding Sources:	CWC FHMP Program
Responsible Organization:	Town of Jewett	Local Planning Mechanisms to be Used in Implementation, if any:	LFA recommended project
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Facility will continue to be impacted by flooding
	There is no other feasible alternative to determine the best mitigation action to take		
	Conduct feasibility study	\$5,000	Will determine best course of action to take to reduce flooding of CF
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Jewett		
Project Name:	Stormwater assessment and implementation Town complex		
Project Number:	TJEW 5		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Mitigate Stormwater runoff from impervious surfaces affecting town hall offices and town highway garage.		
Action or Project Intended for Implementation			
Description of the Solution:	Conduct stormwater drainage feasibility study to improve drainage ditch along the northern side of State Route 23C. Remove, replace, and reroute system as needed. A full rework of the drainage ditch system to the east of the town hall is recommended and rerouting stormwater drainage directly to the inlet of the replacement concrete box culvert under CR 23C (separate Mitigation Action). A hydrologic and hydraulic analysis should be conducted to determine whether the replacement concrete box culvert under CR 23C would be adequate to convey the additional stormwater drainage amounts. The analysis should also include capacity of the driveway culverts along the drainage ditch to the north of CR 23C.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 500-year event	Estimated Benefits (losses avoided):	Determine the appropriate mitigation action to eliminate flooding of CF and implement the action
Useful Life:	Depends on the action determined based on the study		
Estimated Cost:	Cost estimates for preliminary and final designs will be derived from a conceptual phase 1 stormwater plan, estimated at \$20,000.		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2022
Estimated Time Required for Project Implementation:	2023	Potential Funding Sources:	CWC Stormwater Retrofit Program
Responsible Organization:	Town of Jewett	Local Planning Mechanisms to be Used in Implementation, if any:	Conceptual analysis to include estimated runoff volume from the site, estimated volume of runoff managed through the proposed practice(s), estimated pollutants removed based on published pollutant removal efficiency of chosen practice(s), as well as estimated scheduling, design and construction costs.
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Facility will continue to be impacted by flooding
	There is no other feasible alternative to determine the best mitigation action to take		



	Develop a conceptual phase 1 stormwater plan	\$20,000	Will determine best course of action to take to reduce flooding of CF
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Lexington Annex

This section presents the jurisdictional annex for the Town of Lexington.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
JoEllen Schermerhorn Town of Lexington 3542 Route 42, PO Box 28 Lexington, NY 12452 518-989-6476 x 107 supervisor@lexingtonny.com	Kevin Simmons, Highway Superintendent Town of Lexington 3542 Route 42, PO Box 28 Lexington, NY 12452 518-989-6626 lexhighwa73@yahoo.com
NFIP Floodplain Manager	
Carl Giangrande, Building Inspector, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Lexington had a total population of 770 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	770	Median household income	\$58,359
White	98.1%	In civilian labor force age 16+	
Black or African American	0.1%	Persons with a disability under 65	
American Indian and Alaskan Native	1.2%	Persons under 5 years	4.5%
Asian	0.7%	Persons under 18 years	20.2
Two or more races	0.7%	Persons 65 years and over	21.2
Hispanic or Latino	1.7%	Persons in poverty	
White, non-Hispanic or Latino	97.3	Households with internet	
Foreign born persons	3.8%		

Location and Land Area

The Town of Lexington is one of Greene County’s Mountaintop Towns located in the southwest part of the county within the Catskill State Park. The total land area for Lexington is 79.72 square miles, with 0.04 square miles of that being water.

History

The Town of Lexington was first settled in 1788 as part of the Town of Windham. It was officially separated and incorporated in 1813. The Town was first called New Goshen, after the Connecticut town that many of its early settlers came from but was renamed a few months later to Lexington by Silas Fowler, a captain in the Revolutionary War.



Governing Body

The Town of Lexington consists of an elected board comprised of four Council members and as well as the Town Supervisor. The Town Board meets on the first Tuesday of each month. The Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Pre-COVID, the Town of Lexington generally had minimal development, approximately a few homes built every year. Since 2020, the housing market has seen a marked increase with new homes and rehabilitating old homes. Many of the homes are short term rentals (STR) and the town passed a law controlling their use. A sewer district was installed in the Hamlet of Lexington in 2016 with NYCDEP funding. Commercial growth is encouraged for the hamlet areas.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Town roads		

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Seasonal home owners – Short term Rentals Regulations pertaining to Number of Occupants
Land use	Agricultural, Conservation, Housing Developments
Disproportionately impacted populations	
Climate Change	Solar usage concerns: Solar farms

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.



Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	Roads become washed out, eroded, slope failures, clogged culverts, damage to bridges.
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	2	The Schoharie Creek ice jams causing flooding in the hamlet. Power outages and lack of communication to residents.
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	Severe Storms such as Hurricane Irene caused flooding of most roads destroying bridges, loss of power, lack of communication

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Lexington	28	52	\$1,180,727.63

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
383	4021

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials)



facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Electric Substation	Energy	0	1
EMS Facility	Safety and Security	1	1
Fire Station	Safety and Security	1	1
Government Facility	Safety and Security	1	1
Highway Facility	Transportation	1	1

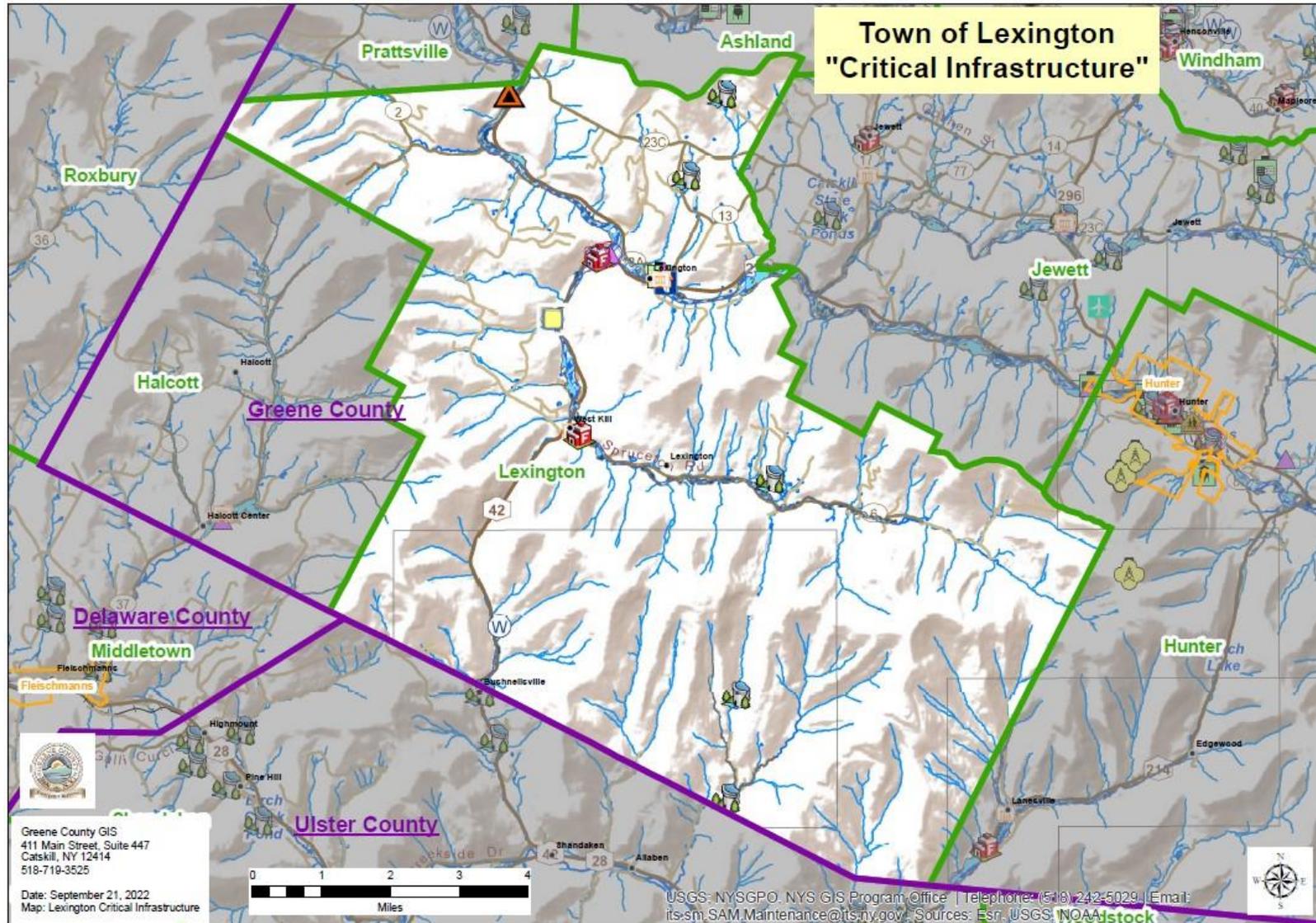
The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns and flooding is of concern here. There are a number of parcels located in the 100-year or 500-year floodplain as well as several critical facilities and 9 repetitive loss properties, based on the most current data available. Therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
8

Sampling of comments received from survey respondents specific to the Jurisdiction
Thank you for making us aware we should be better prepared

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Public meetings	Annual; as needed
Planning / Zoning Committee meetings	

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	Presently, we are in the process of updating our Comprehensive Plan to present and future concerns. The last one was completed in 2003. Plan can be used to implement mitigation actions
Capital Improvement Plan		
Economic Development Plan		



Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis	Yes 2016	The Town completed a Local Flood Analysis (LFA) in 2016 for the Town’s two hamlets to model flood vulnerabilities and the effects of potential mitigation solutions. A Flood Advisory Committee was formed to guide the LFA process and long-term flood mitigation projects and initiatives in the Town.
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	West Kill and Schoharie Stream Management Plans
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year: Planning Board meets monthly to carefully look over any concerns and make possible recommendations to the property owner.
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	The Town also has a guidance document for improved site planning to mitigate stormwater runoff, reduce impervious surface, and preserve and enhance existing natural areas.
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	Members of the Zoning Board are discussing concerns that may need to be updated
Subdivision ordinance	Yes	



Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?



		Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes PT	Yes, to all.
Code Enforcement Officer	Yes PT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?		Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	Yes, The Town has used the program to help fund projects that reduce flood impacts including property protection measures, floodplain reclamation projects, public infrastructure protection, and property buyout/relocation.
GCSWCD Stream Management	Yes	Stream and floodplain restoration, riparian buffer planting, culvert replacement/upsizing



Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	NYC Flood Buyout Program
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g.		



responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Lexington. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
31	Comprehensive Flood Mitigation	Flooding every time it rains	Proceed with comprehensive flood mitigation in Lexington Hamlet center through the projects described in the LFA from 2015: <ul style="list-style-type: none"> • acquire and remove homes on south side of Route 13A; • acquire and remove Lexington Hotel; • lower the sewer pipe between Route 13A and Schoharie Creek; • create floodplain bench; and • replace Route 42 bridge with larger span based on H/H modeling 	Delayed, there are multiple components within this one broad project recommendation.	The Lexington Hotel was approved by the town to go into the NYC voluntary flood buyout program. Negotiations are between property owner and the DEP.	The property owners for the other structures are not interested in a buyout at this time. The state DOT performed work on the Rte 42 bridge, it is not slated for enlargement at this time.	Yes
32	Flood mitigation for properties along Route 23A and Banks Road	Flood mitigation for properties along Route 23A and Banks Road where backwater conditions extend from Schoharie Creek through culverts under Route 23, causing tributaries to flood in the vicinity of these culverts.	Mitigation may include property-specific options (elevations) and conveyance/backwater mitigation projects.	Delayed, not a priority		staff limitations, not a priority	Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
33	Flood mitigation for properties near West Kill Creek	Flooding in Lexington & West Kill Hamlets near West Kill Creek.	Pursue property-specific flood mitigation options in Lexington & West Kill Hamlets near West Kill Creek. The choice of acquisition vs. elevation will depend on the position of each building relative to the West Kill Creek floodway.	Ongoing	Five properties were evaluated for floodproofing measures.	One property owner is advancing with floodproofing design, one was denied because the home is in the floodway; the other three are not interested at this time. The 25% cost share is born by the landowner.	Yes
34	Stream stabilization along West Kill Creek	Upstream of Route 42 in West Kill Hamlet, the West Kill Creek needs stream stabilization to protect the bridge from structural damage during future floods	Stream stabilization along West Kill Creek upstream of the Route 42 bridge in West Kill Hamlet.	Delayed, capacity limitation		staff limitation, not a priority and funding	Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
35	Building Elevations on Route 42 in FEMA SFHA	Elevate buildings in FEMA SFHA	Per the LFA (2015) Elevate buildings in floodplain: 5 on Route 42 and 1 located east of town hall	Ongoing	Some structures were evaluated for floodproofing measures; the town highway garage is recommended for flood buyout.	some property owners not interested in floodproofing. Those who have had a study done, it is up to them if they wish to proceed with mitigation	yes, ongoing, combined with # 36
36	Building Elevations on Spruceton Road and Route 42 in 500-yr Flood Zone	Elevate buildings in 500-yr Flood Zone	Elevate buildings in 500-yr Flood Zone on Spruceton Road (3 including Community Hall) and 1 on Route 42	Ongoing			Yes, ongoing, combined with #35



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
37	Beech Ridge Road Embankment Stabilization Project	A reach of the West Kill above Pushman's bridge on Rte. 42 is unstable causing erosion and sediment loading which threatens the short-term stability of Beech Ridge Road as well as the water quality of the West Kill and Schoharie Creek. The nature of the embankment is soft alluvial and glacial till soils that are eroding at the toe of the road embankment along the West Kill. The instability began during Hurricane Irene in August 2011 and has deteriorated significantly leaving the bank geometry below the roadway highly unstable and in a condition where failure is imminent.	The toe of the eroding bank needs to be stabilized and protected from erosive forces. Due to visible bed rock in the channel bed near the toe of the slope, stacked and pinned rock wall is the likely best treatment of the embankment failure. Approximately 170 feet of the embankment's length will need to be stabilized to a height of approximately 25 feet. Soil borings would be conducted to determine the depth of the bedrock and soil characteristics to inform design of the rockery wall. A keyway will need to be excavated into the bed rock to create a stable foundation for the wall. After stacking each course of the wall there will be holes drilled through the rocks and into the bedrock and pins would be installed to connect the rocks to the bed rock. Site mobilization is an important factor because the problem area is difficult to access. Whereas, the stream restoration treatments are traditional, accessing the site will be difficult and add to the cost. Stabilizing the toe of the eroding bank will protect it from further instability, sediment loading, and eliminate impacts to transportation infrastructure on the slope	Ongoing	Greene County Soil & Water commissioned a geotechnical engineer to assess the stability of the Beech Ridge Road embankment in 2019, which included soil borings. Report concluded a qualified design build contractor is needed to investigate and design two possible options for stabilizing the road - 1) soil nailing to improve the existing soil portions of the slope or 2) possibly drive sheeting and use tiebacks at the top of the slope.		Yes



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TLEX 1 Old #31	Town of Lexington	Comprehensive Flood Mitigation Lexington Hamlet	1, 2, 3	Flood	Reduce flood damages to structures in floodplain by reducing surface water elevations in hamlet area.	Comprehensive flood mitigation in Lexington Hamlet center through the projects as recommended in the 2016 LFA: <ul style="list-style-type: none"> • acquire and remove homes on south side of Route 13A; • acquire and remove Lexington Hotel; Hotel enrolled in NYC FBO program • lower the sewer pipe between Route 13A and Schoharie Creek; • create floodplain bench; and • replace Route 42 bridge with larger span based on H/H modeling 	No	Medium - High	Ongoing	\$7-\$8 million (mostly in bridge enlargement)	PDM/HMGP/DOT/Local CWC for eligible projects, NYCDEP for eligible acquisitions	Reduce or eliminate damages to structures in floodplain
TLEX 2 Old #32	Town of Lexington	Flood mitigation for properties along Route 23A and Banks Road	1, 2, 3, 4	Flood	Reduce flood damages to structures in floodplain.	Mitigation may include property-specific options (elevations) and conveyance/backwater mitigation projects.	No	Low - medium	Ongoing	\$5,000/property is available for property protection studies through the CW FHMIP	CWC, HMGP, SMIP (NYCDEP/GCS WCD)	Reduce or eliminate damages to structures in floodplain



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TLEX 3 Old #33	Town of Lexington	Flood mitigation for properties near West Kill Creek	1, 2, 3, 4	Flood	Reduce flood damages to structures in floodplain	Pursue property-specific flood mitigation options in Lexington & West Kill Hamlets near West Kill Creek. The choice of acquisition vs. elevation will depend on the position of each building relative to the West Kill Creek floodway.	No	Medium - High	Ongoing based on property owners interest	Varies with recommendations	CWC, PDM/HMGP, NYCDEP for acquisitions	Reduce or eliminate damages to structures in floodplain
TLEX 4 Old # 34	Town of Lexington	Stream stabilization along West Kill Creek	1, 2, 3	Flood	Reduce flood damages to structures in floodplain	Stream stabilization along West Kill Creek upstream of the Route 42 bridge in West Kill Hamlet.	No	Low	2024-2025	TBD	SMIP, NYCDEP, CWC, PDM/HMG	Reduce or eliminate damages to structures in floodplain
TLEX 5 Old # 35 and # 36	Town of Lexington	Building Elevations on Spruceton Rd and Route 42 in FEMA SFHA	1, 2, 3, 4	Flood	Reduce flood damages to structures in floodplain	Work with property owners to flood proof structures (elevation preferred method where feasible) in floodplain and where that is not practical, consider voluntary flood buyout	No	Medium - High	Ongoing	TBD/\$5,000 per property will generate a property protection study funded by CWC	CWC, PDM/HMG	Reduce or eliminate damages to structures in floodplain



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TLEX 6 Old # 37	Town of Lexington	Beech Ridge Road Embankment Stabilization Project	1, 2, 3	Flood	A reach of the West Kill above Pushman's bridge on Rte. 42 is unstable causing erosion and sediment loading which threatens the short-term stability of Beech Ridge Road as well as the water quality of the West Kill and Schoharie Creek. The nature of the embankment is soft alluvial and glacial till soils that are eroding at the toe of the road embankment along the West Kill. The instability began during Hurricane Irene in August 2011 and has deteriorated significantly leaving the bank geometry below the roadway highly unstable and in a condition where failure is imminent.	Greene County Soil & Water commissioned a geotechnical engineer to assess the stability of the Beech Ridge Road embankment in 2019, which included soil borings. Report concluded a qualified design build contractor is needed to investigate and design two possible options for stabilizing the road - 1) soil nailing to improve the existing soil portions of the slope or 2) possibly drive sheeting and use tiebacks at the top of the slope.	No	High	2024	Est. \$250,000 - \$400,000	PDM/H MGP	Prevent failure of the roadway and prevent future erosion and sediment buildup



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TLEX 7	Town of Lexington	Howard Rd. feasibility study	1, 2, 3, 4	Flood	Assess instability of West Kill affecting Howard Road	The town applied for CWC funding to have a feasibility study of stabilizing the West Kill near Howard Rd. When the LFA was developed in 2016, Howard Road, a town road, and five homes located on the road, were not threatened by the West Kill. The mitigation modeling that was done for this area at that time included reducing roughness and removing sediment, concluding both had little to no impact on predicted water surface elevations. Since that time, the stream has migrated east toward the road, undermining the road and threatening homes on the road. If funding is approved an evaluation will be done to identify the causes the instability to the road, which is threatening homes, and what would be recommended to safeguard the road and homes. The feasibility study will include mitigation solutions to minimize flood damage to the road, and homes, and cost estimates.	No	High	2022	\$10,000 feasibility study	CWC, PDM/HMG, SMIP	Determine the appropriate mitigation action to stabilize the road and protect homes

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Lexington		
Project Name:	Beech Ridge Road Embankment Stabilization Project		
Project Number:	TLEX 6 Old # 37		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	A reach of the West Kill above Pushman's bridge on Rte. 42 is unstable causing erosion and sediment loading which threatens the short-term stability of Beech Ridge Road as well as the water quality of the West Kill and Schoharie Creek. The nature of the embankment is soft alluvial and glacial till soils that are eroding at the toe of the road embankment along the West Kill. The instability began during Hurricane Irene in August 2011 and has deteriorated significantly leaving the bank geometry below the roadway highly unstable and in a condition where failure is imminent.		
Action or Project Intended for Implementation			
Description of the Solution:	Greene County Soil & Water commissioned a geotechnical engineer to assess the stability of the Beech Ridge Road embankment in 2019, which included soil borings. Report concluded a qualified design build contractor is needed to investigate and design two possible options for stabilizing the road - 1) soil nailing to improve the existing soil portions of the slope or 2) possibly drive sheeting and use tiebacks at the top of the slope.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to at least the 100-year flood event	Estimated Benefits (losses avoided):	Prevent failure of the roadway and prevent future erosion and sediment buildup
Useful Life:	Est. 25 years		
Estimated Cost:	Est. 250,000 - \$400,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2024
Estimated Time Required for Project Implementation:	2024	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Town of Lexington	Local Planning Mechanisms to be Used in Implementation, if any:	LFA
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road will fail
	Continue to patch and maintain road and embankment	Unknown	This would only be a temporary fix and road would eventually fail
	Stabilize the Beech Ridge Embankment	\$250,000 - \$400,000	This would prevent failure of the roadway and prevent future erosion and buildup
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Lexington		
Project Name:	Howard Rd. feasibility study		
Project Number:	TLEX 7		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Assess instability of West Kill affecting Howard Road		
Action or Project Intended for Implementation			
Description of the Solution:	The town applied for CWC funding to have a feasibility study of stabilizing the West Kill near Howard Rd. When the LFA was developed in 2016, Howard Road, a town road, and five homes located on the road, were not threatened by the West Kill. The mitigation modeling that was done for this area at that time included reducing roughness and removing sediment, concluding both had little to no impact on predicted water surface elevations. Since that time, the stream has migrated east toward the road, undermining the road and threatening homes on the road. If funding is approved an evaluation will be done to identify the causes the instability to the road, which is threatening homes, and what would be recommended to safeguard the road and homes. The feasibility study will include mitigation solutions to minimize flood damage to the road, and homes, and cost estimates.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Depends on the mitigation action(s) identified in the study	Estimated Benefits (losses avoided):	Determine the appropriate mitigation action to stabilize the road and protect homes
Useful Life:	Depends on the mitigation action(s) identified in the study		
Estimated Cost:	\$10,000 for the feasibility study		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2022
Estimated Time Required for Project Implementation:	2023	Potential Funding Sources:	CWC, PDM/HMGP, SMIP
Responsible Organization:	Town of Lexington	Local Planning Mechanisms to be Used in Implementation, if any:	LFA
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road will fail and homes will be impacted
	There are no other feasible alternatives to the Study		
	Conduct feasibility study	\$10,000	Will be able to determine the appropriate actions to take to mitigate the issues.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of New Baltimore Annex

This section presents the jurisdictional annex for the Town of New Baltimore.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Jeff Ruso Town of New Baltimore 3809 County Route 51 Hannacroix, NY 12087 518-756-6671 x 7 jruso@townofnewbaltimore.org	Alan VanWormer, Highway Superintendent Town of New Baltimore 3809 County Route 51 Hannacroix, NY 12087 518-567-4961 highway@townofnewbaltimore.org
NFIP Floodplain Manager	
Allan Jourdin, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of New Baltimore had a total population of 3,226 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	3,226	Median household income	\$65,862
White	78.4%	In civilian labor force age 16+	
Black or African American	0%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0%	Persons under 18 years	20.2%
Two or more races	0%	Persons 65 years and over	32.8%
Hispanic or Latino	21.7%	Persons in poverty	5%
White, non-Hispanic or Latino	78.4%	Households with internet	
Foreign born persons			

Location and Land Area

The Town of New Baltimore is located in the northeast corner of Greene County along the Hudson River. It is bordered by Albany and Columbia Counties. I-87 and US 9W pass through the Town. The total land area for name is 43.03 square miles, with 1.60 square miles of that being water.

History

The Town of New Baltimore dates back to 1713. The Town of New Baltimore was incorporated on March 15, 1811, from parts of the Town of Coxsackie. Prior to its incorporation, the Town had thriving mills and farms. Farming grew and continued through the years and still continues on a smaller scale today.



Governing Body

The Town of New Baltimore consists of an elected Board composed of four council members and as well as the Town Supervisor. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Yes	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	No
Land use	No
Disproportionately impacted populations	No
Climate Change	No

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	2	



Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	
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National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
New Baltimore	13	6	\$32,422.06

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
310	310

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

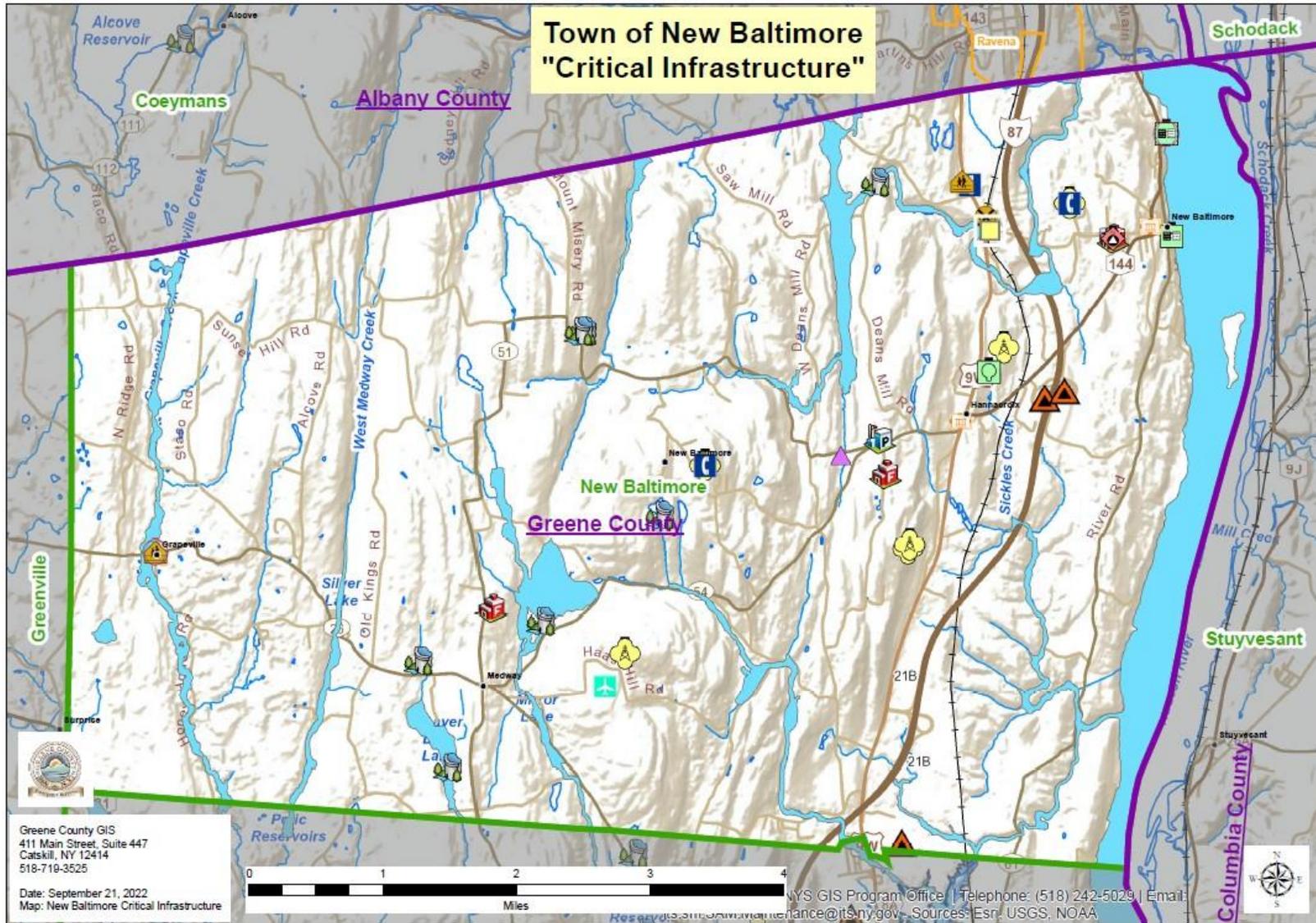
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Public Waste Water Treatment Facility	Food, Water and Shelter	1	1
School	Food, Water and Shelter	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s River Towns. Areas in the Town that are subject to flooding are Mill Street, in the area of the waste water pump station, and other low lying areas in the Hamlet of New Baltimore, which lies on the banks of the Hudson River. There are a number of parcels located in the 100-year or 500-year floodplain as well as a few critical facilities located in the floodplain. Therefore, the areas susceptible to flooding should be the focus of the Town’s mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
12

Sampling of comments received from survey respondents specific to the Jurisdiction
None

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Encourage residents to attend meetings	Twice a month

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		
Economic Development Plan		
Emergency Operations (Response) Plan	Yes	



Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year: Does not allow for building in wetland or flood prone areas
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes, FT	Yes, to all.
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager	Yes FT	Yes, to all.
Community Planner		



Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of New Baltimore. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
38	Madison Avenue East Drainage System	Drainage system on Madison Avenue East is faulty	Replace faulty drainage system on Madison Avenue East with larger diameter more effective system	Not yet completed			yes
39	Concrete Flood Wall at Waste Water Pump Station	Reduce the chances of pump station being flooded as it has in the past.	Install concrete flood wall at waste water pump station to reduce the chances of pump station being flooded as it has in the past.	Not yet completed			yes
40	Staff Training	Staff training needing in hazard mitigation.	Train all staff including code enforcement and building department regarding hazard mitigation.	Completed			No



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
41	Medway Grapeville Fire Station Backup Power	The current standby generator is unrepairable if it should go down again due to its age. This is a very high priority as this generator provides electrical power to the fire station during power outages which is part of our critical infrastructure and is used as an emergency shelter for the western portion of the Town.	Replacement of emergency standby generator	Completed			No
42	Replacement of Wastewater Treatment Plant	Upgrade of wastewater treatment plant needed.	Replacement of wastewater treatment plant.	Completed in 2021			No



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TNEW 1 Old # 38	Town of New Baltimore	Madison Avenue East Drainage System	1, 2, 3	Flood	Drainage system on Madison Avenue East is faulty	Replace faulty drainage system on Madison Avenue East with larger diameter more effective system	No	Medium	Medium	\$20,000	PDM/HMGP	Reduce or eliminate flooding of roadway to keep it open
TNEW 2 Old #39	Town of New Baltimore	Concrete Flood Wall at Waste Water Pump Station	1, 2, 3, 4	Flood	Reduce the chances of pump station being flooded as it has in the past.	Install concrete flood wall at waste water pump station to reduce the chances of pump station being flooded as it has in the past.	Yes	Medium	Medium	TBD	PDM/HMGP	Reduce or eliminate the possibility of flooding at this CF

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of New Baltimore		
Project Name:	Madison Avenue East Drainage System		
Project Number:	TNEW 1 - Old #38		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Drainage system on Madison Avenue East is faulty		
Action or Project Intended for Implementation			
Description of the Solution:	Replace faulty drainage system on Madison Avenue East with larger diameter more effective system		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year event	Estimated Benefits (losses avoided):	Reduce or eliminate flooding of roadway to keep it open
Useful Life:	Est. 30+ years		
Estimated Cost:	\$20,000		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	2025
Estimated Time Required for Project Implementation:	2025	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Town of New Baltimore	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road will eventually fail and continue to flood
	Continue to clean and maintain the drainage system	Unknown	This is only a temporary fix and doesn't mitigation the issue
	Replace the current system with a more effective one	\$20,000	Reduce of eliminate flooding and keep road open
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of New Baltimore		
Project Name:	Concrete Flood Wall at Waste Water Pump Station		
Project Number:	TNEW 2 - Old #39		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Reduce the chances of pump station being flooded as it has in the past.		
Action or Project Intended for Implementation			
Description of the Solution:	Install concrete flood wall at waste water pump station to reduce the chances of pump station being flooded as it has in the past.		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 500-year event	Estimated Benefits (losses avoided):	Reduce or eliminate the possibility of flooding at this CF
Useful Life:	Est. 100+ years		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	2025
Estimated Time Required for Project Implementation:	2025	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Town of New Baltimore	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Building will continue to have flooding issues
	Elevate the pump station	Unknown	This is not a feasible alternative due to the nature of the structure
	Install a concrete wall at the pump station	TBD	Reduce or eliminate the possibility of flooding at this CF
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Prattsville Annex

This section presents the jurisdictional annex for the Town of Prattsville.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Greg Cross, Supervisor Town of Prattsville 14517 Main St Prattsville, NY 12468 518-299-3125	
NFIP Floodplain Manager	
Mike Traver, Building Inspector, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Prattsville had a total population of 774 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	774	Median household income	\$46,692
White	97.1%	In civilian labor force age 16+	
Black or African American	0.1%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0.6%	Persons under 18 years	
Two or more races	0.7%	Persons 65 years and over	
Hispanic or Latino	1.1%	Persons in poverty	9.4%
White, non-Hispanic or Latino		Households with internet	
Foreign born persons			

Location and Land Area

The Town of Prattsville is one of Greene County’s Mountaintop Towns. It is located in the northwest corner of the county within the Catskill State Park. The Town shares its northern border with Schoharie County and its western border with Delaware County. The total land area for Prattsville is 19.73 square miles, with 0.11 square miles of that being water.

History

The Town, originally called Schoharie Kill, was first settled around 1763. The Town of Prattsville was established in 1824 from a portion of the Town of Windham. In 1848, some of the area of the Town was carved out to become the Town of Ashland. The Town was named after Zadock Pratt, a congressman and prominent citizen who built a tannery larger than any other in the world at the



time. The population of the Town grew from 830 in 1830 to 1,989 in 1850. By 1845 all the hemlock bark had been extracted and Pratt was forced to close the tannery, which resulted in the loss of a significant amount of the population.

Governing Body

The Town is governed by a Town Board that is composed of a Supervisor and four Council members. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Similar to other neighboring communities, Prattsville has seen an increase in demand for housing, in large part spurred by the COVID pandemic. Homes, especially rundown homes, have been purchased, fixed up and used as either full-time or part-time rentals. The short term rental market has ballooned causing some concern about lack of housing for full time residents. A number of residences along Main Street in the heart of Prattsville have been elevated taking advantage of funding through the NYC Watershed.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Not in floodplain, but new development has been on the rise in the town	Local law for flood damage prevention from FEMA and NYSDEC model law (passed 2008)	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Will be considered with future comp plan
Land use	Will be considered with future comp plan
Disproportionately impacted populations	Will be considered with future comp plan
Climate Change	Will be considered with future comp plan

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains



information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	Most recent December 25, 2020; worst on record Hurricane Irene (2011)
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	3	2/28/2010 – major snowstorm, lot of accumulation, impaired traveling for days
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	2	

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Prattsville	35	98	\$4,341,211.67

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
219	234

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released



concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
EMS Facility	Safety and Security	1	1
Government Facility	Safety and Security	2	2
Public Waste Water Treatment Facility	Food, Water and Shelter	0	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

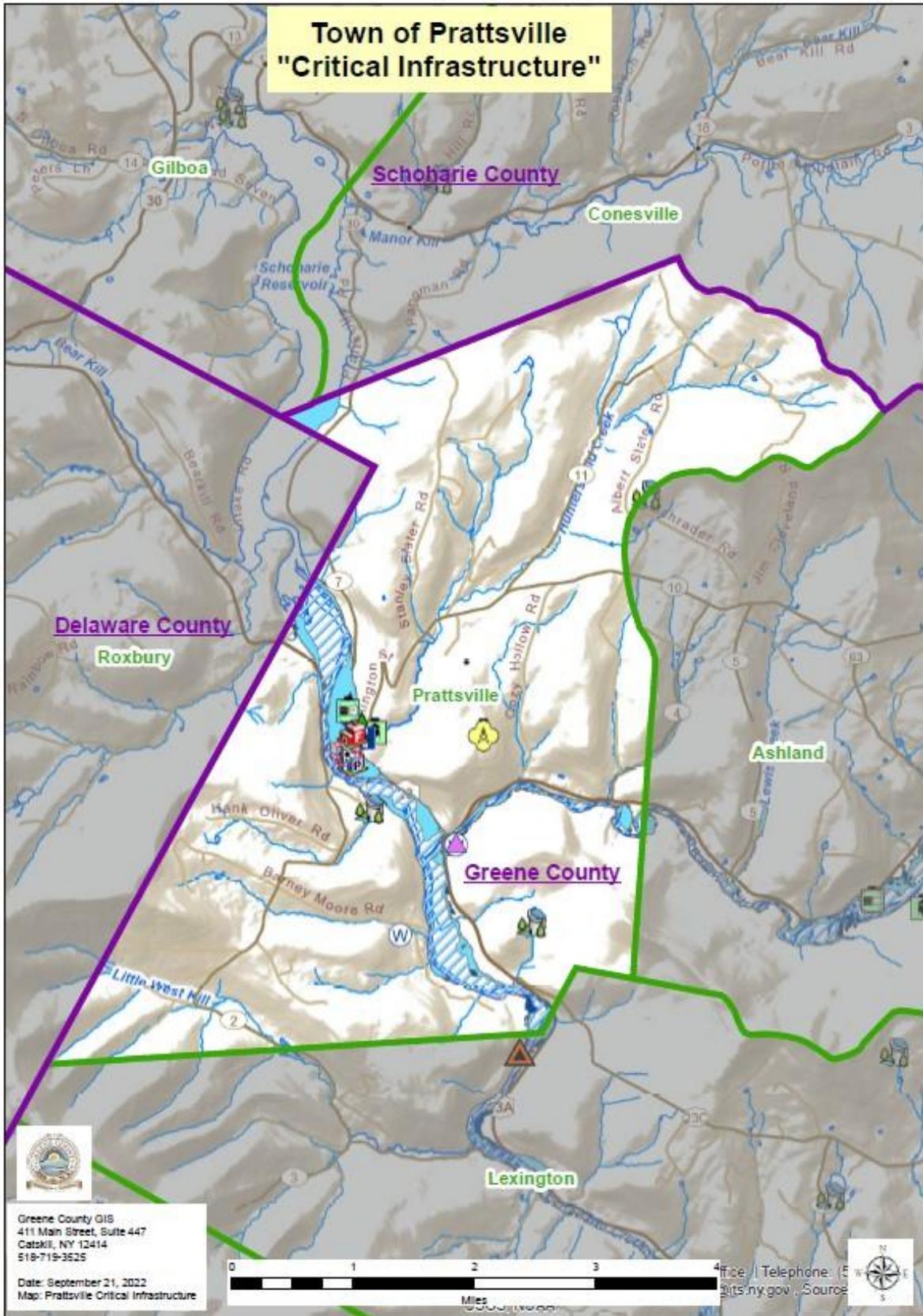
Summary of Vulnerabilities

The jurisdiction is one of Greene County’s Mountaintop Towns located within the Catskill State Park. Flooding along the Schoharie Creek is common and resulted in near destruction of the Village during Hurricane Irene in 2011. There are a number of parcels located in the 100-year or 500-year floodplain

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



as well as a number of critical facilities located in the floodplain. There are also 6 repetitive loss properties, based on the most current data available. Therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
14

Sampling of comments received from survey respondents specific to the Jurisdiction
Thank you for your leadership in getting this information out. The Prattsville Art Center is happy to help develop a disaster plan with the town.
10 yrs ago Prattsville flooded. The reason was the creeks were never cleaned out. Since the flood the creeks STILL have not been dredged. Flooding will happen again if this is not done!
Making sure that homes(mobile) that went in after hurricane Irene were actually put on slabs the is a requirement but not followed. I know from personal experience.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Public Meetings and use of digital media	

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	In process of updating plan
Capital Improvement Plan	Yes	



Economic Development Plan		
Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis	Yes 2013	Engineering analysis identified flood prone areas in the town, threatening public and private infrastructure, and modeled mitigation actions for flood relief. Projects implemented from study have made the town more resilient. Other actions will build upon this.
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	NY Rising Community Reconstruction Plan
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance	Yes	
Floodplain ordinance		



Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes	Floodplain Management/Basin Plan
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes PT	Yes, to all.



Code Enforcement Officer	Yes PT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes PT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	Elevating structures in floodplain Resource is available.
GCSWCD Stream Management Implementation Program (SMIP)	Yes	Stream restoration, streamside buffer plantings, education and outreach, culvert upsizing Resource is available.
Community Development Block Grants	Yes	



Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	NYC Voluntary Flood Buyout
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	Yes	Town and not for profits have organized educational programs over the years, e.g., building of the Gilboa Dam, invasive species identification



Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Prattsville. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
43	Made in Prattsville Business Recovery Park	The Town of Prattsville experienced unprecedented flood damage from Hurricane Irene on August 28, 2011. The Town sustained millions of dollars of worth of damage to its Main Street business and residential district. A flood study was conducted addressing the watershed hydrology, existing riverine morphology, existing channel hydraulics and floodwater elevations along a one mile stretch of the Schoharie Creek that parallels Prattsville's business district.	Reclaiming 12 acres of floodplain on the Schoharie Creek in Prattsville's Business District, relocating the Huntersfield Creek outlet (a tributary to Schoharie), removing berms, and select channel dredging are preliminary recommendations in the local flood analysis conducted for Prattsville (April 2012, Malone & MacBroom). In order to successfully relocate Dimensional Hardwoods, the anchor business, out of the floodplain and remain a viable business for the town, a relocation strategy needs to be developed drawing on many different funding source.	Cancelled	Some projects implemented (bridge enlargements, berm removal) and some no longer relevant. Dimensional Hardwoods is no longer operational, landowner moved out of town, did not have interest in pursuing relocation strategy		No. Some projects implemented (bridge enlargements, berm removal) and some no longer relevant.



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
44	Made in Prattsville Business Recovery Park	A relocation strategy needs to include purchasing a large enough parcel to relocate to, infrastructure investment (water, sewage, utilities), highway access, permitting, and design, and possible site remediation of the existing parcel if hazardous material is found (due to past usage this is a possibility).		Cancelled			No. Some projects implemented (bridge enlargements, berm removal) and some no longer relevant.
45	Made in Prattsville Business Recovery Park	The flooding from Tropical Storm Irene wiped out the factory, equipment, and the kilns. Looking ahead, the bat factory is cultivating a “Made in Prattsville” strategy that will capture the heart of baseball fans while at the same time drive energy independence and help to jump start Prattsville’s community recovery. The company’s focus is to produce wood products and promote the local and regional forestry industry throughout the state of New York.		Cancelled			No. Some projects implemented (bridge enlargements, berm removal) and some no longer relevant.



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
46	Berm and Floodplain Alteration	Flooding of homes near Route 23	Survey lowering berm below State 23 bridge to determine flood reduction to nearby homes. This should be done in combination with floodplain vegetation clearing.	Completed			No
47	Deepen and widen the Schoharie Creek	Reduce flooding along the Schoharie Creek	Deepen and widen the Schoharie Creek in the vicinity of the business district using HEC RAS modeling performed for the local flood study (2014). Channel configuration spanning 210 to 260 feet in width anticipates drop in water surface elevations from two to almost seven feet during the 100-year event.	Delayed, will be implemented based on property owners' interest and participation.			Yes
48	Route 23 Bridge Replacement	Replace the Route 23 Bridge with a larger span to pass higher flood flows	Replacement of the Route 23 bridge based on modeling performed for the local flood analysis (2014).	Completed			No



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TPRA 1 Old #47	Town of Prattsville	Deepen and widen the Schoharie Creek	1, 2	Flood	Reduce surface water elevations above state route 23 bridge	Deepen and widen the Schoharie Creek in the vicinity of the business district using HEC RAS modeling performed for the local flood study (2014). Channel configuration spanning 210 to 260 feet in width anticipates drop in water surface elevations from two to almost seven feet during the 100-year event.	NO	Medium	Contingent on landowners participation	TBD	CWC FHMP, GCSWCD SMIP, HMGP	Reduce surface water elevations above state route 23
TPRA 2	Town of Prattsville	Barrier dam removal	1, 2, 3, 4	Flood	Reduce surface water elevations above barrier dam	Consider removing fish barrier dam in Schoharie per LFA. Modeling showed flood water elevations would be reduced immediately upstream benefiting existing homes and the roadway, with minor effect on how water is diverted onto Main Street.	NO	Low - medium	2023-2024	TBD	NYDEC, CWC	Reduce flood water elevations and remove threat to homes and roadway
TPRA 3	Town of Prattsville	Letter of Map Revision for Schoharie - post bridge replacement	1, 2, 3,	Flood	Reflect changes to NFIP map as a result of the 23-bridge enlargement	Letter of Map Revision to change floodplain boundary. Surveying floodplain is needed to show changes in stream channel profile after bridge enlargement	NO	Medium - High	2023-2024	TBD	NYDEC, CWC, HMGP	Update NFIP maps to show changes in the floodplain boundary.

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Prattsville		
Project Name:	Deepen and widen the Schoharie Creek		
Project Number:	TPRA 1 - Old #47		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Reduce surface water elevations above state route 23 bridge		
Action or Project Intended for Implementation			
Description of the Solution:	Deepen and widen the Schoharie Creek in the vicinity of the business district using HEC RAS modeling performed for the local flood study (2014). Channel configuration spanning 210 to 260 feet in width anticipates drop in water surface elevations from two to almost seven feet during the 100-year event.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	100-year flood event	Estimated Benefits (losses avoided):	Reduce surface water elevations above state route 23
Useful Life:	Est. 40+ years		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Contingent on landowner participation
Estimated Time Required for Project Implementation:	Contingent on landowner participation	Potential Funding Sources:	CWC FHMIP, GCSWCD SMIP, HMGP
Responsible Organization:	Town of Prattsville	Local Planning Mechanisms to be Used in Implementation, if any:	LFA
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Flooding will continue to impact roadway
	There are no other feasible alternative options to lower the water elevations		
	Deepen and widen the noted section of the Schoharie Creek	TBD	Reduce water surface elevations
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Prattsville		
Project Name:	Letter of Map Revision for Schoharie - post bridge replacement		
Project Number:	TPRA 3		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The state route 23 bridge was enlarged, mitigating flood risk and changing the floodplain boundary.		
Action or Project Intended for Implementation			
Description of the Solution:	Letter of Map Revision to change floodplain boundary. Surveying floodplain is needed to show changes in stream channel profile after bridge enlargement		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Update NFIP maps to show changes in the floodplain boundary.
Useful Life:	N/A		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium – High	Desired Timeframe for Implementation:	2023-2024
Estimated Time Required for Project Implementation:	2023-2024	Potential Funding Sources:	NYDEC, CWC, HMGP
Responsible Organization:	Town of Prattsville	Local Planning Mechanisms to be Used in Implementation, if any:	LFA, Local Flood Damage Prevention ordinance
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Floodplain information on NFIP maps will be inaccurate
	There is no other alternative action to update floodplain changes on the NFIP maps		
	Surveying floodplain to show changes in stream channel profile	TBD	NFIP maps will have updated information on the floodplain
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Town of Windham Annex

This section presents the jurisdictional annex for the Town of Windham.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Thomas Hoyt, Supervisor Town of Windham PO Box 96, 371 State Route 296 Hensonville, NY 12436 518-734-4170 windhamnysupervisor@gmail.com	Gary Thorington, Highway Superintendent Town of Windham PO Box 96, 371 State Route 296 Hensonville, NY 12436 518-734-4244
NFIP Floodplain Manager Dominick Caropreso, Building and Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Town of Windham had a total population of 1,708 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	1,708	Median household income	\$51,339
White	89.3%	In civilian labor force age 16+	
Black or African American	4.2%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0%	Persons under 18 years	13.2%
Two or more races	2.2%	Persons 65 years and over	25.1%
Hispanic or Latino	4.3%	Persons in poverty	8%
White, non-Hispanic or Latino	89.3%	Households with internet	
Foreign born persons			

Location and Land Area

The Town of Windham is a Mountaintop Town in the west-central part of Greene County, within the northern boundary of the Catskill State Park. The Batavia Kill flows past the Hamlet of Windham. The total land area for name is 45.34 square miles, with 0.14 square miles of that being water.

History

The Town of Windham was formed in March 1798, as a part of Ulster County. On March 25, 1800, the Town became the western half of Greene County. The towns of Ashland, Halcott, Hunter, Jewett, Lexington, Prattsville and Windham were created from what some called “Old Windham.” In 1813, the towns of Lexington and Hunter were taken from the southern part of Windham. In 1833, the



Town of Prattsville was created from the northwest corner of Windham and in 1848 the Town of Ashland was formed from parts of Prattsville and Windham.

Governing Body

The Town is governed by an elected Supervisor and Town Board consisting of four councilmen. The Town Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Similar to other regional communities, the Town of Windham has seen an increase in development trends, a great deal fueled by the COVID pandemic (2020 – present). Windham’s housing market has seen a marked increase with new homes and rehabilitating old homes. Many of the homes are short term rentals (STR) and the town is monitoring those impacts to the broader community.

The Town did a complete review of its Comprehensive Plan beginning in 2020 and finishing in 2021. The CP identifies the hamlet designated areas and the business district on Main Street, Windham as areas to concentrate development consistent with past patterns. Focus new development in and around infrastructure (water, septic district) and preserve the outer regions, maintaining the pristine, rural character. Challenges identified in the CP include lack of cell and internet service, housing for full-time and younger residents, and year-round recreation to name a few. The Town does not have zoning and has done a remarkable job directing growth over the years. There have been proposals, however, in recent years prompting the Town to form a committee to consider some form of use control.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Yes	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Being discussed
Land use	Being discussed
Disproportionately impacted populations	
Climate Change	

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information



on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdictions were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	2	Flash flood
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	Heavy snow, ice storm
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	3	Windstorm

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Windham	68	49	\$2,746,214.75

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
513	548

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials)



facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
ARC Shelter	Food, Water and Shelter	1	1
Bus Garage	Transportation	0	1
Communications Facility	Communications	1	1
EMS Facility	Safety and Security	1	1
Fire Station	Safety and Security	1	1
Government Facility	Safety and Security	1	1
Private Water Facility/Well	Food, Water and Shelter	3	3
Public Waste Water Facility	Food, Water and Shelter	2	4
Public Water Facility/Well	Food, Water and Shelter	5	5
School	Food, Water and Shelter	0	1
Tier 2 Facility	Hazardous Materials	1	1

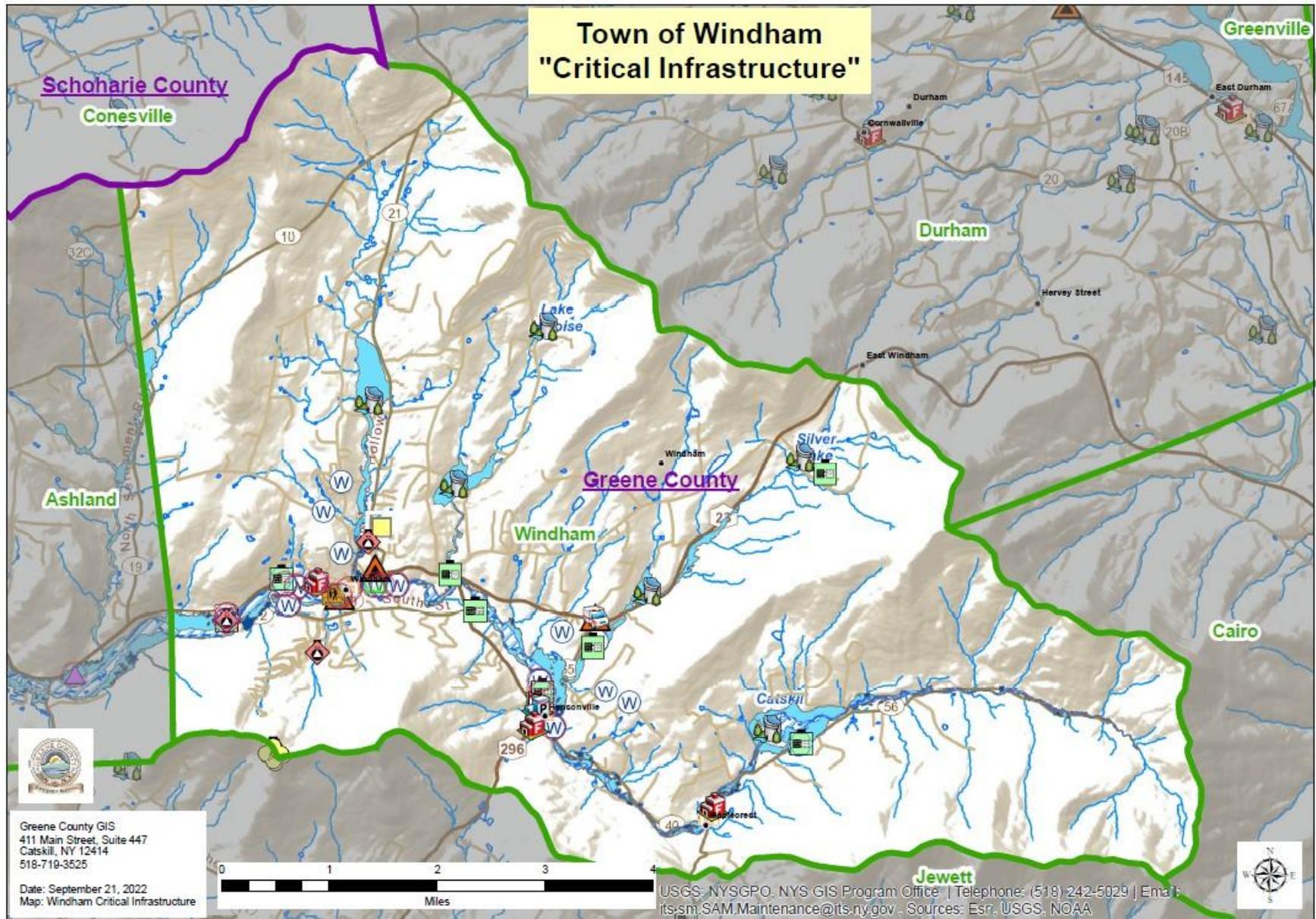
¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns and is generally concerned with flooding related to storm water. There are a large number of parcels located in the 100-year or 500-year floodplain as well as numerous critical facilities located in those areas. Therefore, the areas susceptible to flooding should be the focus of the Town's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
17

Sampling of comments received from survey respondents specific to the Jurisdiction
Building codes in place but not enforced.
Our road has been washed out several times in the 50 years that we have been in this house (Irene was one). There is no cellular service available here and if we lose electric power there is no phone or internet service. (Our phone is connected via internet.) our biggest concern is the eventual forest fire. I am not aware of any preparedness information that is available.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Social media/town website	As needed
Board meetings	As needed

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2021	
Capital Improvement Plan		



Economic Development Plan		
Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis	Yes 2015	An LFA was completed in October 2015 for 8.8 miles of the Batavia Kill to model flood vulnerabilities and potential mitigation solutions. A Flood Advisory Committee was formed to guide the LFA process and long-term flood mitigation projects and initiatives in the Town.
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Batavia Kill Stream Management Plan (2007) Generic Environmental Impact Statement (2010) NY Rising Community Reconstruction Plan (2014)
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change. In addition, a Committee has been formed and will meet the 4 th Thursday of each month.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements		
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance	Yes	



Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?



Building Official	Yes FT	Yes, to all.
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	
GCSWCD Stream Management Implementation Program (SMIP)	Yes	



Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Town has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household		



preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Town of Windham. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
49	Culvert Replacement	This culvert four-foot undersized corrugated metal pipe culvert needs to be replaced to provide additional capacity to reduce local flooding impacts.	Upgrade drainage infrastructure along CR 56 in the area of CR 56 to improve stormwater runoff with a six foot by six foot box culvert. This project will expand capacity, improve mobility, ensure access to the dam, and reduce localized flooding impacts. This is a NYCR project, consultant (MMI), expected to complete summer 2016.	Completed			No
50	Back-up Power	Provide for emergency generators at Town of Windham emergency shelters. These shelters will be used in the event of evacuation of people within the inundation zone, associated with a flash flooding event resulting from a dam failure.	Emergency generators at Town of Windham emergency shelters needed. These shelters will be used in the event of evacuation of people within the inundation zone, associated with a flash flooding event resulting from a dam failure. This is a NYCR project, CT Male consultant	Completed			No
51	WWTP and Water Systems	Protect WWTP & Water systems	Consolidation with Ski Windham complete	Completed			No



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
52	Local Flood Analysis Flood Mitigation Actions	Implement comprehensive flood mitigation actions in high risk areas	Work cooperatively with GCSWCD, NYCDEP and other funders to implement comprehensive flood mitigation actions in high risk areas described in the Local Flood Analysis from 2015: 1) Remove existing structures out of the floodway (HRA #3), specifically homes located at 120 County Rte 65, and at 109 County Route 65 (status unknown) are located in the FEMA floodway and should be removed. 2) Implement Alt. 4.2 in LFA: Replace Main Street (Rt. 23) bridge and create floodplain bench on Mitchell Hollow Creek by acquiring and relocating three commercial structures (5327, 5330 and 5331 State Rte. 23). Passed BCA. Significant flood reduction potential 3. Implement Alt. 4.3 – floodplain enhancement downstream of Church Street which would require buying out and relocating GNH Lumber.	DELAYED, homeowners not willing to sell their homes for this project	Significant investment working with GNH and funders to relocate business including purchase of parcel out of floodplain. Due to financial limitations, GNH was not in a position to advance the relocation.		Yes, based on homeowner and municipal board approval
53	Drainage Study in Hamlet of Hensonville	Sheet flow flooding	Perform drainage study in Hamlet of Hensonville on SR 296 and CR 65 to identify remediation of sheet flow flooding	Delayed, no funding			Yes
54	Mad (Pratt) Brook stream bank restoration alternatives	Stream bank restoration needed.	Continue to support the study of Mad (Pratt) Brook stream bank restoration alternatives. Part of MMI scope of work, NYCR - 2016 project	Completed			No



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
55	Road Drainage and Condition Survey	Survey of road drainage and condition alternatives needed.	Perform a town-wide survey of road drainage and condition alternatives.	In the works, Fall of 2024			Yes



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TWIN 1 Old #52	Town of Windham	Local Flood Analysis Flood Mitigation Actions	1, 2, 3	Flood	Implement comprehensive flood mitigation actions in high-risk areas	Work cooperatively with GCSWCD, CWC, NYCDEP and other funders to implement comprehensive flood mitigation actions in high risk areas described in the Local Flood Analysis: 1) Remove existing structures out of the floodway (HRA #3), specifically homes located at 120 County Rte 65, and at 109 County Route 65 (status unknown). 2) Implement Alt. 4.2 in LFA: Replace Main Street (Rt. 23) bridge and create floodplain bench on Mitchell Hollow Creek by acquiring and relocating three commercial structures (5327, 5330 and 5331 State Rte. 23). Passed BCA. Significant flood reduction potential 3. Implement Alt. 4.3 – floodplain enhancement downstream of Church Street which would require buying out and relocating GNH Lumber.	No	Medium	Depends on property owner interest and town approval	TBD, ~\$7-8 million (mostly due to Rt. 23 bridge replace ment)	FEMA HMGP, NYCFFB O, CWC FHMIP, GCSWCD SMIP, NYSDOT (bridge replacement)	Reduce or eliminate impacts from flooding
TWIN 2 Old #53	Town of Windham	Drainage Study in Hamlet of Hensonville	1, 2, 3	Flood	Sheet flow flooding in the Hamlet of Hensonville.	Perform drainage study in Hamlet of Hensonville on SR 296 and CR 65 to identify remediation of sheet flow flooding	No	Medium	2023-2025	TBD	PDM, HMGP, Greene Co. Highway , CWC	Identify actions to be taken to reduce or eliminate flooding



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
TWIN 3 Old #55	Town of Windham	Road Drainage and Condition Survey	1, 2, 3	Flood	Survey of road drainage and condition alternatives needed.	Perform a town-wide survey of road drainage and condition alternatives.	No	Medium	2024-2025	TBD	Town of Windham operating budget, CDBG/PDM connect with specific project	Identify actions to be taken to reduce or eliminate flooding

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Windham		
Project Name:	Drainage Study in Hamlet of Hensonville		
Project Number:	TWIN 2 - Old #53		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Sheet flow flooding in the Hamlet of Hensonville		
Action or Project Intended for Implementation			
Description of the Solution:	Perform drainage study in Hamlet of Hensonville on SR 296 and CR 65 to identify remediation actions for sheet flow flooding.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Identify actions to be taken to reduce or eliminate flooding
Useful Life:	Depends on mitigation actions identified in the study		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	2023-2025
Estimated Time Required for Project Implementation:	2023-2025	Potential Funding Sources:	PDM, HMGP, Greene Co. Highway, CWC
Responsible Organization:	Town of Windham	Local Planning Mechanisms to be Used in Implementation, if any:	Municipality
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Flooding will continue
	There are no other alternates to the Study		
	Conduct drainage study to identify remediation actions.	TBD	Identify actions to be taken to reduce or eliminate flooding
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Town of Windham		
Project Name:	Road Drainage and Condition Study		
Project Number:	TWIN 3 - Old #55		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Survey of road drainage and condition alternatives needed.		
Action or Project Intended for Implementation			
Description of the Solution:	Perform a town-wide survey of road drainage and condition alternatives.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Identify actions to be taken to reduce or eliminate flooding
Useful Life:	Depends on mitigation actions identified in the study		
Estimated Cost:	TBD		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	2024-2025
Estimated Time Required for Project Implementation:	2024-2025	Potential Funding Sources:	Town of Windham Operating Budget, CDBG/PDM connecting to a specific project
Responsible Organization:	Town of Windham	Local Planning Mechanisms to be Used in Implementation, if any:	Municipality, LFA
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Flooding will continue and areas of concern will not be documented
	There are no other alternates to the Study		
	Perform a town-wide survey of road drainage and condition alternatives.	TBD	Identify actions to be taken to reduce or eliminate flooding
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Village of Athens Annex

This section presents the jurisdictional annex for the Village of Athens.

Hazard Mitigation Planning Team

Primary Point of Contact		Alternate Point of Contact	
Amy Serrago, Mayor Village of Athens 2 First Street Athens, NY 12015 518-945-1551		Christopher Sprague, DPW Supervisor Village of Athens 2 First Street Athens, NY 12015 518-945-2618	
NFIP Floodplain Manager			
Edward Tercasio, Code Enforcement Officer			
Additional Planning Team Contributors			
Joe Myers (Northdome), Water/Sewer Admin		Jason Preisner (Lamont Engineering) Village Engineer	

Jurisdiction Profile

Based upon the current U.S. Census, the Village of Athens had a total population of 1,586 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	1,586	Median household income	\$65,054
White	83.4%	In civilian labor force age 16+	
Black or African American	1.4%	Persons with a disability under 65	
American Indian and Alaskan Native	0.1%	Persons under 5 years	
Asian	4.5%	Persons under 18 years	15.2%
Two or more races	1.2%	Persons 65 years and over	26%
Hispanic or Latino	9.5%	Persons in poverty	11.7%
White, non-Hispanic or Latino	83.4%	Households with internet	
Foreign born persons	9.6%		

Location and Land Area

The Village of Athens is located in Greene County along the west bank of the Hudson River within the eastern portion of the Town of Athens. The total land area for Athens is 4.6 square miles, with 1.2 square miles of that being water.

History

The land that is currently the Village of Athens was purchased from the Makicanni Tribe in 1655 and became three settlements: Loonenburg (1685), Esperanza (1794), and Athens (1800). The Village of Athens was incorporated in 1805 and was a port on the Hudson-Athens Ferry. It thrived as a hub for shipbuilding, brick making, and ice harvesting. In 1935, when the Rip Van Winkle Bridge opened just



4 miles to the south, it eliminated the need for the ferry. The Village of Athens architecture is much the same as it was in the 1800s and there are more than 300 buildings in the Village that are on national and state historical registers.

Governing Body

The Village is governed by a Village Board comprised of the mayor and four trustees. The Village Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs. Each member serves a 2-year term.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No, just working on improvements to existing buildings to improve flood resiliency.	Zoning code in MUW updated to discourage industrial development. LWRP to undergo up-date.	Currently no solid plans are in place. Ideas that have been discussed include mitigation actions and a focus on sustain-ability.

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Water/Sewer infrastructure studies to identify potential weaknesses and places for improvement/replacement as we see more and more full time residents.
Land use	Currently working to upgrade our LWRP with consideration of potential hazards to our water-front.
Disproportionately impacted populations	N/A
Climate Change	Formed Conservation Advisory Council to explore actions we can take related to mitigating effect of climate change on our community.

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains



information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	A significant rain event on December 25, 2020 caused the Hudson to rise above the bulkhead of Athens Riverfront Park and along the waterfront. A local marina was flooded and at least one resident had to be evacuated by boat.
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	3	Early December 2019, several feet of snow.
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	2	Hurricanes Irene and Sandy both caused the river to rise up. Irene had the water halfway up the first block of 2nd St. (btw. Water & Washington).

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Athens	9	23	\$725,254.35

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
241	272



Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Government Facility	Safety and Security	1	1
Port	Transportation	1	2
Public Waste Water Treatment Facility	Food, Water and Shelter	2	2
Tier 2 Facility	Hazardous Materials	0	1

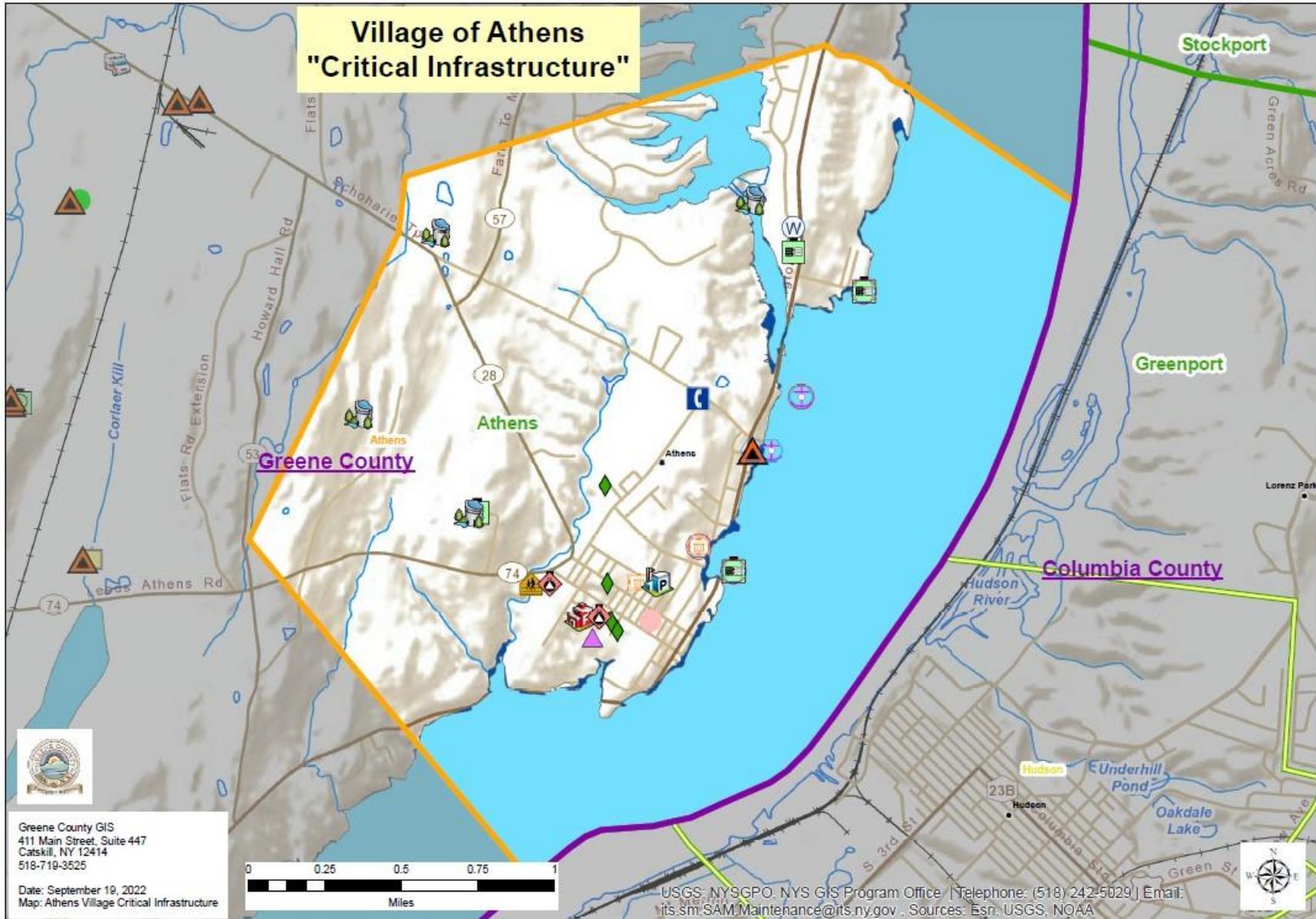
¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's River Towns located along the Hudson River. Flooding occurs adjacent to the Hudson River, along major tributaries, and steep slopes. There are a number of parcels located in the 100-year or 500-year floodplain as well as several critical facilities located in those areas. There are also 3 repetitive loss properties, based on the most current data available. Therefore, the areas susceptible to flooding should be the focus of the Village's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
29

Sampling of comments received from survey respondents specific to the Jurisdiction
Does Greene County have an emergency program that alerts residents on their phones? I have one for Amber Alerts. I would think there might be something available for municipalities to connect w residents.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Attend meetings, updates to Annex	When needed

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2020	Improved hazard mitigation, planning and communication on such matters is a listed goal in the updated comprehensive plan. Particularly to mitigate the effects of flooding, severe storms and improve public awareness and communication on these issues. Current studies underway to devise a plan to move forward on these



		improvements. This plan can be used to implement mitigation actions.
Capital Improvement Plan		
Economic Development Plan		
Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		We will continue to consider these mitigation plans as we move forward on plans for infrastructure and business district improvements and upgrades in the Village of Athens.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:2008
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes 2013	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes 2022	Local Law 2 of 2021 - We made changes to our zoning in the mixed use waterfront district to restrict industrial uses that could potentially worsen threats to our



		waterfront and overall environment from flooding, storm surges etc.
Subdivision ordinance	Yes 2013	
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes	Flood and Historical Laws (2008)
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	Chairperson has been in place for many years and has extensive knowledge of Village Code and Zoning
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.



Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official		
Code Enforcement Officer	Yes PT	Yes, to all.
Emergency Manager		
Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?		Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		



GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Village has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		



Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?	Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.	



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Village of Athens. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
56	Culvert Replacement	Culvert replacement needed.	Replace culvert and widen roadway on Union Street.	Completed: Spring 2022		Had to plan for funding over the course of approx. three years. Then materials (pipe) were delayed due to supply chain issues.	No



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
57	Wastewater Treatment Plant Flood Mitigation	<p>The Village of Athens Sewage plant is located right on the Hudson River in the flood zone on Water Street and Market Streets. Storm water previously entered the plant and created high inflow and infiltration and created a violation of the SPDES permit for required usage of the plant. Renovation of the Main Waste Water Treatment was initiated after the development of the last plan. The renovation of the Main Waste Water Plant is now complete, eliminating several potentials sources of storm damage. New clarifiers, a new sludge press, waterproof equipment and better drainage upgrades have helped to mitigate storm effects. Electrical service to plant has been relocated to higher area within the plant. Underground fuel tank has been removed. High volumes still have the potential to cause problems.</p>	<p>New influent pumps should be purchased to assure that increased inflow during storms can be properly handled.</p>	<p>Not yet completed</p>	<p>remains pending</p>	<p>We are in the planning phase of significant upgrades to our water/sewer systems. Funding will be the issue.</p>	<p>Yes</p>



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
58	Brick Row Sewer Plant	In addition to the main sewer plant in the Village, Brick Row has a small sewer plant that serves the residents of Brick Row, the second historic district in the Village. This sewer plant is in a flood zone on the Hudson River at the end of Brick Row. The Village is involved in talks with the Sleepy Hollow Lake management to build a series of pump stations which would remove the Brick Row Waste Water Plant from operation and pump the sewage from SHL and Brick Row directly to the main plant. Problems with the Brick Row site would be mitigated by this action.	Removal of this plant and construction of pump station and forcemain. System would be a public/private partnership with a local development.	Not yet completed	remains pending	Partnership with local development did not materialize. We still plan to accomplish this when we can. Again, funding is lacking.	Yes
59	Village of Athens Drainage System	The Village of Athens drainage system is extremely old and does not even exist in some areas. Consequently, run off from heavy rains does not drain properly. Water frequently runs in the road instead of under or along side of the road.	Perform a full study of the drainage system in the Village of Athens.	Currently working on a partial study as part of our larger systems study. We have focused on storm drains that tie directly into the sewers at this time.	Partial review of certain "problem" areas in combination with a larger study.	Funding	Yes, minor wording changes to adjust for work completed



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
60	New Sewer and Water Lines /I & I Work	In addition to a new drainage system and in conjunction with the sewage plant and drainage system work, new sewer lines should be placed where necessary. In addition to a new drainage system, sewer lines should be replaced where necessary. Many sewer lines have broken down or cracked over the years and created an I&I problem.	Consider replacement of sewer. Ongoing I&I work and the rehab of manholes and sewer mains.	In process	I&I study completed, will prioritize the worst areas and move forward on repairs/updates.	Will need to secure significant funding to do this project in full.	Yes -minor wording changes to adjust for work completed
61	Relocate Department of Public Works Building	Consider relocation of Public Works Building. The Department of Public works Building is on the Hudson River and houses the Department of Public Works and their equipment. The building is in a flood zone and all equipment needs to be removed during a heavy rain event because of flooding (the machinery shed is a particular concern). However, the problem of cost for this project remains an issue.	The Department of Public Works should have a new building erected outside of the flood zone near the fire department building.	Completed: Feb. 2021		Project went smoothly despite minor Covid-related supply chain delays. Didn't set us back too far.	No



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VATH 1 Old #57	Village of Athens	Wastewater Treatment Plant Flood Mitigation	1, 2, 4	Flood	Potential Flooding of WTP	New influent pumps should be purchased to assure that increased inflow during storms can be properly handled.	Yes	Medium	Medium	TBD	Will need to seek out funding, unsure of source at this time.	Ability to increase flow during storms to prevent flooding
VATH 2 Old #58	Village of Athens	Brick Row Sewer Plant	1, 2, 4	Flood	In addition to the main sewer plant in the Village, Brick Row has a small sewer plant that serves the residents of Brick Row, the second historic district in the Village. This sewer plant is in a flood zone on the Hudson River at the end of Brick Row. The Village is involved in talks with the Sleepy Hollow Lake management to build a series of pump stations which would remove the Brick Row Waste Water Plant from operation and pump the sewage from SHL and Brick Row directly to the main plant. Problems with the Brick Row site would be mitigated by this action.	Removal of this plant and construction of pump station and forcemain. System would be a public/private partnership with a local development.	Yes	Low	Long term	TBD	Will need to seek out funding, unsure of source at this time. Original plan to partner with private local development tabled indefinitely.	Remove this CF from the flood zone



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VATH 3 Old #59	Village of Athens	Village of Athens Drainage System	1, 2, 3	Flood	The Village of Athens drainage system is extremely old and does not even exist in some areas. Consequently, run off from heavy rains does not drain properly. Water frequently runs in the road instead of under or along side of the road.	Perform a full study of the drainage system in the Village of Athens. Currently working on a partial study of drainage systems as part of a larger systems study. Currently focused on storm drains that tie directly into the sewers.	No	High	Current portion of study should be completed by September. Will require additional work to complete full drainage study.	Study is approx. \$20,000 with full project approx. \$ 2 Million	Using money received through ARPA for current portion of study.	Increase drainage in areas and reduce runoff on roadway
VATH 4 Old #60	Village of Athens	Potential replacement of sewer. Ongoing I&I work and the rehab of manholes and sewer drains.	1, 3	Flood	Water main breaks; Potential water contamination	Potential replacement of sewer. Ongoing I&I work and the rehab of manholes and sewer mains. Recently completed I&I study which has helped us prioritize areas with the most significant problems so we can move forward with incremental repairs and upgrades as funding becomes available.	No	High	2024-2025	\$1 - 1.3 Million	CFA grant cycle 2023. Still determining best source. May need to raise water rates.	Reduce the potential of loss of water and/or water contamination

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Athens		
Project Name:	Village of Athens Drainage System		
Project Number:	VATH 3 - Old#59		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	The Village of Athens drainage system is extremely old and does not even exist in some areas. Consequently, run off from heavy rains does not drain properly. Water frequently runs in the road instead of under or along side of the road.		
Action or Project Intended for Implementation			
Description of the Solution:	Perform a full study of the drainage system in the Village of Athens. Currently working on a partial study of drainage systems as part of a larger systems study. Currently focused on storm drains that tie directly into the sewers.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year event	Estimated Benefits (losses avoided):	Increase drainage in areas and reduce runoff on roadway
Useful Life:	Est. 100+ years		
Estimated Cost:	Study is approx. \$20,000 with full project approx. \$ 2 Million		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Current portion of study should be completed by September.
Estimated Time Required for Project Implementation:	Will require additional work to complete full drainage study.	Potential Funding Sources:	Using money received through ARPA for current portion of study
Responsible Organization:	Village of Athens	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	System will eventually fail from age
	Continue maintaining current system	Unknown	This is not a fix for the problem and system will eventually fail
	Perform study of the system and implement actions identified in study	Study is approx. \$20,000 with full project approx. \$ 2 Million	A new system will increase drainage and ensure there is drainage where it currently doesn't exist – will reduce or eliminate flooding
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Athens		
Project Name:	Potential replacement of sewer. Ongoing I&I work and the rehab of manholes and sewer drains.		
Project Number:	VATH 4 - Old #60		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Water main breaks; Potential water contamination		
Action or Project Intended for Implementation			
Description of the Solution:	Potential replacement of sewer. Ongoing I&I work and the rehab of manholes and sewer mains. Recently completed I&I study which has helped us prioritize areas with the most significant problems so we can move forward with incremental repairs and upgrades as funding becomes available.		
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year event	Estimated Benefits (losses avoided):	Reduce the potential of loss of water and/or water contamination
Useful Life:	Est. 100+ years		
Estimated Cost:	\$1 – \$1.3 Million		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2024-2025
Estimated Time Required for Project Implementation:	2024-2025	Potential Funding Sources:	CFA grant cycle 2023. Still determining best source. May need to raise water rates.
Responsible Organization:	Village of Athens	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Water main breaks will continue and eventually fail
	Continue to patch water main breaks	Unknown	This is not a fix and system will eventually fail
	Repair/upgrade system	\$1 – \$1.3 Million	Reduce the potential of loss of water and/or water contamination
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Village of Catskill Annex

This section presents the jurisdictional annex for the Village of Catskill.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Patrick McCulloch, Assistant Superintendent Village of Catskill 422 Main Street Catskill, NY 12414	Peter Grasse, Village President Village of Catskill 422 Main Street Catskill, NY 12414 pgrasse@villageofcatskill.net
NFIP Floodplain Manager	
Michael Ragaini, Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Village of Catskill had a total population of 3,745 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	3,745	Median household income	\$33,901
White	70%	In civilian labor force age 16+	
Black or African American	17%	Persons with a disability under 65	
American Indian and Alaskan Native	4.4%	Persons under 5 years	
Asian	1.5%	Persons under 18 years	12%
Two or more races	1.6%	Persons 65 years and over	18%
Hispanic or Latino	3.3%	Persons in poverty	32%
White, non-Hispanic or Latino	70%	Households with internet	
Foreign born persons	6.2%		

Location and Land Area

The Village of Catskill is located on the banks of the Hudson River in Greene County along the northeast portion the Town of Catskill and on the southern border of the Town of Athens. The total land area for name is 2.86 square miles, with 0.58 square miles of that being water.

History

The Village of Catskill was part of a land purchase made in 1684. The Village was incorporated in 1806.



Governing Body

The Village is governed by a Village Board composed of the Village President and four Trustees. The Village Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Yes – Capital Improvements at Waste Water Filtration Plant	Yes	Marina Drive new development 10 units, flood zone

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Comprehensive Plan
Land use	Comprehensive Plan
Disproportionately impacted populations	
Climate Change	Comprehensive Plan

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	Flooding on West Main St.



Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	1	

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Catskill	51	40	\$2,423,114.66

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
227	279

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the

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updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

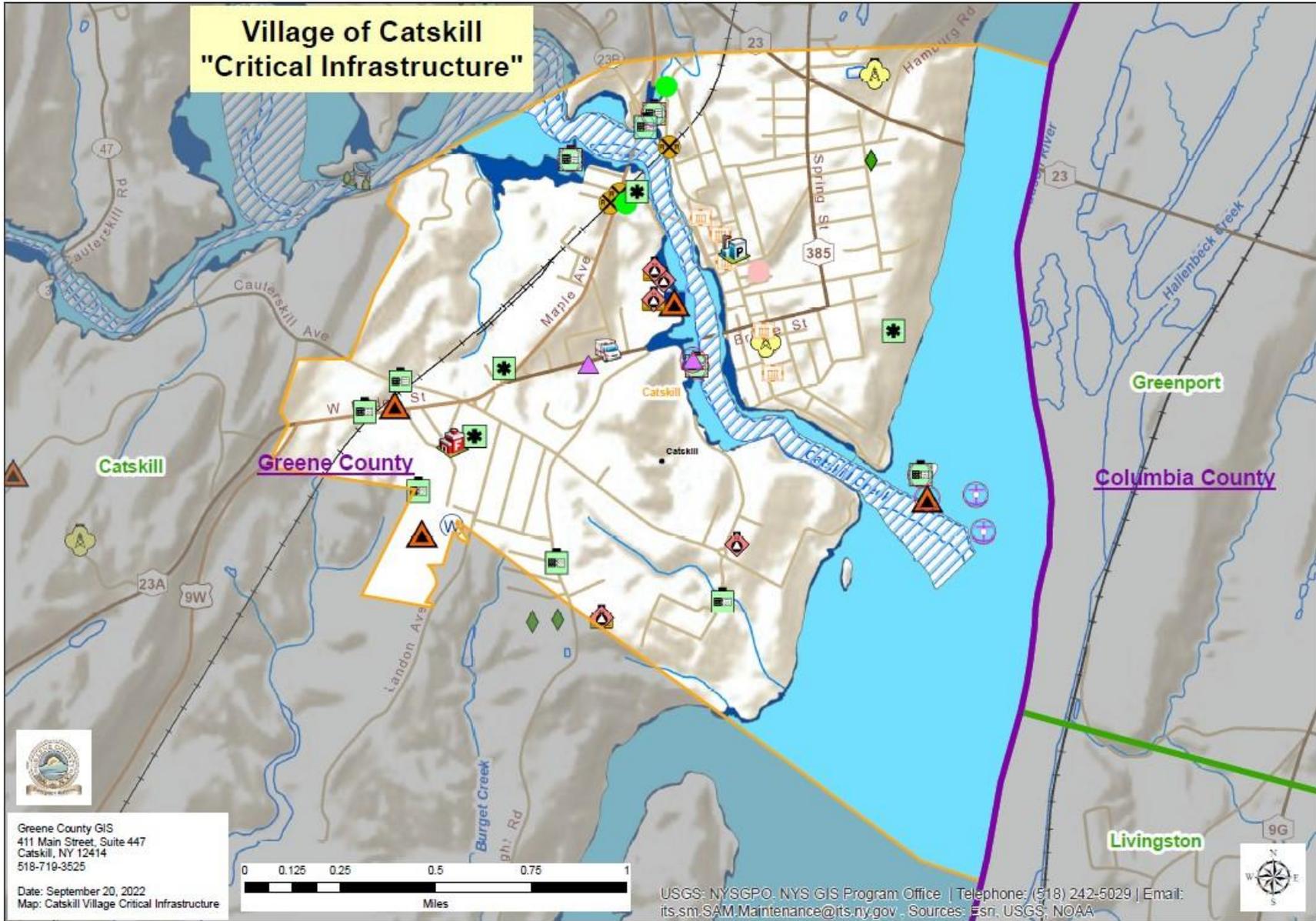
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Port	Transportation	1	1
Public Waste Water Facility	Food, Water and Shelter	1	2
Public Waste Water Pump Station	Food, Water and Shelter	2	2
Public Waste Water Treatment Facility	Food, Water and Shelter	1	1
Tier 2 Facility	Hazardous Materials	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's River Towns along the Hudson River. Flooding occurs in low lying areas and the Village is impacted by major rain events. There are a number of parcels located in the 100-year or 500-year floodplain as well as 5 repetitive loss properties, based on the most current data available. In addition, there are several critical facilities located in those areas, therefore, the areas susceptible to flooding should be the focus of the Village's mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
9

Sampling of comments received from survey respondents specific to the Jurisdiction
I am interested in reviewing your Greene County Emergency Plan. I would like to see if there are any plans to utilize Greene County Transit as part of any mass evacuation procedure and review or create a combined process in the event that we are needed.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Will communicate this plan with the public at regular board meetings	As often as needed

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2021	
Capital Improvement Plan		
Economic Development Plan		



Emergency Operations (Response) Plan	Yes	Mentions all known hazards and includes plans. Can be used to implement mitigation actions
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance		
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official		
Code Enforcement Officer		
Emergency Manager		
Community Planner		



Superintendent of Highways		
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Village has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Village of Catskill. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
62	Wastewater Treatment Plant Flood Mitigation	Flooding of the Wastewater Treatment Plant Control and pump facility due to storm surge or heavy rain. When flooded the building and the motors and pumps that pump raw sewage into the treatment process are at risk. We have experienced flooding at the plant during Hurricane Irene and Storm Surge Sandy. We suffered approximately \$62,000.00 of damage to the plant during Storm Surge Sandy.	<p>Extend the height of the concrete wall surrounding the entrance to the wet well and pump gallery. This will enable the building to sustain higher flood levels.</p> <p>Install aluminum plates on all the glass doors and windows of the building to prevent a breach at any of those locations during a flood event.</p> <p>Install outward opening doors on the wetwell and drywell outside entrances to prevent a breach of those doors during a flood event.</p>	Completed Nov. 2020		all listed work was installed as well as a new mechanical bar screen	No
63	Implementation of Resilient Catskill Plan			Unknown status			No, unclear what this action is



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VCAT 1	Village of Catskill	Stormwater separation East side of Village.	1, 2, 3	Flood	The stormwater collection and piping systems and village sewer system run together, which creates unnecessary volume of water through the sewer treatment facility and more importantly, during heavy rainfall event, creates sewage backups and sewage to escape onto public streets.	This project will separate the stormwater collection and piping system from the village's sewer system. The project will involve excavating alongside all affected village streets and placing new stormwater pipes, catch basins and associated fixtures. This is a large project which is in the planning stages.	No	Medium	Second quarter of 2029	\$14 Million	Village funds, BRIC, NYS EFC	Eliminate sewage backups that cause sewage to escape onto public streets
VCAT 2	Village of Catskill	Culvert replacement at Thompson Street and Spring Street	1, 2, 3	Flood	Currently the culvert undersized to handle the volume of water during heavy rains. This causes erosion around the catch basin extending into the street which needs constant repair.	This project will replace the current culvert with a larger one, upsize the catch basin and restructure the road in the area to minimize adverse effects in the event the new size culverts capacity is intermittently exceeded.	No	High	Third quarter of 2023	\$50,000	Village funds, BRIC	Eliminate road damage and flooding

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Catskill		
Project Name:	Stormwater separation East side of Village.		
Project Number:	VCAT 1		
Risk / Vulnerability			
Hazard of Concern:	Flooding		
Description of the Problem:	The stormwater collection and piping systems and village sewer system run together, which creates unnecessary volume of water through the sewer treatment facility and more importantly, during heavy rainfall event, creates sewage backups and sewage to escape onto public streets.		
Action or Project Intended for Implementation			
Description of the Solution:	This project will separate the stormwater collection and piping system from the village's sewer system. The project will involve excavating alongside all affected village streets and placing new stormwater pipes, catch basins and associated fixtures. This is a large project which is in the planning stages.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	100-year flood	Estimated Benefits (losses avoided):	Eliminate sewage backups that cause sewage to escape onto public streets
Useful Life:	Est. 50+ years		
Estimated Cost:	\$14 Million		
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	2027
Estimated Time Required for Project Implementation:	Second quarter of 2029	Potential Funding Sources:	Village funds, BRIC, NYS EFC
Responsible Organization:	Village of Catskill	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Roads will continue to have sewage seep on to it following heavy rains
	There are no other alternative actions to mitigate this issue		
	Install new stormwater pipes and catch basins	\$14 Million	Project will eliminate sewage from escaping onto public roads
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Catskill		
Project Name:	Culvert replacement at Thompson Street and Spring Street		
Project Number:	VCAT 2		
Risk / Vulnerability			
Hazard of Concern:	Flooding		
Description of the Problem:	Currently the culvert undersized to handle the volume of water during heavy rains. This causes erosion around the catch basin extending into the street which needs constant repair.		
Action or Project Intended for Implementation			
Description of the Solution:	This project will replace the current culvert with a larger one, upsize the catch basin and restructure the road in the area to minimize adverse effects in the event the new size culverts capacity is intermittently exceeded.		
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	100-year flood	Estimated Benefits (losses avoided):	Eliminate road damage and flooding
Useful Life:	Est. 30+ years		
Estimated Cost:	\$50,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Third quarter 2023
Estimated Time Required for Project Implementation:	Third quarter 2023	Potential Funding Sources:	Village funds, BRIC
Responsible Organization:	Village of Catskill	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Road will continue to flood
	Continue to repair catch basin and street	Unknown	This is only a temporary fix to the problem and does not mitigate the issue
	Replace current culvert and catch basin and restructure the road	\$50,000	This project will eliminate flooding and erosion around the catch basin and roadway
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Village of Coxsackie Annex

This section presents the jurisdictional annex for the Village of Coxsackie.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Mark R. Evans, Mayor Village of Coxsackie 119 Mansion Street Coxsackie, NY 12051 518-731.2718	Nikki Berezna, Village Clerk Village of Coxsackie 119 Mansion St. Coxsackie, NY 12051 518-731-2718
NFIP Floodplain Manager	
Michael Ragaini, Building Inspector/Code Enforcement Officer	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Village of Coxsackie had a total population of 2,746 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	2,746	Median household income	\$58,074
White	96.1%	In civilian labor force age 16+	
Black or African American	0.1%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0.6%	Persons under 18 years	21.3%
Two or more races	0%	Persons 65 years and over	23.9%
Hispanic or Latino	3.2%	Persons in poverty	6%
White, non-Hispanic or Latino	96%	Households with internet	
Foreign born persons	5.8%		

Source: US Census Bureau (2020). American Community Survey 5-year estimates.

Location and Land Area

The Village of Coxsackie is in Greene County along the west bank of the Hudson River, near U.S. Route 9W. The total land area for name is 2.59 square miles, with 0.42 square miles of that being water.

History

The Upper Village (known as West Coxsackie) was the first settlement in the Village. At the start of the 1800s, the area where the Village now sits was purchased by Eliakim Reed, where he established a small wharf. The business district of the Village was laid out in 1810 and grew rapidly due to the



shipping of farm goods and ice to the New York City area by way of the Hudson River. The Village of Cossackie was incorporated on April 5, 1867.

Governing Body

The Village is governed by the Mayor and four Trustees. The Trustees sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Yes	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	Yes, to some degree
Land use	Yes
Disproportionately impacted populations	No
Climate Change	Yes

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	April 2022
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	3	Every winter



Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	2	July 7, 2021
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National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Coxsackie	15	15	\$251,480.03

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
146	189

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

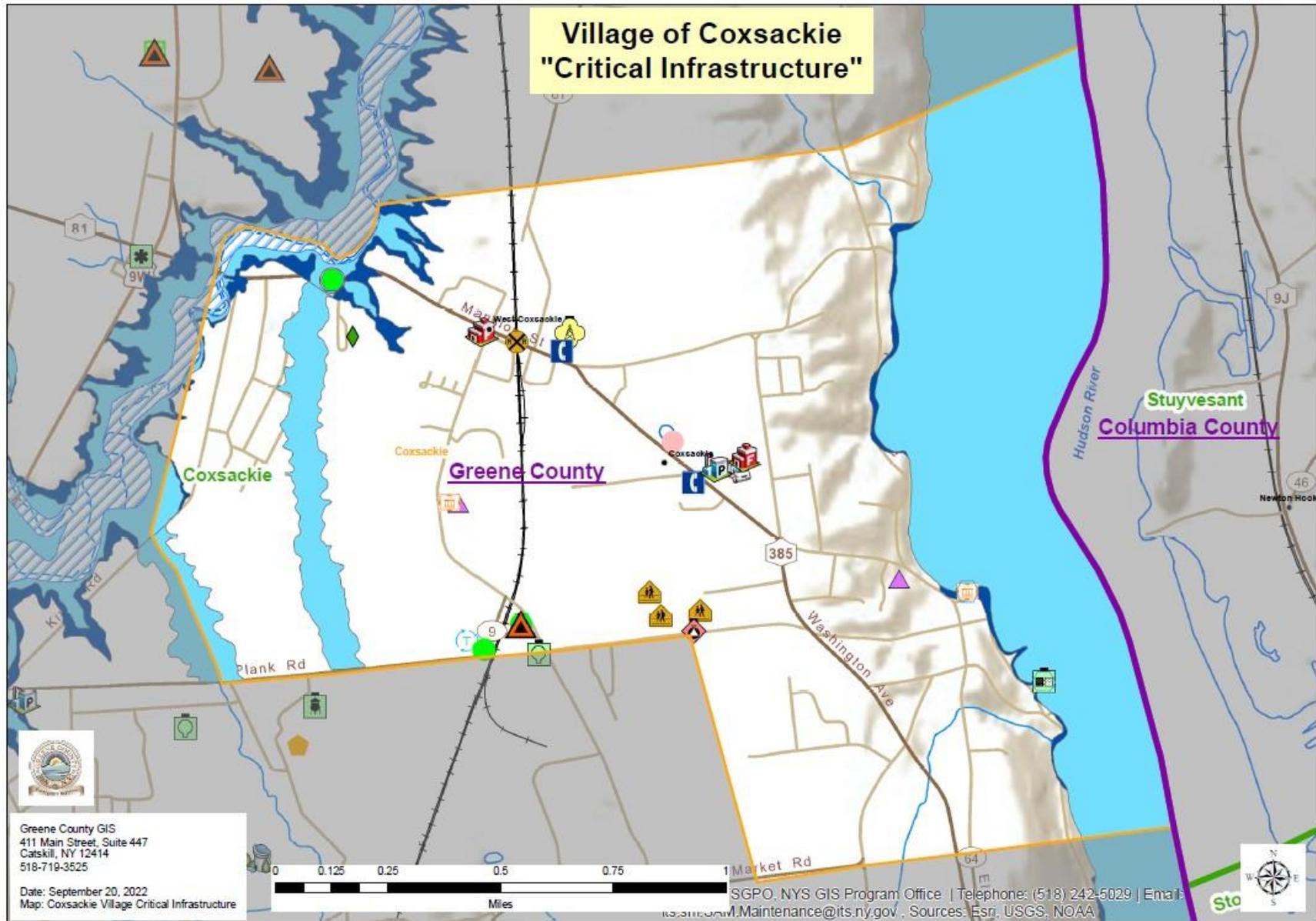
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Gas Facility	Energy	1	1
Government Facility	Safety and Security	0	1
Public Waste Water Treatment Facility	Food, Water and Shelter	0	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County’s River Towns located along the Hudson River. Flooding occurs in low lying areas including the underpass of the CSX Railway, along the Cocksackie Creek, and along the Hudson River. There are a number of parcels located in the 100-year or 500-year floodplain as well as 3 repetitive loss properties, based on the most current data available. In addition, there are a few critical facilities located in those areas, therefore, the areas susceptible to flooding should be the focus of the Village’s mitigation actions to ensure the safety of their residents and the community as a whole.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
6

Sampling of comments received from survey respondents specific to the Jurisdiction
Could use more information on recommendations for disaster preparedness kits, what recovery resources are out there. Information on flood mitigation for River communities such as the Village of Coxsackie.

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Posting on website, bring attention to it at meetings	Yearly

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		
Economic Development Plan		



Emergency Operations Plan		
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan		
Local Flood Analysis		
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance	Yes	Floodplain Management/Basin Plan
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes	NFIP Flood Damage Prevention Ordinance (2008) Natural Resource Protection Plan
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?		By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes FT	Yes, to all.
Code Enforcement Officer	Yes FT	Yes, to all.
Emergency Manager		
Community Planner		



Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)		
GCSWCD Stream Management Implementation Program (SMIP)		
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Village has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Village of Coxsackie. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
64	Rt 385/CSX underpass	Repetitive flooding of the NYS Route 385/CSX underpass. Repetitive flooding frequently results in closure of the main route into and out of the village.	Complete drainage assessment and design/implement improvements to remedy repetitive flooding of the NYS Route 385/CSX underpass. Remedies would include improvements to conveyance system and reconfiguration of SW outfall to eliminate back water effect when Coxsackie creek is at flood stage	State DOT project now			No, State DOT project now
65	Wastewater Treatment Plant for Infrastructure	Wastewater Treatment Plant built in 1973	Replace Wastewater Treatment Plant	Completed May 2021			No
66	West Coxsackie Sewer Trunk Line	Eliminate repetitive flooding problems and overloading to the West Coxsackie sewer pump station	Relocation of West Coxsackie sewer trunk line along the Coxsackie Creek to eliminate repetitive flooding problems and overloading to the West Coxsackie sewer pump station	No plan to address at this time			No, change in priority



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
67	Drainage from Apple Blossom Lane and east to Matthew Lane and Luke Ave.	Complete drainage assessment and design/implementation of drainage improvements to remedy a repetitive flooding problem at the development known as Flach Development on Apple Blossom Lane, and the avenues of Matthew, Mark, and Luke and Howard Drive.	Design and install drain piping. Replace approximately 70 water meters with remote read models	No plans to address until \$ available			No, not until funding is available
68	Flood attenuation basins	Reduce flooding along the Cocksackie creek.	Work cooperatively with the Town of Cocksackie to undertake the design and implementation of a series of shallow flood attenuation basins to reduce flooding along the Cocksackie creek. Initial assessments indicate that 4-6 structures placed on strategic waterways feeding the Cocksackie creek would have an immediate benefit. Such structures would be similar to an existing structure already constructed by the Greene IDA on an unnamed tributary located east of NYS Route 81. Basins would be designed as wetland cells and would provide secondary benefits due to wetland creation as well as habitat value for endangered species known to be in this area. Potential sites include former farm land located on the grounds of Cocksackie and Greene Correctional facilities	No plan to address at this time			No, change in priority



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
69	Riverside Avenue retaining wall to address slope failure	17 - 27 Riverside Avenue: The two houses and road are vulnerable to ground failure by river.	Install retaining wall or sheet pilings to stop slope failure.	No plan to address at this time			No, change in priority
70	Stabilize Kings Road	Slope failure has occurred and southbound lane is collapsing.	Stabilize west side of Kings Road.	No plan to address at this time			No, change in priority
71	Retaining wall and drainage on New Street	Rebuild retaining wall and install drainage to prevent wall failure and avoid danger of collapse of the four houses that are 14' below the wall on New Street between 44 and 52 on northbound lane.	Rebuild retaining wall and provide drainage in wall to prevent wall failure and avoid danger of collapse of the four houses that are 14' below the wall on New Street between 44 and 52 on northbound lane.	No plan to address at this time			No, change in priority
72	Drainage on lower Church St., Franklin St. and South River St.	Complete drainage assessment and design/implementation of drainage improvements to remedy a repetitive flooding problem.	Design and install corrective measures.	Working fine			No, system is working fine
73	Church Street stabilization	North side of road has been collapsing for 30 years and is sliding down embankment.	Stabilize Church Street (from 56-58 Church Street).	No plan to address at this time			No, change in priority
74	Mansion Street drainage	Improve drainage between Getty station and rescue squad on Mansion street to avoid mosquito breeding and flooding in local cellars.	Design and install corrective measures.	No plan to address at this time			No, change in priority



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
75	Drainage Assessment and Improvements for Noble Street	Need to remedy drainage and sliding problems to prevent road failure and avoid danger of collapse on north side of Noble Street.	Complete drainage assessment and design/implement improvements to remedy drainage and sliding problems to prevent road failure and avoid danger of collapse on north side of Noble Street.	No plan to address at this time			No, change in priority
76	Gate House Intake at Climax reservoir	Regulates water flow to plant, built in 1935, 1 of 3 gates work	Replace broken gates	Plan in progress - carry over to new plan			Yes
77	Spillway at lower reservoir	Spillway at lower reservoir is deteriorated and needs complete overhaul	Design/implement spillway overhaul	Plan in progress - carry over to new plan			Yes
78	Pipe connecting the two reservoirs	The Village monitors and maintains the creek between the two reservoirs. Contaminants currently enter the water system as water flows between them, requiring more chemicals to provide safe drinking levels	Install pipe between Climax and Medway Reservoirs	Long term plan - on hold for now			No, on hold for now
79	Water Tank	Provide additional storage capacity	Purchase and install a new 2 million gallon tank	Construction to start 2023 - carry over to new plan			Yes
80	Water Line Replacement	Aging water distribuion system and sewer lines consisting of mains, valves, hydrants, etc.	Replace nearly 40 miles of distribution system	No plan to address at this time			No, change in priority



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VCOX 1 Old #76	Village of Coxsackie	Gate House Intake at Climax reservoir	1, 2, 3	Flood	Currently only 1 of 3 intake gates that regulate water flow is functioning.	Repair the intake gates so all three are functioning as intended	No	High	Medium	\$500k	PDM/HMGP	Ensure water intake for Village of Coxsackie Reservoir
VCOX 2 Old #77	Village of Coxsackie	Spillway at lower reservoir	1, 2, 3	Flood	Spillway at lower reservoir is deteriorated and needs complete overhaul	Design/implement a complete overhaul of the spillway.	No	Medium	Long term	\$500k	Dam safety program	Avoid a potential catastrophe if spillway fails.
VCOX 3 Old #79	Village of Coxsackie	Water Tank	1, 2, 3, 4	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Provide additional storage capacity	Purchase and install a new 2-million-gallon tank	Yes	High	2023	\$2 million	PDM/HMGP	Additional water will be available if needed in an emergency

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Coxsackie		
Project Name:	Gate House Intake at Climax reservoir		
Project Number:	VCOX 1 - Old #76		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Currently only 1 of 3 intake gates that regulate water flow is functioning.		
Action or Project Intended for Implementation			
Description of the Solution:	Repair the intake gates so all three are functioning as intended		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year event	Estimated Benefits (losses avoided):	Ensure water intake for Village of Coxsackie Reservoir
Useful Life:	Est. 50+ years		
Estimated Cost:	\$500K		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	By 2025
Estimated Time Required for Project Implementation:	By 2025	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Village of Coxsackie	Local Planning Mechanisms to be Used in Implementation, if any:	Village Engineer, Chief Water Plan Operator
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Inadequate water intake
	Fix only 1 of the intake gates	TBD	This is only a partial fix and will not ensure adequate intake
	Repair all gates so they are all functioning properly	\$500k	This will ensure water intake for the reservoir
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Coxsackie		
Project Name:	Water Tank		
Project Number:	VCOX 3 - Old #79		
Risk / Vulnerability			
Hazard of Concern:	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm		
Description of the Problem:	Provide additional storage capacity		
Action or Project Intended for Implementation			
Description of the Solution:	Purchase and install a new 2-million-gallon tank		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Additional water will be available if needed in an emergency
Useful Life:	TBD		
Estimated Cost:	\$2 million		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2023
Estimated Time Required for Project Implementation:	2023	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Village of Coxsackie	Local Planning Mechanisms to be Used in Implementation, if any:	Village Engineer, Chief Water Plant Operator
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	There will be less water storage capacity
	Install a smaller size tank	Unknown	Would not provide adequate additional water supply
	Purchase and install a new 2-million-gallon tank	\$2 million	This will provide needed additional storage capacity
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Village of Hunter Annex

This section presents the jurisdictional annex for the Village of Hunter.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Michael Papa, Mayor Village of Hunter 7955 Main St. Hunter, NY 12442 mpapa@villageofhunterny.org 518-390-5830	Alan Higgins, Superintendent of Highways Village of Hunter 7955 Main St. Hunter, NY 12442 518-263-4690
NFIP Floodplain Manager	
Carl Giangrande, Code Enforcement Officer, Building Inspector	
Additional Planning Team Contributors	

Jurisdiction Profile

Based upon the current U.S. Census, the Village of Hunter had a total population of 429 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	429	Median household income	\$22,813
White	99.7%	In civilian labor force age 16+	
Black or African American	0%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0%	Persons under 18 years	4.3%
Two or more races	0%	Persons 65 years and over	45.9%
Hispanic or Latino	0.3%	Persons in poverty	25.7%
White, non-Hispanic or Latino	99.7%	Households with internet	
Foreign born persons	19.8%		

Source: US Census Bureau (2020). American Community Survey 5-year estimates.

Location and Land Area

The Village of Hunter is located within the Town of Hunter in Greene County. It is entirely within the Catskill State Park and situated at the base of Hunter Mountain, home to the Hunter Mountain Resort. The total land area for name is 1.77 square miles, with 0.03 square miles of that being water.

History

The land that is currently the Village of Hunter, so named in 1790, was once part of the Town of Hunter and originally called Edwardsville. Based on the significant stand of hemlock trees, Colonel



William Edwards (for whom the land was originally named) encouraged others in 1816 to invest in his Tannery, which was the largest tanning factory in the world until an even larger tannery was built in nearby Prattsville. The Village was incorporated in 1894 as a municipality with its own local government and shortly thereafter, in 1896, it was incorporated into the Town of Hunter. Hunter Mountain Ski Bowl opened in 1959, with two chairlifts and snowmaking capability. The venture failed just 3 years later, but was taken over by local contractor Orville Slutzky and his brother, who built Hunter Mountain into the nationally renowned resort that it is today.

Governing Body

The Village is governed by a Board comprised of the Mayor and two Trustees. The Village Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs. All three officials serve 3-year terms.

Changes in Development

In general, the Village of Hunter has experienced a decline in commercial businesses on the west end of the Village over the last five years, with the exception of a popular coffee shop. The Village has seen adaptive reuse and infill development primarily consisting of residential development in the last few years, in part due to the COVID 19 pandemic. Hunter Mountain also underwent an expansion several years ago. In December 2015, Hunter Mountain sold to a resort company, Peaks Resorts. At the end of 2019, Peaks Resorts was bought by Vail Ski Corporation. The Route 23A corridor, which serves as Main Street in the Village, is primed for redevelopment, and there are plans for new businesses spurred by entrepreneurs who relocated to the area. The Village has seen a significant increase in full-time and seasonal population due to the number of people who own seasonal or second homes in the area, as well as those that visit and stay in the area. The pandemic caused some second homeowners to become full-time residents.

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
Hunter Peaks development is about 25 lots on steep slopes	Project sponsor got permits from local, state, and NYC to construct	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	
Land use	Through zoning, site plan and subdivision laws
Disproportionately impacted populations	
Climate Change	



Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
Flooding (riverine, flash flood, dam failure)	1	December 25, 2020 flooding
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	3	February 2010 (7+ feet of snow)
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	2	The worst flood on record was Hurricane Irene in 2011

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Hunter	18	26	\$225,872.27

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
224	258



Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Communications Facility	Communications	1	1
Electric Substation	Energy	1	1
Fire Station	Safety and Security	1	1

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>

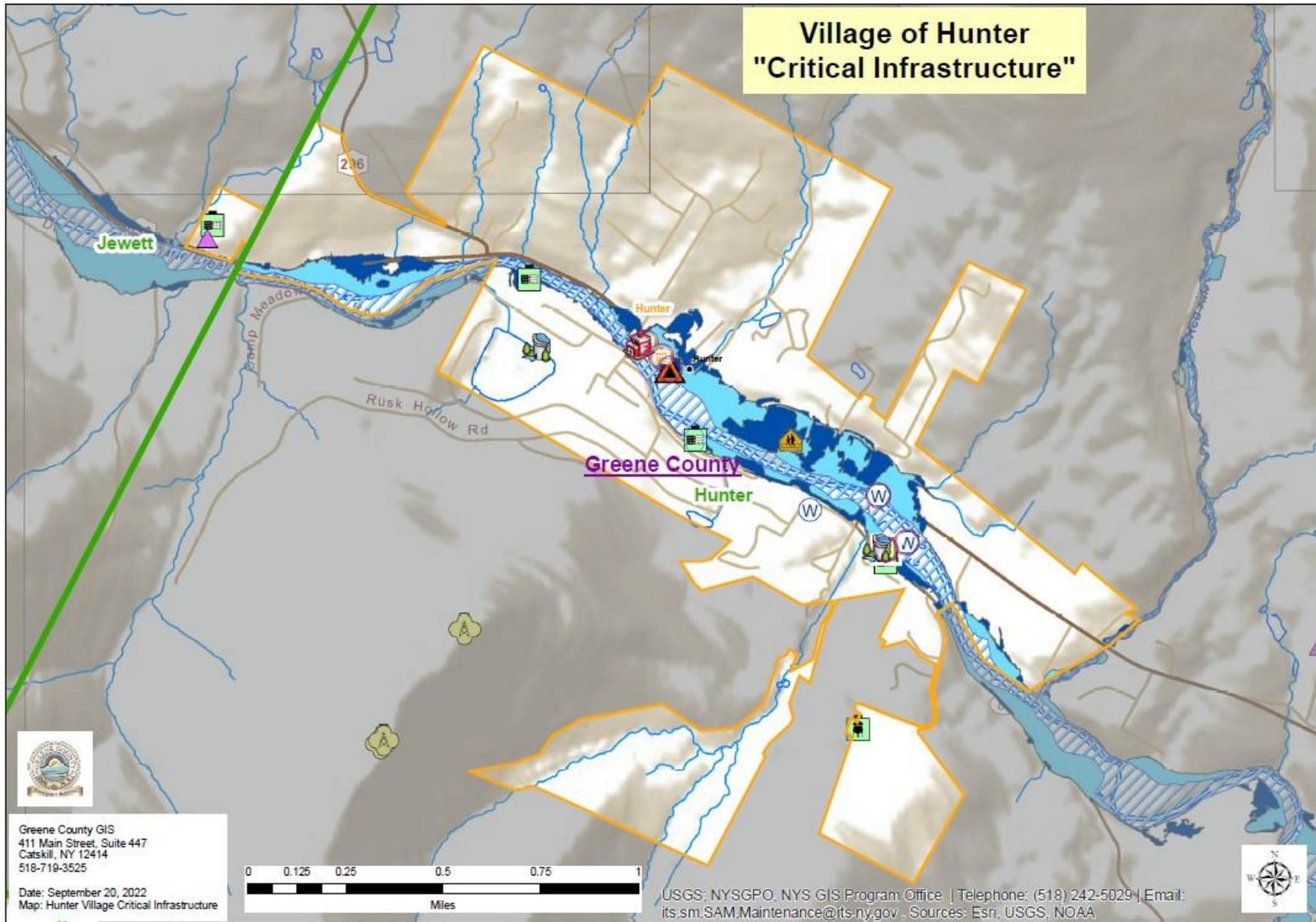


Government Facility	Safety and Security	2	2
Public Waste Water Pump Station	Food, Water and Shelter	0	1
Public Water Well	Food, Water and Shelter	2	2
School	Food, Water and Shelter	0	1
Tier 2 Facility	Hazardous Materials	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns. There are a number of parcels located in the 100-year or 500-year floodplain, as well as several critical facilities located in those areas. In addition, there are 2 repetitive loss properties, based on the most current data available. Therefore, the areas susceptible to flooding should be the focus of the Village's mitigation actions to ensure the safety of their residents and the community as a whole. Many of the recommended measures to be taken can be found in the Local Flood Analysis that was completed recently.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
5

Sampling of comments received from survey respondents specific to the Jurisdiction
None

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Solicit input at public meetings, social media	Biyearly
Provide input on jurisdictional annex	As needed

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan	Yes	
Economic Development Plan		
Emergency Operations (Response) Plan	Yes	



Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan	Yes	
Local Flood Analysis	Yes 2018	Identifies flood vulnerabilities and mitigation solutions.
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Regional Stream Management Plan and MOU with GCSWCD
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Floodplain ordinance		The floodplain mapping was updated for the Red Kill and a portion of the Schoharie Creek in the Village limits in 2015. The new maps were based on new and updated hydrologic analyses for use in the development of hydraulic analyses.
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		



Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other	Yes 2015	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes PT	Yes, to all.
Code Enforcement Officer	Yes PT	Yes, to all.
Emergency Manager		



Community Planner		
Superintendent of Highways	Yes FT	Yes, to all.
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?		Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	The Village of Hunter and its residents have been recipient of these funds for property protection measures, elevation, and demolition of structures in the floodplain. They can also be a resource for funding future mitigation actions.
GCSWCD Stream Management Implementation Program (SMIP)	Yes	The Village of Hunter and its residents have been recipient of these funds for stream and floodplain restoration and culvert upsizing. They can also be a resource for funding future mitigation actions.
Community Development Block Grants		
Capital improvements project funding		



Authority to levy taxes for specific purposes		
Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	NYC Flood Buyout Program
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Village has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.		
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	Yes	Watershed Summits hosted at the local elementary school have addressed flood mitigation on a property specific and community wide scale. Information on the summit programs can be found at https://www.gcsxcd.com/env-ed/scho-eo/sw-summits
Public-private partnership initiatives		



addressing disaster related issues		
StormReady certification		
How can these capabilities be expanded and improved to reduce risk?	Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.	



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Village of Hunter. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
81	Stormwater Retrofit program	A stormwater infrastructure assessment was conducted in the Village of Hunter (2006) and identified swales, culvert inlet/outlets and flood prone areas that would benefit from best management practice retrofits to decrease stormwater runoff and associated flood hazards during storm events.	A summary of culvert inlets and culvert outlets that could potentially represent a flood and sediment source problem with the Village are provided below. Upgrade and stabilize areas of erosion above and below these culverts: 1. Berry; 2 - Botti; 3 - Bridge St.; 4 - Brook St.; 5 - Central Ave; 6 - Clearview; 7 - Colonels Dr.; 8 - Ethel Court; 9 - Gaby; 10 - Garfield; 11 - Hunter Lane; 12 - Hunter Rd. 13 - Lake Dr.; 14 - Linda; 15 - Lookout Mnt.; VOH 16 - Maple; 17 - Mountain; 18 - Overlook; 19 - Pine; 20 - Point Breeze; 21 - Riverside Dr.; 22 - Route 23A; 23 - Route 296; 24 - Rusk Hollow; 25 - Scribner Hollow	Cancelled	Glen Avenue culvert at Camp Loyaltown was replaced with a structure passing the 100-yr base flood		No, some areas were addressed, but priority has changed
82	LFA	Local Flood Analysis is needed to assess feasibility of flood mitigation projects.	The Village will be conducting a local flood analysis in 2016 to identify flood vulnerabilities and potential mitigation measures (GCSWCD facilitating).	Completed in 2018			No completed



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VHUN 1	Village of Hunter	Bridge St. Bridge Replacement	1, 2, 3	Flood	Undersized bridge acting as hydraulic constriction contributing to flooding of buildings on Main Street.	Replace Bridge Street bridge with adequate size structure	No	High	2025-2027 (contingent on relocation of fire house)	\$4-5 million, per LFA estimate	Capital Improvement, STIP, HMGP, SMIP, CWC	Eliminate flooding of buildings on Main St.
VHUN 2	Village of Hunter	Fire House Relocation	1, 2, 3, 4	Flood	Relocate Hunter Fire House out of floodplain	Relocate the fire house out of the floodplain. The fire house is a critical community facility, which if destroyed or damaged would impair the health and safety of the community.	Yes	High	2023-2025	\$4 million	NYSDEC Climate Smart Community grant, CWC, NYCFBO, HMGP, GCSWCD	Remove critical facility from the floodplain and relocate to a safer location to avoid loss of service
VHUN 3	Village of Hunter	Floodplain reclamation	1, 2, 3	Flood	Floodplain channel constriction increasing velocities that can become destructive during high during a flood, with dramatic erosion and damage. Obstructions placed in the floodplain (structures, infrastructure) they are vulnerable to flooding and damage.	Excavate fill out of the floodplain to enhance flood conveyance capacity, reducing surface water elevations along Main Street. Implement floodplain enhancement scenarios 2c or 2d as modeled in the LFA	No	Medium	Contingent on landowners participation and funding	TBD	CWC FHMIP, GCSWCD SMIP, HMGP	Enhance flood conveyance capacity and reduce surface water



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VHUN 4	Village of Hunter	Mad Brook Culvert at Glen Ave	1, 2, 3	Flood	Replace Mad Brook culvert at Glen Ave. above Main St. culvert	Hydraulic modeling indicates this culvert is undersized and does not pass the 50-year storm flow. Replace this culvert with a new culvert sized to pass at a minimum the 50-year storm flow. Initial modeling indicates that a 9 ft x 5 ft concrete box culvert, or 10 ft x 5 ft corrugated metal arch culvert would be required	No	Low	As funding allows	TBD	CWC FMHIP, GCSWCD SMIP, HMGP	Replace culvert so it exceeds the 50 year storm flow
VHUN 5	Village of Hunter	Mad Brook Culvert at Main St.	1, 2, 3	Flood	Replace Mad Brook Culvert at Main Street with adequate size	Replace existing culvert with a new culvert sized to pass at a minimum the 50-year storm flow.	No	High	2023	TBD	NYSDOT Capital Improvement project	Replace culvert so it exceeds the 50 year storm flow
VHUN 6	Village of Hunter	Mad Brook Realignment	1, 2, 3	Flood	Realign Mad Brook downstream of Main Street culvert to eliminate hard bend and have natural outlet to the Schoharie Creek	Realign Mad Brook downstream of Main Street culvert to eliminate hard bend and have natural outlet to the Schoharie Creek. This requires participation from two landowners.	No	Medium	2023-2024	TBD	CWC FHMIP, GCSWCD SMIP, HMGP	Reduce or eliminate flooding and create outlet for water

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Hunter		
Project Name:	Bridge St. Bridge Replacement		
Project Number:	VHUN 1		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Undersized bridge acting as hydraulic constriction contributing to flooding of buildings on Main Street.		
Action or Project Intended for Implementation			
Description of the Solution:	Replace Bridge Street bridge with adequate size structure		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to 100-year flood	Estimated Benefits (losses avoided):	Eliminate flooding of buildings on Main St.
Useful Life:	Est. 10+ years		
Estimated Cost:	\$4-5 Million per LFA estimate		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2025-2027 (contingent on relocation of fire house)
Estimated Time Required for Project Implementation:	2025-2027 (contingent on relocation of fire house)	Potential Funding Sources:	Capital Improvement, STIP, HMGP, SMIP, CWC
Responsible Organization:	Village of Hunter/Greene County Highway	Local Planning Mechanisms to be Used in Implementation, if any:	Local flood analysis, NYSDOT design criteria
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Flooding of buildings on Main St will continue to occur.
	There are no other feasible alternative actions other than those listed		
	Replace bridge with adequate size structure	\$4-5 Million	New bridge would eliminate flooding of buildings on Main St
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Hunter		
Project Name:	Fire House Relocation		
Project Number:	VHUN 2		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Relocate Hunter Fire House out of floodplain		
Action or Project Intended for Implementation			
Description of the Solution:	Relocate the fire house out of the floodplain. The fire house is a critical community facility, which if destroyed or damaged would impair the health and safety of the community.		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 500 year event	Estimated Benefits (losses avoided):	Remove critical facility from the floodplain and relocate to a safer location to avoid loss of service to the community
Useful Life:	Est. 100+ years		
Estimated Cost:	\$4 Million		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	2023
Estimated Time Required for Project Implementation:	2023-2025	Potential Funding Sources:	NYSDEC Climate Smart Community grant, CWC, NYCFBO, HMGP, GCSWCD
Responsible Organization:	Village of Hunter	Local Planning Mechanisms to be Used in Implementation, if any:	Local flood analysis, local site plan review
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Fire house will remain at risk in the floodplain
	Elevate structure	Unknow	It is not realistic to elevate a structure such as this
	Relocate Fire House out of the floodplain	\$4 Million	Moving the CF out of the floodplain will ensure it's services are operational and available to the community at all times.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Village of Tannersville Annex

This section presents the jurisdictional annex for the Village of Tannersville.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Lee McGunnigle, Mayor Village of Tannersville 1 Park Lane P.O. Box 967 Tannersville, NY 12485 518-589-5850	Carl Giangrande, Floodplain Admin./Code Enforcement Officer Village of Tannersville 1 Park Lane P.O. Box 967 Tannersville, NY 12485 518-589-5850 x2
NFIP Floodplain Manager	
Carl Giangrande, Floodplain Admin./Code Enforcement Officer/Building Inspector	
Additional Planning Team Contributors	
Steve Tuomey, Working Highway Superintendent	Joseph Myers, Chief Operator (Water System)
Kerry Knoetgen, Water Supervisor	

Jurisdiction Profile

Based upon the current U.S. Census, the Village of Tannersville had a total population of 568 people. The table below shows additional demographic information for the jurisdiction. Information for the County in general can be found in Section 3 - County Profile, of the base plan.

Demographics

County Demographics		County Demographics	
Population	568	Median household income	\$54,833
White	100%	In civilian labor force age 16+	
Black or African American	0%	Persons with a disability under 65	
American Indian and Alaskan Native	0%	Persons under 5 years	
Asian	0%	Persons under 18 years	27.5%
Two or more races	0%	Persons 65 years and over	11.3%
Hispanic or Latino	0%	Persons in poverty	15.1%
White, non-Hispanic or Latino	100%	Households with internet	
Foreign born persons	4.3%		

Location and Land Area

The Village of Tannersville is located in Greene County within the Town of Hunter. It is entirely within the Catskill Park and located at the junction of Route 23A and Route 23C. The total land area for name is 1.2 square miles, with 0.04 square miles of that being water.



History

The land that is currently the Village of Tannersville started out in the nineteenth century as a center for tanneries and sawmills. The Village grew as a result of the Hunter Turnpike and became a destination vacation spot, which resulted in the development of hotels and boarding houses. The Village was incorporated in 1895.

Governing Body

The Village is governed by a Board comprised of the Mayor and four Trustees. The Village Board sets policy, approves the budget, adopts local laws, implements policies, and administrates local affairs.

Changes in Development

Changes in development within the jurisdiction since the last update of the plan.

In the last 5 years, has there been any development (new buildings/infrastructure/utilities) in hazard prone areas, e.g. floodplain? (Yes/No with explanation)	Is there a local ordinance/code/regulation that prevents/regulates development in hazard areas?	Are there any plans for future development in hazard prone areas, e.g. floodplain?
No	Yes	No

Consideration for Future Impacts

Consideration given in mitigation actions to address future population growth, land use and disproportionately impacted populations, as well as climate change.

Type of Future Impacts	Consideration taken for future impacts
Population growth	
Land use	Zoning
Disproportionately impacted populations	
Climate Change	

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards are profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities, both public and private (excluding County owned), in the jurisdiction that are in the hazard area.

Jurisdictions were asked to rank the three hazards identified for the County, based on the impacts and risks for the jurisdiction. That ranking can be found below. Jurisdiction were asked to identify any other hazards that are of concern for the community, which is also contained below.

Hazard (with definition)	Rank (1 being highest risk)	Example of recent event for this hazard
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Flooding (riverine, flash flood, dam failure)	1	After Heavy Rain events, Most Severe Hurricane Irene
Severe Winter Storm/Ice storm (heavy snow, ice storm, extreme cold, etc.)	1	Annually, most severe, February 2010 (7+ feet of snow)
Severe Storm/Wind Event (hurricane, windstorm, hail, tornado, etc.)	2	Most Severe recently Hurricane Irene - 2011

National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

Jurisdiction	Number of Policies	Number of Claims	Total Claims Payouts
Tannersville	13	27	\$233,346.40

Source: DEC (2022)

Number of parcels in the 100- and 500-year floodplain

Below is the number of parcels that are in the 100-year and 500-year floodplain, according to the 2015 FEMA Flood Insurance Rate Map.

100-Year Floodplain	500-Year Floodplain
159	180

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

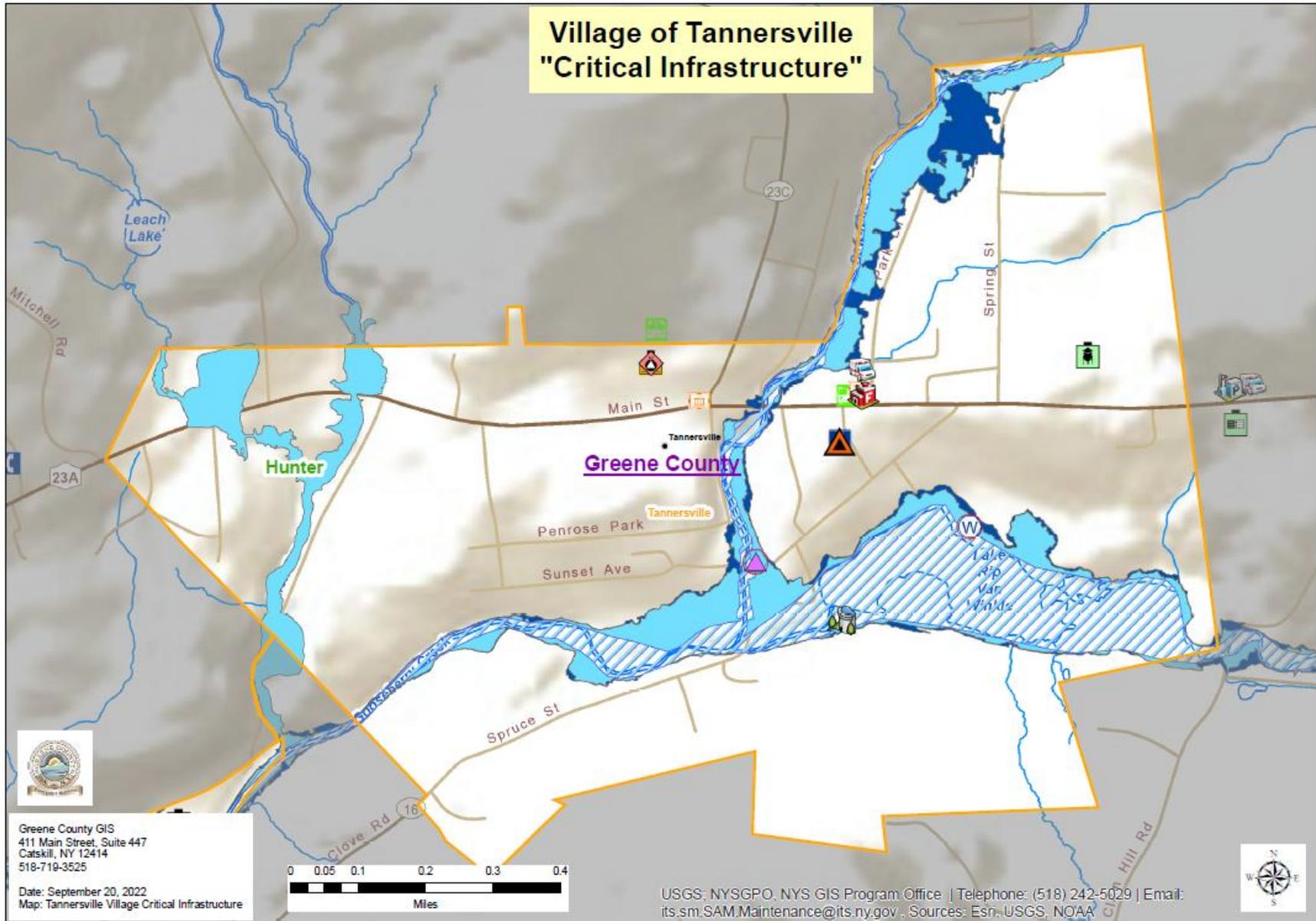
As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifelines classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Highway Facility	Transportation	1	1
Public Water Well	Food, Water and Shelter	1	1

The map below illustrates the critical facilities in the hazard area (the map legend is contained in Section 3.10 of the base plan). Section 4.3 in the base plan has additional details regarding residential building loss for 100- and 500-year flood events and hurricanes.

Summary of Vulnerabilities

The jurisdiction is one of Greene County's Mountaintop Towns. There are a number of parcels located in the 100-year or 500-year floodplain, as well as several critical facilities located in those areas. Therefore, the areas susceptible to flooding should be the focus of the Village's mitigation actions to ensure the safety of their residents and the community as a whole. Many of the recommended measures to be taken can be found in the Local Flood Analysis that was completed recently.





Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the Jurisdiction.

Number of surveys completed for the Jurisdiction
6

Sampling of comments received from survey respondents specific to the Jurisdiction
None

The jurisdiction will also continue to seek further public participation after the plan is adopted through the actions noted below.

Type of continued public involvement	Frequency of involvement
Attend Public Meeting	Subject to availability but intend on being at meetings as needed with at least one representative for Village.
Provide input on jurisdictional annex	As needed

Capability Assessment

A capability assessment was conducted of the jurisdiction’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the jurisdiction are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes	
Capital Improvement Plan		
Economic Development Plan		



Emergency Operations (Response) Plan	Yes	
Continuity of Operations Plan		
Transportation Plan		
Stormwater Management Plan	Yes	Yes to all
Local Flood Analysis	Yes	Completed in 2018, implementing mitigation recommendations
Other special plans (e.g. disaster recovery, climate change adaptation)	Yes	Downtown Revitalization Plan
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code	Yes	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	YES	
Subdivision ordinance	Yes	
Floodplain ordinance		Floodplain Management/Basin Plan
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		



Acquisition of land for open space and public recreation uses		
Other	Yes 2008	NFIP Flood Damage Prevention Ordinance
How can these capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administration	Yes/No	Describe capability Is coordination effective?
Planning Board	Yes	
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)		
Mutual aid agreement	Yes	The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.
How can these capabilities be expanded and improved to reduce risk?	By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.	
Technical Staff	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes PT	Yes to all
Code Enforcement Officer	Yes PT	Yes to all
Emergency Manager		
Community Planner		



Superintendent of Highways	Yes FT	Yes to all
GIS/Hazus Coordinator		
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the jurisdiction. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	The Village has received this funding in the past and will continue to use it as a funding resource for future mitigation actions.
GCSWCD Stream Management Implementation Program (SMIP)	Yes	The Village has received this funding in the past and will continue to use it as a funding resource for future mitigation actions.
Community Development Block Grants		
Capital improvements project funding		
Authority to levy taxes for specific purposes		



Impact fees for new development		
Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs	Yes	NYC Flood Buyout Program
How can these capabilities be expanded and improved to reduce risk?		Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
Municipal website and social media	Yes	The Village has a website that can be used to help implement future mitigation activities.
Natural disaster or safety related school programs		
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Mountaintop Progressives host community programs – stream clean ups, Earth Day celebrations
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)		
Public-private partnership initiatives addressing disaster related issues		



StormReady certification		
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for the Village of Tannersville. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/ Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
83	LFA	Local Flood Analysis is needed to assess feasibility of flood mitigation projects.	The Village will be conducting a local flood analysis in 2016 to identify flood vulnerabilities and potential mitigation measures (GCSWCD facilitating).	Local Floodplain Analysis Completed in February 2018	Study Completed and some projects in-progress	Lack of funding or low BCA score to be competitive for FEMA money	Yes - Continuous



<p>84</p>	<p>Reservoir #3 Mitigation</p>	<p>Tannersville Reservoir #3, DEC Dam ID# 192-2716 is an earth dam that was built in 1957 and retains 10 million gallons of water when at peak capacity. This Class B-Intermediate Hazard Dam is our main water supply. In recent years, there has been a growing expression of concern regarding failure of the dam. In November of 2012, the New York State Department of Environmental Conservation Division of Water Dam Safety Section had assigned an Unsound condition rating due to inadequate spillway capacity. They have also noted further depressions in the dam in the downstream slope and leakage at the joints of the spillway wingwall. In addition, there are several wet areas on the downstream embankment and toe. The Village of Tannersville has had a hydrologic/hydraulic analysis completed on the reservoir and more recently completed an Emergency Action Plan which included a dam break analysis. Just less than 100 residents downstream would be affected in the event of failure which is 1/4 of our population.</p>	<p>The Village of Tannersville needs to complete a full Engineering Assessment in order to fully identify how to mitigate the problem if not identify more issues that may not be seen. It is expected with full remediation of the current issues the Village can prevent failure of the dam and protect our resources. Construction costs cannot be estimated at this moment due to the unknown specific measures needed to prevent the dam failure. The figure given below may not be accurate and it is imperative that an engineering assessment be completed in order to more accurately assess costs and mitigation measures.</p>	<p>Engineering Assessment Complete in 2020 and conceptual Design completed and submitted to NYSDEC January 2021. NYSDEC has approved conceptual design. Project cost projected at \$1.5 million.</p>	<p>Engineering Assessment, Conceptual Design, NYSDEC Approval of Design</p>	<p>Funding - Project will not progress without financial assistance. Village applied to HMGP_4480 in June 2022 to offset capital costs.</p>	<p>Yes - Dam has been classified as "Unsound - Deficiency Noted" by the NYSDEC. Would greatly help Villages applications for FEMA HMGP monies if project listed in Plan.</p>
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Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
85	Reservoir #3 Mitigation	<p>It would also destroy our water plant which would effect all of our water customers inside the Village and approximately 200 outside the Village. While the Reservoir has withstood Hurricane Irene and Tropical Storm Sandy, the Village would want to prevent an unfortunate disaster with the current issues at hand. In the event of failure, the dam may damage isolated homes, highways, public utilities and/or cause economic loss to the community as well as cause serious environmental damage. Recently we have spent approximately \$25,000 for the Inspection & Maintenance plan, Hydrologic/Hydraulic analysis, and Emergency Action Plan including a dam break analysis. The Village needs to retain professional engineers to perform an engineering assessment of the dam and complete remedial measures. The DEC would like the Village to have this rectified by the fall of 2014.</p>		Combined with number 84			



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VTAN 1 - Old #'s 84 and 85	Village of Tannersville	Rehabilitation of Reservoir #3 Dam	1, 2, 3, 4	Flood	Following Engineering Assessment submission to the NYSDEC, the dam was given an “Unsound – Deficiency Recognized” rating. This designation was granted for the dam based on identified hydrologic and structural deficiencies.	Following consideration of different alternatives, Engineers Report recommends: 1) Armor the dike crest on the rear of the reservoir in order for this structure to serve as the emergency overflow. 2) Raise the same crest by 2' in order to provide 1' of freeboard during design storm event. 3) Flatten the downstream slope of the embankment to obtain required stability factors. 4) Repair existing spillway structure	No	High	Depends on funding	\$1.5 Million	Village and Hazard Mitigation Grant Program – Applied to HMGP 4480 on 6/1/2022	Eliminate potential failure of the dam
VTAN 2	Village of Tannersville	DPW Garage Relocation	1, 2, 3, 4	Flood	Flooding of Village Department of Public Works Garage	The relocation of the Village of Tannersville DPW garage out of the flood hazard area is recommended. In its current configuration, the facility is located within the SFHA and was flooded in Tropical Storm Irene with substantial damage to the structure. In addition to eliminating flood risks at the facility, the relocation would also result in benefits to water quality by removing potential pollutants from flood prone areas.	Yes	High	2 - 3 years depending on funding	\$1.2 Million	Village and NYCDEP Flood Buyout Program	Remove critical facility from flood hazard area to ensure services are available when needed



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
VTAN 3	Village of Tannersville	Spruce St. Culvert Replacement	1, 2, 3	Flood	Flooding associated with undersized Spruce street culvert	Replacement of culvert with adequately sized structure and armoring to prevent scouring/erosion and backwater flooding.	No	Low-Medium	2 - 5 years	\$750,000	HMGP, SMIP, CWC Flood Mitigation Implementation Program	Eliminate further erosion and flooding
VTAN 4	Village of Tannersville	Railroad Ave. Streambank Stabilization Project	1, 2, 3	flood, Severe Storm/Wind Event	Railroad Ave. Roadside Streambank Erosion	The embankment along the eastern side of Railroad Ave. in the Village of Tannersville is the Sam Mill Creek. Over time, and following various storm events, the streambank in this area has eroded and the roadway has begun to deteriorate. The Village is currently working with the Catskill Watershed Corporation to facilitate the stabilization of this roadway streambank.	No	Medium - High	2 - 3 years	\$1.2 Million	Catskill Watershed Corporation and Greene County Soil and Water	eliminate further erosion and flooding and road failure

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet	
Name of Jurisdiction:	Village of Tannersville
Project Name:	Rehabilitation of Reservoir #3 Dam
Project Number:	VTAN 1 - Old #'s 84 and 85
Risk / Vulnerability	
Hazard of Concern:	Flood
Description of the Problem:	<p>Following Engineering Assessment submission to the NYSDEC, the dam was given an "Unsound – Deficiency Recognized" rating. This designation was granted for the dam based on identified hydrologic and structural deficiencies. Deficiencies are summarized as follows: 1) The peak inflow hydrograph indicated a flow of 591 CFS for the 100-year storm. The peak outflow hydrograph for the same recurrence indicated a flow of 569 cfs. This provides for the water level to overtop the dam by 0.3' during the 100-year storm. This overtopping could cause saturation of the dam, along with erosion and scouring of the dam depending on the season and vegetative/ground conditions. As noted, the dam was overtopped during events smaller than the 100-year storm. 2) The peak inflow hydrograph indicated a flow of 887 CFS for the design standard of 150% of the 100-year storm. The peak outflow hydrograph indicated a flow of 880 cfs for the same recurrence. This provides for the water level to overtop the dam by 0.5' during the 100-year storm. This over-topping could cause saturation of the dam, along with failure of the dam at its "thin" point of the dam depending on the season and vegetative conditions. 3) As indicated by the above results, the existing dam spillway is undersized. Additionally, the reservoir does not include an auxiliary spillway. 4) Inundation mapping was previously completed by the Village for the dam and detailed the swath of damage should a breach occur. Damage to residential and commercial properties would occur as well as washout of a main throughfare through this region of NY (NYS Rt. 23A). See attached inundation mapping. 5) While the results of the above reference inundation study did not specifically indicate damage, the \$30 million dollar sewer treatment plant that is owned and maintained by the New York City Department of Environmental Protection is downstream of the dam, and would likely be impacted by a potential dam breach. 6) The geotechnical analysis included in the Engineering Assessment indicated that: "the dam did have acceptable factors of safety for sliding, overturning and rapid drawdown conditions for the upstream slope. For the downstream slope under normal and highwater conditions with a seismic loading, the computed factor of safety (1.0) was deemed inadequate". 6) The downstream embankment of the dam has a thin-cross section at its center point. This is likely the result of historic overtopping as the this area is not specified in the original design documents. 7) There are visible signs of seepage from the dam. Should the dam become saturated, it would fail.</p>
Action or Project Intended for Implementation	
Description of the Solution:	<p>Following consideration of different alternatives, Engineers Report recommends:</p> <ol style="list-style-type: none"> 1) Armor the dike crest on the rea of the reservoir in order for this structure to serve as the emergency overflow. 2) Raise the same crest by 2' in order to provide 1' of freeboard during design storm event. 3) Flatten the downstream slope of the embankment to obtain required stability factors 4) Repair existing spillway structure.
Is this project related to a Critical Facility?	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)	
Level of Protection:	Protect to 100- or 500-year flood event
Useful Life:	Est. 100+ years
Estimated Cost:	From BCA \$1,500,000
Estimated Benefits (losses avoided):	
Losses avoided from BCA \$1,693,490 NYCDEP Sewer Plant is downstream of this dam. Damage cost not included in the attached losses.	
Plan for Implementation	



Prioritization:	High	Desired Timeframe for Implementation:	Depends on funding
Estimated Time Required for Project Implementation:	Depends on funding	Potential Funding Sources:	Hazard Mitigation Grant Program – 4480 (Village applied in 6/2022)
Responsible Organization:	Village of Tannersville	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Dam will fail
	Other actions were considered; however, Engineers Report recommended the actions noted above	\$1,500,000	Prevent the dam from failing and protecting the Village's primary water supply
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Village of Tannersville		
Project Name:	DPW Garage Relocation		
Project Number:	VTAN 2		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Flooding of Village Department of Public Works Garage		
Action or Project Intended for Implementation			
Description of the Solution:	The relocation of the Village of Tannersville DPW garage out of the flood hazard area is recommended. In its current configuration, the facility is located within the SFHA and was flooded in Tropical Storm Irene with substantial damage to the structure. In addition to eliminating flood risks at the facility, the relocation would also result in benefits to water quality by removing potential pollutants from flood prone areas. Project is not moving forward due to lack of financing. Project is being considered for NYCDEP flood buyout program.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	Protect to the 500 year flood event	Estimated Benefits (losses avoided):	Remove critical facility from flood hazard area to ensure services are available when needed
Useful Life:	Est. 100+ years		
Estimated Cost:	\$1,500,000		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	1 – 3 years depending on funding
Estimated Time Required for Project Implementation:	1 – 3 years depending on funding	Potential Funding Sources:	Hazard Mitigation Grant Program – 4480 (Village applied in 6/2022), CWC FHMIP, NYCFBO
Responsible Organization:	Village of Tannersville	Local Planning Mechanisms to be Used in Implementation, if any:	Local Flood Analysis (Completed February 2018)
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Facility will continue to flood
	Village evaluating consolidation of highway facilities with Town of Hunter, and relocation of DPW assets to other Village owned parcels.	Unknown	This could extend response times during storms or other emergency events.
	Relocate facility out of floodzone	\$1,500,000	Critical facility would be out of the floodzone and it would remove potential pollutants from flood prone areas.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Greene County Annex

This section presents the jurisdictional annex for Greene County.

Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Dan King, Emergency Manager Greene County Emergency Services 25 Volunteer Drive, Cairo, NY 12413 518-622-3643 dking@gc911eoc.com	John Farrell, Director Greene County Emergency Services 25 Volunteer Drive, Cairo, NY 12413 518-622-3643 jfarrell@gc911eoc.com
Additional Planning Team Contributors	
Shaun Groden, County Administrator	Warren Hart, Deputy County Administrator
Michelle Yost, Watershed Asst. Program Coord.	Scott Templeton, Highway & Solid Waste Superintendent
Teri Weiss, Dir. Business Marketing	Tom Hoyt, Occupational Health and Safety Officer

County Profile

Based upon the 2020 U.S. Census, Greene County had a total population of 48,499 people in 2020. The table below shows additional demographic information for the County. The full county profile can be found in Section 3 - County Profile, of the base plan.

County Demographics	2020	County Demographics	2020
Population	48,499	Median household income	\$56,681
White	89.5%	In civilian labor force age 16+	53.6%
Black or African American	6.3%	Persons with a disability under 65	9.5%
American Indian and Alaskan Native	0.5%	Persons under 5 years	4.3%
Asian	1.3%	Persons under 18 years	15.9%
Two or more races	2.4%	Persons 65 years and over	23.0%
Hispanic or Latino	6.8%	Persons in poverty	11.2%
White, non-Hispanic or Latino	84.2%	Households with internet	73.8%
Foreign born persons	5.8%		

Source: US Census Bureau

Hazard Identification

Following the review of available data, the Planning Team determined that flooding, severe storms/wind events, and severe winter storms/ice storms posed the greatest risk to the County. These hazards were profiled in Section 4 – Risk Assessment, in the base plan. Section 4 also includes the full risk assessment for the County. In addition, Annex A contains additional historical information on the hazards and impacts on the County. The Critical Infrastructure section below contains information on critical facilities under the prevue of the County that are in the hazard area.



National Flood Insurance Program (NFIP)

All of the towns and villages in Greene County participate in the NFIP, which is administered at the municipal level. Section 5.1 of the base plan provides a summary of the NFIP information for the County. In addition, each jurisdictional annex contains the NFIP and floodplain management information specific to the jurisdiction.

NFIP information for all jurisdictions in the County

Jurisdiction		Number of Policies	Number of Claims	Total Claims Payouts
Town	Ashland	11	13	\$353,473.85
	Athens	1	5	\$154,647.84
	Cairo	28	44	\$562,020.70
	Catskill	47	132	\$4,734,536.79
	Coxsackie	3	3	\$11,398.88
	Durham	13	14	\$222,436.08
	Greenville	5	2	\$67,611.00
	Halcott	3	2	\$18,826.39
	Hunter	14	28	\$308,311.38
	Jewett	18	26	\$356,958.29
	Lexington	28	52	\$1,180,727.63
	New Baltimore	13	6	\$32,422.06
	Prattsville	35	98	\$4,341,211.67
	Windham	68	49	\$2,746,214.75
Village	Athens	9	23	\$725,254.35
	Catskill	51	40	\$2,423,114.66
	Coxsackie	15	15	\$251,480.03
	Hunter	18	26	\$225,872.27
	Tannersville	13	27	\$233,346.40
Total		393	605	\$18,949,856.02

Source: DEC (2022)

Critical Facilities and Lifelines

Critical facilities provide essential services and functions to a community and need to always remain functional and accessible, especially following a natural disaster or event. If these facilities are offline or not operational, the impacts to the community can be devastating. Critical facilities in a community generally consist of police, fire and Emergency Medical Services (EMS); emergency operations centers (EOCs); public and private utility facilities; drinking water and wastewater treatment plants; medical facilities; schools; communication towers and Tier 2 (hazardous materials) facilities. In addition to critical facilities, Greene County also incorporates the recently released concept by FEMA, known as Community Lifelines¹. Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. As noted

¹ FEMA Community Lifelines: <https://www.fema.gov/emergency-managers/practitioners/lifelines>



in the Executive Summary, cross over planning was conducted with the Comprehensive Emergency Management Plan (CEMP) planning team, which was working on the update to that plan at the same time as this update. The CEMP planning team was incorporating Community Lifelines into their Emergency Support Functions; therefore, it was imperative the two teams collaborate to ensure potential impacts to community lifelines and potential mitigation actions were considered in the updated plan. As part of these planning efforts, critical facilities were categorized by their associated Community Lifeline and that is how they are presented in this plan.

Lifelines are the fundamental services that, when stable, allow other facets of communities to function. Lifelines allow critical government and business functions to continue to operate and they are essential to the health and safety of the public. There are seven Community Lifelines as defined by FEMA.

- Safety and Security
- Food, Water, Sheltering
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

As noted above, the critical facilities that were identified by the planning team and other sources, were categorized by their associated Lifeline. Below is information on the number of critical facility types and lifeline classification within the jurisdiction that are in the 100- and 500-year flood hazard area identified by the jurisdiction. In addition, a full listing of the names and location of all critical facilities in the County is contained in Appendix C, which is not for public disclosure.

Facility Type	Lifeline Classification	100 yr. Flood	500 yr. Flood
Highway Facility	Transportation	2	2
Government Facility	Safety and Security	0	2
Port	Transportation	1	1
Police Station	Safety and Security	1	1

Public Involvement

Section 2.3 – Community Engagement, of the base plan outlines the public engagement that was conducted at the County level as part of the update process. In addition, below is an overview of the number of Community Surveys that were completed as well as a sampling of some of the comments received from the public that are specific to the County.

Number of surveys completed in total
398



Sampling of comments received from survey respondents specific to the County
I would like to see Greene County Highway actually trim brush hanging over our road.
County should help local Fire Departments to make shelters like get them cots, blankets and pillows
Our road has been washed out several times in the 50 years that we have been in this house (Irene was one).
Concerned about climate change and cyclic nature of events.
I believe that people new to the area should have access to information on how to be prepared for a snow or ice storm that could impact the area.
Please be sure to include Wave Farm's WGXC 90.7-FM in your community partners who can help communicate information to Greene County Residents on this important topic.
I am interested in reviewing your Greene County Emergency Plan. I would like to see if there are any plans to utilize Greene County Transit as part of any mass evacuation procedure and review or create a combined process in the event that we are needed.

Capability Assessment

A capability assessment was conducted of the County’s authorities, policies, programs, and resources that can reduce impacts of hazards or could aid in implementing mitigation actions. Capabilities for the County are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Plans	Yes/No Year last updated	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan		
Capital Improvement Plan		
Economic Development Plan	Yes 2007	
Emergency Operations Plan	Yes 2022	Yes, it addresses all hazards. Yes, it can be used to implement mitigation actions through the various Community Lifeline Branches and associated ESFs.
Continuity of Operations Plan	Yes 2021	Yes, it addresses all hazards. Yes, the plan be used to implement mitigation actions.
Transportation Plan	Yes 2018	



Stormwater Management Plan		
Local Flood Analysis	N/A	Yes, implemented at local and county level, without county support.
Other special plans (e.g. disaster recovery, climate change adaptation)		
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the GCHMP, as well as potential impacts of climate change.
Building Codes, Permitting, Inspections	Yes/No	What types of codes? Are codes adequately enforced?
Building Code		Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score:		Score:
Fire department ISO rating		Rating:
Site plan review requirements	Yes	Yes, codes are adequately enforced
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.
Land Use Planning and Ordinances	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance		
Subdivision ordinance		
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps	Yes	
Acquisition of land for open space and public recreation uses		
Other		



<p>How can these capabilities be expanded and improved to reduce risk?</p>	<p>Planning and land use regulations will be reviewed based on developing trends in identified hazards, including potential impacts of climate change, and mitigation measures that can make them more effective at preventing losses.</p>
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Administrative and Technical

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS/Hazus Coordinator, building inspectors, grant writers, and floodplain managers. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

<p>Administration</p>	<p>Yes/No</p>	<p>Describe capability Is coordination effective?</p>
<p>Planning Board</p>	<p>Yes</p>	
<p>Mitigation Planning Committee</p>	<p>Yes</p>	<p>The Hazard Mitigation Planning team for the County includes representatives from multiple departments, including the administration, that work together to identify and review mitigation actions to aid the County in mitigating against the risk/vulnerabilities they face.</p>
<p>Maintenance programs to reduce risk (e.g. tree trimming, clearing drainage systems)</p>		<p>Yes, County Highway Dept. conducts these maintenance items to reduce power outages and flooding.</p>
<p>Mutual aid agreement</p>	<p>Yes</p>	<p>The County has mutual aid agreements for all fire departments in the County and with adjacent counties. There is a similar mutual aid agreement for EMS services and coordination of both agreements is effective.</p>
<p>How can these capabilities be expanded and improved to reduce risk?</p>		<p>By ensuring these groups are aware of the hazards identified in this plan and continue to work with them to identify ways a mitigate the risks they pose.</p>
<p>Technical Staff</p>	<p>Yes/No FT/PT</p>	<p>Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?</p>
<p>Building Official</p>		
<p>Code Enforcement Officer</p>		
<p>Emergency Manager</p>	<p>Yes/FT</p>	<p>Yes, to all.</p>
<p>Community Planner</p>	<p>Yes/FT</p>	<p>Yes, to all.</p>



Superintendent of Highways	Yes/FT	Yest to all.
GIS/Hazus Coordinator	Yes/FT	Yes, to all.
Grant Writer		
How can these capabilities be expanded and improved to reduce risk?	Continue to utilize and seek improved practices for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts.	

Financial

The table below contains a list of administrative and financial capabilities available to the County. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMGP)	Yes	
Pre-Disaster Mitigation (PDM) grant program	Yes	
Flood Mitigation Assistance (FMA) grant program	Yes	
Catskill Watershed Corporation (CWC) Flood Hazard Mitigation Implementation Program (FHMIP)	Yes	
GCSWCD Stream Management Implementation Program (SMIP)	Yes	
Community Development Block Grants	Yes	
Capital improvements project funding		
Authority to levy taxes for specific purposes		
Impact fees for new development		



Incur debt through general obligation bonds and/or special tax bonds		
Other State or Federal funding programs		
How can these capabilities be expanded and improved to reduce risk?	Identify new and creative ways to acquire funding, including through jurisdictional budgets. Apply for FEMA grant programs and other programs that may be available at the state level.	

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Program/Organization	Yes/No	Describe program/organization and how it relates to disaster resilience and mitigation Could the program/organization help implement future mitigation activities?
County website and social media	Yes	The County maintains a website and accounts with Facebook, Twitter, You Tube and Instagram. These resources have been used to provide information on hazard mitigation activities to the public. All resources can be used to support future mitigation activities.
Natural disaster or safety related school programs		Looking into Columbia Greene Community College as a resource for this.
Citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Medical Reserve Corps (MRC), and Red Cross work with county agencies to provide and promote preparedness information and training and provide support during disasters. The GC Veterans Service Agency works to support veterans with access to needed medical care and helps to identify veterans in need during a potential hazard situation. All groups can be used to support future mitigation activities. GC Mental Health population awareness Greene County Chamber of Commerce
Public education/information program (e.g. responsible water use, fire safety, household preparedness, environmental education)	Yes	Continued education regarding emergency preparedness and planning through radio interviews and attendance at events like the County Youth Fair. Provide public health emergency preparedness trainings to volunteers and the general public. GC Soil and Water Conservation District sponsors a number of public outreach and education projects related to watersheds, water quality, and erosion and sediment control. All programs can be used to support



		future mitigation activities. Looking into Columbia Greene Community College as a resource for training or providing classes.
Public-private partnership initiatives addressing disaster related issues	Yes	Ulster-Greene ARC works to provide transportation and assistance to a segment of the County's vulnerable population, particularly in rural areas, which makes them an important part of the mitigation planning process and they can be used to support future mitigation activities.
StormReady certification	No	No, but the County is exploring obtaining this certification for the County as a whole.
How can these capabilities be expanded and improved to reduce risk?		Make a concerted effort to include these organizations in public outreach and overall emergency preparedness efforts. Could also work to develop a schedule for trainings.



Mitigation Strategy

The following section provides an overview of the mitigation strategy for Greene County. The first table below provides an overview and status of the previous mitigation actions that were part of the 2016 HMP. The second table contains the proposed mitigations actions, which includes those that are carried forward from the previous actions. The last part of this section contains the NYS Hazard Mitigation Worksheets that are required as part of the plan.

Overview and Status of Previous Mitigation Actions

Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
1	Emergency Communications Infrastructure Mitigation Program	Communications between the 911 center and emergency responders at risk from identified hazard; and are affected by any compromise in the system.	Install new radio transmission system to ensure dedicated redundant communication lines between the 911 center and each tower. Dedicated fiber optic lines will provide additional redundancy.	In progress/ongoing	The county has added communications sites and enhanced the backhaul. Limited redundancy exists which is the focus of the continued buildout	Funding and supply chain issues	Yes, some sites added so remainder of project is on redundancy
2	Public Awareness Campaign	Improved awareness of the potential damages that can be caused by a natural disaster.	Reach out to towns and villages for distribution of information to general public through their Planning Board meetings, workshops that happen after their meetings and Workshops; radio interviews	Delayed	While some initial action was taken, covid response in '20 and '21 curtailed outreach programs.		Yes
3	Hazardous Cargo Plan	Concern about hazardous cargo and potential for spills on CSX line	There's a County Steering Committee working with a State Steering Committee on a plan (with 20 other counties).	Completed			No, Plan is now in place for hazardous cargo incidents



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
4	County Road 2 Relocation, Town of Lexington, Greene County	The highway has been damaged in a number of storms including Hurricane Irene.	Relocate 2900 feet of two-lane County highway section to current County standards. This will include replacement of a 12-foot box culvert carrying a small tributary to the Schoharie creek, storm water detention or retention practices, new subgrade, full depth asphaltic road surface and guiderail as warranted.	In progress/Ongoing	The 12 foot box culvert was redesigned and is on schedule to be replaced in 2023	Funding for the full relocation has not been secured yet	Yes
5	Bridge replacement	Town water supply wells are at risk. A previous mitigation project was implemented with NRCS	Keep access road clear, improve access, bridge replacement	Cancelled due to change in priorities			No
6	Relocate Building 3 in Ashland	Building 3 is a maintenance sub residency quarters for the Greene County Highway Department. It is located in the Town of Ashland within the 100 year flood plain of the Batavia Kill.	Provide new building above 500 year flood plain using an abandoned soil mine area currently privately owned, proximate to County Route 17.	Delayed		Project is delayed due to alternate locations available.	Yes, slight modification for alternate locations available.



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
7	Relocate garage in Ashland	County Highway garage in Ashland is vulnerable to flood risk.	Relocate the Ashland County Highway garage out of the 500-year floodplain.	Delayed	Mapping to identify suitable parcels out of the floodplain and communication with WAJ school district for possible co-location of its bus facility which is in the floodway & floodplain	Project is delayed due to alternate locations available	Yes, slight modification for alternate locations available.
8	Replacement of temporary Bailey Bridge	The current bridge is a single lane structure with limited capacity, difficult ingress/egress, and a risk of failure.	Replace current “temporary” Bailey Bridge which is bearing on a deteriorating stone arch bridge with risk of failure.	In progress/Ongoing	The Town of Durham which owns and is responsible for the Stone Arch bridge submitted a request for a feasibility study from an engineering firm to develop options to replace existing structure.		Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
9	Replace Timber Lake Bridge over the Broad Street Hollow Creek, Greene County	This one span bridge structure, BIN 3201240, carries Timber Lake Road over the Broad Street Hollow Brook Kill in the Town of Lexington. The bridge is rated structurally deficient by NYSDOT and FHWA.	Replace bridge and approaches to current standards in accordance with NYSDOT Bridge Design Standards.	Delayed		Timber Lake Rd bridge was delayed due to ROW issues but is currently on schedule to be replaced Spring 2023.	Yes
10	Culvert Replacements	Undersized culverts contribute to flooding on roadways during high flows.	Work with Greene County communities to replace undersized culverts.	In progress/Ongoing			Yes, new culvert locations were added
11	Catskill Streams Buffer Initiative	An effective riparian buffer program can assist landowners with their efforts to protect and maintain healthy riparian buffers, address invasive species, and improve the condition of unstable or degraded riparian areas.	The GCSWCD and NYCDEP will work with landowners in the NYC watershed to protect, enhance, manage and restore riparian buffers within the WOH watershed.	In progress/Ongoing			Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
12	Creative Stormwater Practices and Critical Area Seeding	In order to reduce runoff and protect groundwater resources in the basin, the GCSWCD and NYCDEP support promoting the infiltration of stormwater through erosion and sediment control techniques	The GCSWCD will work with multiple partners to implement stormwater projects within the Schoharie Watershed.	Cancelled			No, Stormwater projects are referred to the CWC SW Retrofit program
13	Riparian buffer acquisition program	Acquire streamside properties that protect the floodplain, with intact forested riparian buffers, within the Schoharie Creek Watershed	Piloted in the Schoharie Creek Watershed, this program will be administered by the Catskill Center in Arkville.	Ongoing	34 parcels totaling 260 acres acquired between 2016 - 2022		Yes
14	Stream Restoration Projects and Modifications	Stream bank restoration is needed to prevent erosion and stabilize stream banks.	Stream restoration projects and modifications includes assessment, design, permitting, contracting, and construction oversight.	In progress/Ongoing			Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
15	Kaaterskill Creek Landslide Stabilization	A reach of the Kaaterskill Creek in the Town of Hunter is extremely unstable causing significant sediment loading which threatens the hamlet of Palenville, the long-term stability of County Route 32A, the Kaaterskill and Catskill Creeks, the Hudson River estuary fisheries, and causes significant sediment buildup in the Hudson River ultimately contributing to downstream deposits in the NY-NJ Harbor.	The toe of the eroding bank needs to be stabilized and protected from erosive forces. Sheet piling toe protection is the best option if the geology allows for that. Soil borings would be conducted to determine the depth of the bedrock (generally 1 - 2x's the height of above ground armoring is required).	Delayed	The Town of Hunter submitted a Hazard Mitigation Grant Program application in 2013 to address a massive streambank failure along the Kaaterskill Creek in Kaaterskill Clove. The application was not approved, but the eroding bank remains a concern.	Lack staff capacity and funding	Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
16	Mental Health Facility Acquisition and relocation	Mental Health Facility located in the floodplain of Shingle Kill. Old building in poor condition, has experienced flooding. Groundwater intrusion in basement, SCWD in same building.	Discussing relocation for mental health facility	Delayed	A location has been identified, and the construction process has begun. It is estimated the new facility will be operating in 2024.	Lack of funding for a project this size has delayed it.	Yes
17	Natural Disaster Preparedness Training	Residents need additional training on sheltering in place.	Provide training and informational materials about sheltering in place to everyone in the county.	Cancelled			No, due to change in priority.
18	Local Flood Analyses (LFAs) for Valley Towns/Villages	Use the latest flood information and modeling techniques to evaluate flooding issues in population centers and provide a scientifically-driven process to develop and implement solutions.	Secure funding for LFAs in valley towns/villages (outside of NYC Watershed area)	Delayed		No funding, inadequate staffing	No, no funding and inadequate staffing
19	FEMA Hazard Mitigation Acquisition program	Acquisition of properties in the floodplain to remove them permanently from flood hazard.	Twenty-three properties in 8 towns in the County have gone through the program. Demolition takes place within 3 months of the closing and the property is restored to its natural floodplain state.	In progress/Ongoing	Eight properties completed the NYCFBO with structures in the floodplain demolished.		Yes
20	Flood Hazard Mitigation Implementation Program	Flood hazard mitigation measures.	Acquisition/relocation/ and mitigation of properties in accordance with LFA.	In progress/Ongoing			Yes



Proj. #	Project Name	Summary of the Original Problem	Solution/Project	Status (Complete; In-Progress/Ongoing; Delayed; No Progress or Cancelled)	What was accomplished for this project?	What obstacles, problems or delays did the project encounter?	Action to be included in 2022 Plan? If yes, add any changes or revision; if no, explain why
21	Focus on mitigation of critical facilities and repetitive loss properties	Critical facilities are the lifelines of each town and village. Protecting them and mitigating repetitive loss properties are the best ways to reduce damage from hazard events.	GCSWD and Planning Dept will discuss the options for protection of critical facilities and mitigation of repetitive loss properties with each Town and Village.	In progress/Ongoing	Through the LFAs on the mountaintop, critical community facilities in the floodplain are identified with options for mitigating flood risk.		Yes
22	Temporary Housing sites	Need to identify temporary housing sites for post-disaster	Identify potential sites for temporary housing and any other pre-disaster actions necessary to make those sites viable.	Completed			No, temporary housing sites have been identified and a plan is in place.



Proposed Mitigation Actions

Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 1 Old # 1	Greene County Emergency Services	Emergency Communications Infrastructure Mitigation Program	1, 2, 3	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Greene County's emergency communications system is susceptible to natural hazards (flooding, snow storms, severe storms, landslides, fires). Communications between the 911 center and emergency responders at risk; residents, second home owners and tourists are all affected by any compromise in the system.	New radio transmission system to ensure continuity of critical services through installation of dedicated redundant communication lines between the 911 center and each tower. The system will enhance the reliability and resilience of communications infrastructure by increasing the number of towers to maximize coverage within the county. Dedicated fiber optic lines will provide additional redundancy. The system will also enhance weather monitoring which will help improve early warning capabilities.	Yes	High	Est. 2026 or 2027	\$6 million	DHS-OIEC	Reduce loss of communication at the 911 center and among emergency responders. Reduce risk of delayed response by first responders.
GC 2 Old #2	Greene County Emergency Services	Public Awareness Campaign	1, 2, 3, 4	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	Improved awareness of the potential damages that can be caused by a natural disaster. Interest and awareness about hazard mitigation may lose momentum after big storms and after the plan update process wraps up, so the County will continue efforts to bring up the topic.	Reach out to towns and villages (and for distribution of information to general public) through their Planning Board meetings, workshops that happen after their meetings and Workshops; radio interviews (similar to the ones done in 2015), public access channel piece. Greene County will look into billboards and inviting FEMA/NYS DHSES to meetings.	No	High	One event/action every summer and every winter	Staff time	PDM	Improve public awareness of natural hazards



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 3 Old #4	Greene County Highway Department	County Road 2 Relocation, Town of Lexington, Greene County	1, 2, 3	Flood	County Route 2 between the Falke Quarry (privately owned soil mining operation) and the Mosquito Point Bridge (connecting CR 2 to State Route 23A) is located within the 100 year flood plain of the Schoharie Creek. It is the only practical access to the primary source for soil materials for the construction industry in the western section of Greene County. The highway has been damaged in a number of storms including Hurricane Irene.	Relocate 2900 feet of two lane County highway section to current County standards. This will include replacement of a 12 foot box culvert carrying a small tributary to the Schoharie creek, storm water detention or retention practices, new subgrade, full depth asphaltic road surface and guiderail as warranted. This project will remove this often damaged highway section outside the 100 year flood plain thus avoiding future effort and cost to repair it.	No	High	Culvert to be replaced in Spring 2023 rest of project is on hold until funding secured	\$2.5 million	PDM/HM GP	Move that portion of the highway out of the flood plain, saving future replacement costs
GC 4 Old #6	Greene County Highway Department	Relocate Building 3 in Ashland	1, 2	Flood	Building 3 is a maintenance sub residency quarters for the Greene County Highway Department. It is located in the Town of Ashland within the 100 year flood plain of the Batavia Kill a major tributary of the Schoharie Creek. The building was severely damaged during Hurricane Irene. It is cost effective to relocating the building to a less vulnerable location than elevating it more than four feet. In addition, the opportunity exists to co- create a facility to provide emergency community sheltering for an area comprising over 4000 residents in four townships. This would augment two other shelters and become the prime public shelter.	Provide new building above 500 year flood plain using an abandoned soil mine area currently privately owned, proximate to County Route 17. Building will contain garaging, vehicle mechanical repair space, parts storage and a small office area. Make existing County property available to the New York City Watershed. Make unused quarry property available to the Watershed as well. Provide additional storage facilities to support the use of the structure as a community shelter in the event of severe weather or other emergencies. Provide backup power and communications, hardened for severe events. Use FEMA 361 guidelines for building design. Town will complete a local flood analysis (LFA) in 2016 funded by GCSWCD Stream Management Implementation Program. That will make them eligible for flood hazard mitigation funds through NYCDEP.	Yes	High	TBD-still in discussions with GCSWC and NYC DEP	TBD	HMGP, CWC, NYCDEP	Remove structure from 100 year flood and create an emergency shelter for residents



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 5 Old #7	Greene County Highway Department	Relocate garage in Ashland	2, 3	Flood	County Highway garage in Ashland is vulnerable to flood risk.	Relocate the Ashland County Highway garage out of the 500-year floodplain. This project has been expanded to include the Hunter-Tannersville Central School District (HTCSD) bus system as well.	Yes	High	TBD-still in discussions with GCSWC and NYC DEP	TBD	HMGP, CWC, NYCDEP	Remove the CF from the 500 year floodplain
GC 6 Old #8	Greene County Highway Department	Replacement of temporary Bailey Bridge	1, 2, 3	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	The current bridge is a single lane structure with limited capacity, difficult ingress/egress, and a risk of failure which would result in an extended loss of a significant transportation corridor.	Replace current “temporary” Bailey Bridge which is bearing on a deteriorating stone arch bridge with risk of failure.	No	Medium	TBD-Town of Durham submitted a request for a feasibility study from an engineering firm to develop options to replace existing structure.	TBD	NYSDOT	Prevent failure of the bridge which would create a loss of a significant transportation corridor.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 7 Old #9	Greene County Highway Department	Replace Timber Lake Bridge over the Broad Street Hollow Creek, Greene County	1, 2, 3	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm	This one span bridge structure, carries Timber Lake Road over the Broad Street Hollow Brook Kill in the Town of Lexington. Timber Lake Road is the sole access to several dozen properties, including residents and a major private sports recreation camp. There is no other feasible alternative access to these properties in the event of emergency bridge closure. The bridge is rated structurally deficient by NYSDOT and FHWA. Given the importance of maintaining access to properties with no alternatives, replacement of the bridge and its immediate approaches to current hydraulic and structural requirements is highly desirable.	Replace bridge and approaches to current standards in accordance with NYSDOT Bridge Design Standards. This would include establishing a temporary crossing for the construction period, providing a pile or rock - keyed foundation and new approaches.	No	Medium	Spring 2023	High	DOT	This project will ensure that emergency access can be maintained to this area under the most difficult conditions.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 8 Old #10	Greene County Soil & Water Conservation District/Highway Department	Culvert Replacements	1, 2, 3	Flood	Undersized culverts contributes to flooding on roadways during high flows.	<ul style="list-style-type: none"> • County Route 2 over Unnamed Tributary to Schoharie Creek Bridge Design (Prattsville) • County Route 2 over Unnamed Tributary to Schoharie Creek Culvert Replacement (Prattsville or Lexington?) • Construct Rappleyea Road Culvert Replacement Project slated for 2022 (Lexington) • Replace three culverts in Village of Hunter on Mad Brook at Main St., Mad Brook at Glen Ave., and Ski Bowl Rd. at Shanty Hollow following full hydraulic analysis • Replace culverts in Jewett at CR 23C next to town hall and Beaches Corner Rd.(town road). Installing 16 ft wide x 4 ft. high culvert at 23C is recommended. • When due for replacement conduct thorough hydraulic and hydrologic (H & H) analysis for crossing under 23A at Wright's Creek (Jewett) • Replace Main St. bridge on Rt 23, at Mitchell Hollow Creek and implement floodplain bench (requires acquisition of three structures), Windham • Replace Bridge St. bridge in Village of Hunter (county bridge) and implement floodplain reclamation above bridge 	No	High	2022-2026	Various	HMGP, SMIP (NYCDEP /GCSWC D), NYSDOT, GC Highway Capital Improvement, CWC	Reduce flooding and keep roadways open at all times.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 9 Old #11	Greene County Soil & Water Conservation District	Catskill Streams Buffer Initiative	4	Flood, Severe Storm/Wind event	Protect, enhance, manage and restore riparian buffers within the west of Hudson NYC watershed area of Greene County.	The GCSWCD and NYCDEP will work with landowners in the NYC watershed to protect, enhance, manage and restore riparian buffers within the WOH watershed. GCSWCD staff will conduct site visits to determine eligibility for funding through the CSBI. In addition to site visits, recruitment may also include outreach mechanisms such as press releases, targeted mailings, presentations to organizations, and Riparian Corridor Management Plan development.	No	High	Ongoing recruitment	Various	Contract with NYCDEP	Protect the watershed from future disturbance or encroachment
GC 10 Old #13	Greene County Soil & Water Conservation District	Riparian buffer acquisition program	1,2	Flood	Acquire streamside properties that protect the floodplain, with intact forested riparian buffers, within the Schoharie Creek Watershed	Piloted in the Schoharie Creek Watershed, this program will be administered by the Catskill Center in Arkville.	No	Medium	Ongoing	\$5 million contract	Contract with NYCDEP	Protect the watershed from future disturbance or encroachment



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 11 Old #14	Greene County Soil & Water Conservation District	Stream Restoration Projects and Modifications	1, 2	Flood	Protect and restore stream stability and ecological integrity for the west of Hudson NYC watershed streams and floodplains.	Stream restoration projects and modifications includes assessment, design, permitting, contracting, and construction oversight. 1. Batavia Kill Restoration at Red Falls Project 2 (border of Ashland and Prattsville) 2. West Kill above Wolff Road (Lexington) 3. Windham Path Bank Stabilization Implementation (Windham) 4. East Kill Stabilization near County Route 17 (Jewett) 5. East Kill Streambank Stabilization near CR 78 bridge repairs (Jewett) 6. CR 17 Embankment Stabilization Construction commenced in the fall of 2021 with the repair of the roadway embankment and roadway in order to reopen CR 17 to traffic. Channel realignment and construction is set to resume in summer/fall of 2022.	No	High	2022-2024	Various	Contract with NYCDEP	Protect the streams and watersheds and their environments



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 12 Old #15	Greene County Soil & Water Conservation District	Kaaterskill Creek Landslide Stabilization	1, 2	Flood	Stabilize eroding bank along Kaaterskill Creek, reduce sediment loading	Stabilize and protect toe of eroding bank from erosive forces. Sheet piling toe protection is the best option if the geology allows for that. Soil borings would be conducted to determine the depth of the bedrock (generally 1 – 2x's the height of above ground armoring is required). A hydraulic and hydrologic study needs to be conducted to determine best mitigation option. The estimated volume of sediment loading will be calculated using a formula developed by federal NRCS, which has been used for post-Irene Emergency Watershed Protection projects. Improving the aesthetics of the eroding streambank will also be factored into the mitigation strategy given the significance of the state highway as a Scenic Byway and the economic importance to the region.	No	Medium	Contingent on funding	TBD	PDM/HM GP	Stabilizing the toe of the eroding bank will protect it from further instability, sediment loading, and downstream impacts to infrastructure.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 13 Old #16	Greene County Administration, Buildings and Grounds, Planning	Mental Health Facility Acquisition and relocation	1, 2, 3	Flood	Mental Health Facility located in the floodplain of Shingle Kill, very close to Emergency Services building. Old building in poor condition, has experienced flooding, and has open fields adjacent to it, and is therefore a good candidate for mitigation. Groundwater intrusion in basement, SCWD in same building. Used to flood every time it rained but no problem since Irene. Pumps set up to get water out.	Discussing relocation for mental health facility	Yes	High	FY 2025	\$17 Million for construction	PDM/HM GP	Remove building from floodplain and protect residents from flooding. Lot can be open space for public use
GC 14 Old #19	Planning, GCSWCD	New York City Flood Buyout Program (NYCFBO)	1, 2, 3, 4	Flood	Acquisition of properties in the floodplain to remove them permanently from flood hazard.	The voluntary New York City Flood Buyout Program (NYCFBO) is active when there is no FEMA declared disaster. Structures need to meet eligibility criteria to be considered and interested landowners require local municipal board approval. Demolition of buildings is handled by the Catskill Watershed Corporation	No	Medium	Ongoing	\$15 million program, began in 2017	NYCDEP, CWC	Remove vulnerable properties from the floodplain
GC 15 Old #20	CWC/GCSWCD	Flood Hazard Mitigation Implementation Program	1, 2, 3, 4	Flood	Reduce flood impacts to public and private properties.	Acquisition/relocation/ and mitigation of properties in accordance with LFA.	No	Medium - High	Ongoing	\$15 million program for NYCFBO, \$17 million for CWC FHMIP, \$1 million for SMIP	NYCDEP, CWC, GCSWCD SMIP	Remove vulnerable properties from the floodplain



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 16 Old #21	GCSWD and Planning Department	Focus on mitigation of critical facilities and repetitive loss properties	1, 2, 3, 4	Flood	Reduce flood impacts to critical community facilities and repetitive loss properties.	Mitigate flood damages to critical facilities and repetitive loss properties. The Ashland county highway garage, GNH lumber in Windham, and Hunter fire house are critical facilities identified for relocation in the LFAs.	Yes	Medium - High	Ongoing	\$15 million program for NYCFBO, \$17 million for CWC FHMIP, \$1 million SMIP	NYCDEP, CWC, GCSWCD SMIP	Remove critical facilities from the floodplain and relocate them so safer locations to avoid loss of service
GC 17	Greene County Highway	County Rte. 1 Culvert upgrade	1, 2, 3	Flood	Undersized county culvert over Brownell Creek (CR 1), frequently flanks on left side and overtops road. The structure is in poor condition.	Upgrade culvert upgrade to ensure an adequately sized culvert will pass the 100-year flood event	No	Low - Medium	When scheduled for replacement	Cost estimates will be derived from a hydraulic and hydrologic analysis at time of design.	GC Highway Capital Improvement program, HMGP, Delaware Co. SMIP, CWC	Reduce the impacts from flooding and ensure culvert will pass a 100 year event.



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 18	Greene County Highway	County Rte. 3 Culvert upgrade	1, 2, 3	Flood	County Route 3 is a critical access route for emergency services; primary access to town. The culvert is hydraulically and structurally deficient. It needs to be upsized to pass the 100-year flood.	Upgrade culvert upgrade to ensure an adequately sized culvert will pass the 100-year flood event	No	Low – Medium	When scheduled for replacement	Cost estimates will be derived from a hydraulic and hydrologic analysis at time of design.	GC Highway Capital Improvement program, HMGP, Delaware Co. SMIP, CWC	Reduce the impacts from flooding' keep route open and ensure culvert will pass a 100 year event.
GC 19	Greene County Highway	Replace CR23C culvert next to Jewett Town Hall	1, 2, 3	Flood	Frequent flooding on road that damages the road and can impact the town hall complex.	Replace 23C culvert with a 16-foot-wide by 4-foot-high concrete box culvert that would increase the hydraulic capacity of the culvert from 93 cfs to 427 cfs, or greater than the estimated 100-year flood event, without flooding the road. Restoration of the channel upstream and downstream to bankfull dimensions would be required to accommodate the replacement structure and prevent water from bypassing the new culvert.	No	High	2023 – 2024	TBD, design scope will follow the 30/60/90 design steps required by the NYCDEP and include cost to construct the new culvert	HMGP, SMIP (NYCDEP /GCSWCD), CWC	Reduce flood related damages to county road and town hall complex



Proj #	Lead Agency	Project Name	Goal met	Hazard to be Mitigated	Description of Problem	Description of Solution	CF?	Priority	Est. Timeline	Est. Cost	Potential Funding Sources	Est. Benefits
GC 20	Greene County Highway	Shanty Hollow culvert replacement	1, 2, 3	Flood	Hydraulic modeling indicates this culvert is undersized and does not pass the 50-year storm flow	Replace Ski Bowl Road culvert over Shanty Hollow with a new culvert sized to pass at a minimum the 50-year storm flow.	No	Medium - High	2023	TBD	STIP, Capital Improvement, GC Highway	Reduce flooding of roadway

Implementation timeframe is categorized as Short Term for target year 2023, Medium Term for target year 2025, and Long Term for target year 2026 and beyond. For projects where specific costs is unknown, High (>\$500k), Medium (\$100k-\$500k), and Low (<\$100k) are used to express estimates.



NYS Required Mitigation Action Worksheets (minimum of 2)

Mitigation Action Worksheet			
Name of Jurisdiction:	Greene County		
Project Name:	Emergency Communications Infrastructure Mitigation Program		
Project Number:	GC 1 - previous project number 1		
Risk / Vulnerability			
Hazard of Concern:	Flood, Severe Storm/Wind Event, Severe Winter Storm/Ice Storm		
Description of the Problem:	Greene County's emergency communications system is susceptible to natural hazards (flooding, snow storms, severe storms, landslides, fires). Communications between the 911 center and emergency responders at risk; residents, second home owners and tourists are all affected by any compromise in the system.		
Action or Project Intended for Implementation			
Description of the Solution:	New radio transmission system to ensure continuity of critical services through installation of dedicated redundant communication lines between the 911 center and each tower. The system will enhance the reliability and resilience of communications infrastructure by increasing the number of towers to maximize coverage within the county. Dedicated fiber optic lines will provide additional redundancy. The system will also enhance weather monitoring which will help improve early warning capabilities. Since the 2016 plan was put in place, the county has added communications sites and enhanced the backhaul. Limited redundancy exists which is the focus of the continued buildout.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	500-year flood event	Estimated Benefits (losses avoided):	Reduce loss of communication at the 911 center and among emergency responders. Reduce risk of delayed response by first responders.
Useful Life:	40 years		
Estimated Cost:	\$6 Million		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Project is in process
Estimated Time Required for Project Implementation:	Est. 2026 or 2027	Potential Funding Sources:	DHS -OIEC
Responsible Organization:	Greene County Emergency Services	Local Planning Mechanisms to be Used in Implementation, if any:	N/A
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Potential for temporary loss of communication in areas
	Partial implementation of the measures suggested.	Unknown	The potential for gaps in coverage would still exist without needed redundancy
	Dedicated fiber optic lines will provide additional redundancy.	\$6 Million	Fiber optic lines are the best alternative to ensure redundancy is achieved.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Mitigation Action Worksheet			
Name of Jurisdiction:	Greene County		
Project Name:	Mental Health Facility Acquisition and relocation		
Project Number:	GC 13 - previous project number #16		
Risk / Vulnerability			
Hazard of Concern:	Flood		
Description of the Problem:	Mental Health Facility located in the floodplain of Shingle Kill, very close to Emergency Services building. Old building in poor condition, has experienced flooding, and has open fields adjacent to it, and is therefore a good candidate for mitigation. Groundwater intrusion in basement, SCWD in same building. Used to flood every time it rained but no problem since Irene. Pumps set up to get water out.		
Action or Project Intended for Implementation			
Description of the Solution:	Discussing relocation for mental health facility. A location for a new Mental Health facility has been identified, and the various construction processes have begun. It is estimated to have the new facility operating in 2024.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)			
Level of Protection:	500-year flood event	Estimated Benefits (losses avoided):	Remove building from floodplain and protect residents from flooding. Lot can be open space for public use
Useful Life:	50+ years		
Estimated Cost:	\$17 Million for construction		
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	In process
Estimated Time Required for Project Implementation:	FY 2025	Potential Funding Sources:	PDM/HMGP
Responsible Organization:	Greene County Administration, Buildings and Grounds, Planning	Local Planning Mechanisms to be Used in Implementation, if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	
	Elevate of the facility.	Unknown	Elevation of the facility is not feasible due to the building's construction and age.
	Relocate facility.	\$17 Million	Relocation will protect against a 100- and 500-year flood event
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			