

SECTION 9. JURISDICTIONAL ANNEXES

9.6 TOWN OF HAVERSTRAW

This jurisdictional annex to the Rockland County Hazard Mitigation Plan (HMP) provides information to assist public and private sectors in the Town of Haverstraw with reducing losses from future hazard events. This annex is not guidance of what to do when a disaster occurs; its focus is on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. The annex presents a general overview of the Town of Haverstraw, describes who participated in the planning process, assesses the Town’s risk, vulnerability, and capabilities, and outlines a strategy for achieving a more resilient community.

9.6.1 Hazard Mitigation Planning Team

The Town of Haverstraw identified primary and alternate HMP points of contact and developed this plan over the course of several months, with input from many Town departments. The Building Inspector represented the community on the Rockland County HMP Planning Partnership and Steering Committee and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Table 9.6-1 summarizes Town officials who participated in the development of the annex and in what capacity. Additional documentation of the Town’s planning activities through Planning Partnership meetings is included in Volume I.

Table 9.6-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name/Title: George Behn, Building Inspector Address: 1 Rosman Road, Garnerville, New York 10923 Phone Number: (845) 429-2200 Email: gbehn@townofhaverstraw.org	Name/Title: Michael Gamboli, Director of Finance Address: 1 Rosman Road, Garnerville, New York 10923 Phone Number: (845) 429-2200 Email: mgamboli@townofhaverstraw.org
National Flood Insurance Program Floodplain Administrator	
Name/Title: George Behn, Building Inspector Address: 1 Rosman Road, Garnerville, New York 10923 Phone Number: (845) 429-2200 Email: gbehn@townofhaverstraw.org	
Additional Contributors	
Name/Title: Linda Donnelley, Principal Clerk Method of Participation: Participation and completion of worksheets from the Planning Partnership Risk Assessment and Mitigation Action workshops	

9.6.2 Municipal Profile

The Town of Haverstraw is located north of the Rockland County towns of Clarkstown and Ramapo; east of Orange County; south of the Town of Stony Point (Rockland County); and west of the Hudson River. The town has a total area of 27.4 square miles, 5.3 square miles of which are covered by water. There are three incorporated villages

within the town, one of which is also known as Haverstraw. The Village of Haverstraw is the original seat of government for the town, hosting the area's historic central downtown business district and the densest population in northern Rockland County. The villages of Pomona and West Haverstraw are also located within the town. Significant waterways impacting the town include Minisceongo Creek and its tributaries, the Hudson River along the eastern town boundary, and the Mahwah River near the Village of Pomona.

Research has shown that some populations are at greater risk from hazard events because of decreased resources or physical abilities. These populations can be more susceptible to hazard events based on a number of factors including their physical and financial ability to react or respond during a hazard, and the location and construction quality of their housing. Data from the 2017-2021 American Community Survey indicates that 7.8 percent of the population is 5 years of age or younger, 18 percent is 65 years of age or older, 7.1 percent is non-English speaking, 10.1 percent is below the poverty threshold, and 8.8 percent is considered disabled.

9.6.3 Jurisdictional Capability Assessment and Integration

The Town of Haverstraw performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Volume I describes the components included in the capability assessment and their significance for hazard mitigation planning. The jurisdictional assessment for this annex includes analyses of the following:

- Planning and regulatory capabilities
- Development and permitting capabilities
- Administrative and technical capabilities
- Fiscal capabilities
- Education and outreach capabilities
- Classification under various community mitigation programs
- Adaptive capacity to withstand hazard events

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into day-to-day local government operations. As part of the hazard mitigation analysis, planning and /policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress toward plan integration. Development of an updated mitigation strategy provided an opportunity for the Town of Haverstraw to identify opportunities for integration of mitigation concepts that can be incorporated into municipal procedures.

Planning, Legal, and Regulatory Capability and Integration

Table 9.6-2 summarizes the regulatory tools that are available to Town of Haverstraw.

Table 9.6-2. Planning, Legal, and Regulatory Capability and Integration

	Jurisdiction has this? (Yes/No)	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Codes, Ordinances, & Regulations				
Building Code	Yes	Chapter 84: Fire Prevention and Building Construction, 2007 (New York State Uniform Fire Prevention and Building Code (the Uniform Code) and the State Energy Conservation Construction Code (the Energy Code))	State, Local	Building Department
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The Building Code has permitting requirements and special oversight for development in the floodplain or in areas facing flood risks.				
Zoning/Land Use Code	Yes	Chapter 167: Zoning, 1990	Local	Zoning, Building Inspector, Planning Board
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The purpose of the Zoning Code is to secure safety from fire flood, panic, and other damages, and promote health and general welfare, in addition to other objectives. There are provisions guiding development in floodplains and wetlands to mitigate potential damage from hazard events.				
Subdivision Code	Yes	Chapter A176: Subdivision of Land, 1990	Local	Zoning, Planning Board, Building Department
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> Land to be subdivided shall be of such character that it can be used safely for building purposes without creating danger to health or peril from fire, flood, landslide, or other menace. Proper provision shall be made for access, drainage, water, sewerage and other needed improvements.				
Site Plan Code	Yes	Chapter A173: Site Development Plans, 2004	Local	Planning Board, Building Department
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The Town Code requires permits for any construction other than detached, single-family residences or structures accessory thereto.				
Stormwater Management Code	Yes	Article XVI: Chapter 137: Sewers, Part 3: Stormwater Management, 2006	Local	Engineering Department
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The purpose of this article is to provide for the health, safety, and general welfare of the citizens of the Town of Haverstraw through the regulation of non-stormwater discharges to the municipal separate storm sewer system (MS4) to the maximum extent practicable as required by federal and New York State law.				
Post-Disaster Recovery/ Reconstruction Code	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Real Estate Disclosure	Yes	New York State (NYS) mandate, Property Condition Disclosure Act, NY Code – Article 14 §460-467	State and local	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The NYS mandate requires sellers to disclose to potential buyers whether their property is located in a designated floodplain				
Growth Management	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				

	Jurisdiction has this? (Yes/No)	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Environmental Protection Ordinance	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Flood Damage Prevention Ordinance	Yes	Chapter 87: Flood Damage Prevention, 2014	Federal, State, Local	Building Inspector
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The Town Board of the Town of Haverstraw finds that the potential and/or actual damages from flooding and erosion may be a problem to the residents of the Town of Haverstraw and that such damages may include destruction or loss of private and public housing, damage to public facilities, both publicly and privately owned, and injury to and loss of human life. To minimize the threat of such damages, the Town requires special permits for development of structures and uses that are vulnerable to flood impacts.				
Wellhead Protection	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Emergency Management Ordinance	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Climate Change Ordinance	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Other: Freeboard	Yes	State Code	State, Local	Village Engineer
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
Other: Cumulative Substantial Damage	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Planning Documents				
General/Comprehensive Plan	Yes	6-24-2002 by L.L. No. 7-2002	Local	Planning Board
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The Town's master plan includes areas of natural hazard risk including flood-prone areas and steep slopes, and refers to the county-wide Hazard Mitigation Plan.				
Capital Improvement Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Disaster Debris Management Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Floodplain Management or Watershed Plan	Yes	Chapter 87, 2014 Chapter A176, Article VI, 1990	Federal, State, Local	Building Department, Engineering
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The Town Stormwater Coordinator is the appointed local floodplain administrator to administer and implement the ordinance by granting or denying floodplain development permits in accordance with its provisions.				

	Jurisdiction has this? (Yes/No)	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Stormwater Management Plan	Yes	Stormwater Management Plan, 2012	Local	Engineering, Highway
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
The Town of Haverstraw has enacted Stormwater Management Regulations (SMRs) to protect and safeguard the general health, safety and welfare of the public residing with in the Town of Haverstraw and the natural resources of Town. As part of the SMRs, Patrick Brady, P.E., has been designated the Stormwater Management Officer (SMO) for the Town of Haverstraw. The SMO oversees the SMRs and manages the Municipal Separate Storm Sewer Systems (MS4s).				
Open Space Plan	Yes	Chapter A176, Article VII	Local	Planning, Building
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
The Town has an Open Space Plan which helps to manage natural hazard risk through erosion control, prescribing maintenance for grass and trees, and providing for natural slope stabilization.				
Urban Water Management Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Habitat Conservation Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Economic Development Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Community Wildfire Protection Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Community Forest Management Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Transportation Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Agriculture Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Climate Action/ Resiliency/Sustainability Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Tourism Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				
Business/ Downtown Development Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i>				
N/A				

	Jurisdiction has this? (Yes/No)	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Other (for example NYRCR, etc.)	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Response/Recovery Planning				
Comprehensive Emergency Management Plan	Yes	Town of Haverstraw EOP, 2014	Local	OEM
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> The Emergency Operation Plan for the Town of Haverstraw was updated in 2014. Its implementation is overseen by the Town’s Emergency Coordinator.				
Continuity of Operations Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Substantial Damage Response Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Threat & Hazard Identification & Risk Assessment	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Post-Disaster Recovery Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Public Health Plan	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				
Other	No	-	-	-
<i>How has or will this be integrated with the HMP and how does this reduce risk?</i> N/A				

Development and Permitting Capability

Table 9.6-3 summarizes the capabilities of Town of Haverstraw to oversee and track development.

Table 9.6-3. Development and Permitting Capability

Indicate if your jurisdiction implements the following	Yes/No	Comment:
Do you issue development permits? <ul style="list-style-type: none"> If you issue development permits, what department is responsible? If you do not issue development permits, what is your process for tracking new development? 	Yes	Building Department
Are permits tracked by hazard area? (For example, floodplain development permits.)	Yes	-

Indicate if your jurisdiction implements the following	Yes/No	Comment:
Do you have a buildable land inventory? <ul style="list-style-type: none"> If you have a buildable land inventory, please describe 	Unknown	-
Describe the level of build-out in your jurisdiction.	N/A	-

Administrative and Technical Capability

Table 9.6-4 summarizes potential staff and personnel resources available to Town of Haverstraw and their current responsibilities that contribute to hazard mitigation.

Table 9.6-4. Administrative and Technical Capabilities

Resources	Available? (Yes/No)	Comments (available staff, responsibilities, support of hazard mitigation)
<i>Administrative Capability</i>		
Planning Board	Yes	The Planning Board meets every second Wednesday of the month at 7:30PM in the large meeting room of Town Hall. It is the legislative intent of the Planning Board to consider land subdivisions and site development plans as part of a plan for the orderly, efficient, and economical development of the Town of Haverstraw. The Planning Board is also charged with reviewing the Master Plan.
Zoning Board of Adjustment	Yes	The Zoning Board of Appeals meets every second Wednesday of the month at 7:00PM in the large meeting room of the Town Hall. The Zoning Board of Appeals has all the authority and duties prescribed by the State of New York Town Law and Town of Haverstraw code standards.
Planning Department	No	-
Mitigation Planning Committee	Yes	Emergency Management Coordinator
Environmental Board/Commission	No	-
Open Space Board/Committee	Yes	Planning, Zoning, Building Department
Economic Development Commission/Committee	No	-
Public Works/Highway Department	Yes	The Town of Haverstraw Highway Dept. employees perform various work-related duties in and around the town’s roads. The Department perform snow removal operations, pick-up yard waste, maintain all Town roadways, and perform grounds work of all Town facilities.
Construction/Building/Code Enforcement Department	Yes	The Building Department issues permits and conducts inspections.
Emergency Management/Public Safety Department	Yes	The mission of the Haverstraw Town Police Department is to protect the right of all persons within its jurisdiction to be free from criminal attack, secure in their possessions and to live in peace. The Department consist of the Patrol, Detective, and Youth divisions.
Maintenance programs to reduce risk (stormwater maintenance, tree trimming, etc.)	Yes	The Town of Haverstraw Highway Dept. employees perform various work-related duties in and around the town’s roads. The Department perform snow removal operations, pick-up yard waste, maintain all Town roadways, and perform grounds work of all Town facilities.
Mutual aid agreements	Yes	Building, Engineering, Police, Fire, and Highway Departments

Resources	Available? (Yes/No)	Comments (available staff, responsibilities, support of hazard mitigation)
Human Resources Manual - Do any job descriptions specifically include identifying or implementing mitigation projects or other efforts to reduce natural hazard risk?	No	-
Other	No	-
<i>Technical/Staffing Capability</i>		
Planners or engineers with knowledge of land development and land management practices	Yes	Planning, Zoning, Engineering, Building
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering
Planners or engineers with an understanding of natural hazards	Yes	Planning and Engineering
Staff with expertise or training in benefit/cost analysis	Yes	Consultant Engineers
Professionals trained in conducting damage assessments	Yes	Brooker Engineers and GHD Engineering Firm
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Building and Highway Departments
Personnel skilled or trained in GIS and/or Hazus applications	Yes	Building and Highway Departments
Environmental scientist familiar with natural hazards	No	-
Surveyor(s)	Yes	Engineering
Emergency Manager	Yes	Emergency Coordinator
Grant writer(s)	Yes	Staff and consultant engineers
Resilience Officer	No	-
Other (this could include stormwater engineer, environmental specialist, etc.)	No	-

Fiscal Capability

Table 9.6-5 summarizes financial resources available to Town of Haverstraw.

Table 9.6-5. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use? (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes, in certain areas of town
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No

Financial Resources	Accessible or Eligible to Use? (Yes/No)
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other (for example, Clean Water Act 319 Grants [Nonpoint Source Pollution])	No

Education and Outreach Capability

Table 9.6-6 summarizes the education and outreach resources available to Town of Haverstraw.

Table 9.6-6. Education and Outreach Capabilities

Outreach Resources	Available? (Yes/No)	Comment:
Public information officer or communications office	No	-
Personnel skilled or trained in website development	Yes	Contracted
Hazard mitigation information available on your website	No	-
Social media for hazard mitigation education and outreach	Yes	The Police Department has a Facebook page which can be utilized for hazard mitigation education and outreach.
Citizen boards or commissions that address issues related to hazard mitigation	No	-
Warning systems for hazard events	Yes	The County utilizes NY-Alert and CodeRed (the backup to NY-Alert) for emergency notifications (all Towns and Villages have access to it).
Natural disaster/safety programs in place for schools	No	-
Organizations that conduct outreach to socially vulnerable populations and underserved populations		
Public outreach mechanisms / programs to inform citizens on natural hazards, risk, and ways to protect themselves during such events	Yes	Newsletter
If yes, please describe.	-	The town newsletter, the Town of Haverstraw Talk of the Town, is sent out quarterly.

Community Classifications

Table 9.6-7 summarizes classifications for community programs available to Town of Haverstraw.

Table 9.6-7. Community Classifications

Program	Participating? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	-	-
New York State Department of Environmental Conservation (NYSDEC) Climate Smart Community	No	-	-
National Weather Service Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Other: Organizations with mitigation focus (advocacy group, non-government)	No	-	-

N/A = Not applicable
 — = Unavailable

Adaptive Capacity

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC, 2022). Each jurisdiction has a unique combination of capabilities to adjust to, protect from, and withstand a future hazard event, future conditions, and changing risk. Table 9.6-8 summarizes the adaptive capacity for each identified hazard of concern and the Town’s capability to address related actions using the following classifications:

- Strong: Capacity exists and is in use.
- Moderate: Capacity might exist; but is not used or could use some improvement.
- Weak: Capacity does not exist or could use substantial improvement.

Table 9.6-8. Adaptive Capacity

Hazard	Adaptive Capacity - Strong/Moderate/Weak
Dam Failure	Moderate
Disease Outbreak	Moderate
Drought	Moderate
Earthquake	Moderate
Extreme Temperature	Moderate
Flood	Moderate
Landslide	Moderate
Severe Weather	Moderate
Severe Winter Weather	Moderate
Wildfire	Moderate

9.6.4 National Flood Insurance Program Compliance

This section provides specific information on the management and regulation of the regulatory floodplain, including current and future compliance with the National Flood Insurance Program (NFIP). The floodplain administrator listed in Table 9.6-1 is responsible for maintaining this information.

NFIP Summary

Table 9.6-9 summarizes the NFIP statistics for Town of Haverstraw.

Table 9.6-9. Town of Haverstraw NFIP Summary of Policy and Claim Statistics

# Policies	17
# Claims (Losses)	55
Total Loss Payments	\$390,221
# Repetitive Loss Properties (NFIP definition)	0
# Repetitive Loss Properties (FMA definition)	4
# Severe Repetitive Loss Properties	0
# Policies Within the 1 percent Annual Chance Flood Boundary	0

NFIP Definition of Repetitive Loss: The NFIP defines a repetitive loss property as any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period since 1978.

FMA Definition of Repetitive Loss: FEMA’s Flood Mitigation Assistance (FMA) program defines a repetitive loss property as any insurable building that has incurred flood-related damage on two occasions, in which the cost of the repair, on average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event.

Definition of Severe Repetitive Loss: A residential property covered under an NFIP flood insurance policy and: (a) That has at least four NFIP claim payments over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or (b) For which at least two separate claims payments have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building. At least two of the claims must have occurred within any 10-year period, more than 10 days apart.

Source: FEMA, December 2023

Note: RL count may include properties also identified as SRL.

Flood Vulnerability Summary

Table 9.6-10 provides a summary of the NFIP program in Town of Haverstraw.

Table 9.6-10. NFIP Summary

NFIP Topic	Comments
Flood Vulnerability Summary	
Describe areas prone to flooding in your jurisdiction.	According to the 2014 FEMA Flood Insurance Study, the Town of Haverstraw is presently subject to flooding in areas adjacent to Minisceongo Creek and its tributaries in the vicinity of Letchworth Village and Thiells Mount Ivy Road. The Hudson River often causes flooding in Bowling Park. The Mahwah River causes occasional flooding in the vicinity of Deer Mountain Day Camp.
Do you maintain a list of properties that have been damaged by flooding?	Unknown
Do you maintain a list of property owners interested in flood mitigation?	Unknown
How many homeowners and/or business owners are interested in mitigation (elevation or acquisition)?	Unknown
Are any RiskMAP projects currently underway in your jurisdiction? • If so, state what projects are underway.	Unknown
How do you make Substantial Damage determinations?	The Town does not have a Substantial Damage Plan.*
How many Substantial Damage determinations were declared for recent flood events in your jurisdiction?	None
How many properties have been mitigated (elevation or acquisition) in your jurisdiction? • If there are mitigation properties, how were the projects funded?	Unknown

NFIP Topic	Comments
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <ul style="list-style-type: none"> If not, state why. 	Unknown
NFIP Compliance	
What local department is responsible for floodplain management?	Building Department
Are any certified floodplain managers on staff in your jurisdiction?	Unknown
Do you have access to resources to determine possible future flooding conditions from climate change?	Unknown
Does your floodplain management staff need any assistance or training to support its floodplain management program? <ul style="list-style-type: none"> If so, what type of assistance/training is needed? 	Unknown
Provide an explanation of NFIP administration services you provide (e.g., permit review, GIS, education/outreach, inspections, engineering capability)	Permit review, building inspections
How do you determine if proposed development on an existing structure would qualify as a substantial improvement?	Unknown
What are the barriers to running an effective NFIP program in the community, if any?	Unknown
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? <ul style="list-style-type: none"> If so, state the violations. 	Unknown
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	May 12, 2021
What is the local law number or municipal code of your flood damage prevention ordinance?	Chapter 87: Flood Damage Prevention Ordinance
What is the date that your flood damage prevention ordinance was last amended?	2014
Does your floodplain management program meet or exceed minimum requirements? <ul style="list-style-type: none"> If exceeds, in what ways? 	Meets
Are there other local ordinances, plans or programs (e.g., site plan review) that support floodplain management and meeting the NFIP requirements? For instance, does the planning board or zoning board consider efforts to reduce flood risk when reviewing variances such as height restrictions?	Yes
Does your community plan to join the CRS program or is your community interested in improving your CRS classification?	No

*Note: *The Town reported it does not have a process to make substantial damage determinations; however, during this planning process, it was confirmed that substantial damage determination provisions are established in both the adopted NFIP ordinance and adopted building code. This response has not been changed to accurately reflect the tools leveraged by the Town to mitigate risks.*

9.6.5 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to appreciating a jurisdiction’s overall risk to its hazards of concern. Recent and expected future development trends, including major residential/commercial development and major infrastructure development, are summarized in Table 9.6-11 through Table 9.6-13.

Table 9.6-11. Number of Building Permits for New Construction Issued Since the Previous HMP

	New Construction Permits Issued			Total
	Single Family	Multi-Family	Other (commercial, mixed-use, etc.)	
2019				
Total Permits	0	0	0	0
Permits within SFHA	0	0	0	0
2020				
Total Permits	0	0	0	0
Permits within SFHA	0	0	0	0
2021				
Total Permits	0	0	0	0
Permits within SFHA	0	0	0	0
2022				
Total Permits	0	0	0	0
Permits within SFHA	0	0	0	0
2023				
Total Permits	0	0	0	0
Permits within SFHA	0	0	0	0

SFHA = Special Flood Hazard Area (1 percent flood event)

Table 9.6-12. Recent Major Development and Infrastructure from 2018 to Present

Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zone(s)*	Description / Status of Development
No major development or infrastructure reported.					

* Only location-specific hazard zones or vulnerabilities identified.

Table 9.6-13. Known or Anticipated Major Development and Infrastructure in the Next Five Years

Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zone(s)*	Description / Status of Development
No anticipated major development or infrastructure reported.					

* Only location-specific hazard zones or vulnerabilities identified.

9.6.6 Jurisdictional Risk Assessment

The hazard profiles in Volume I provide detailed information regarding each planning partner’s vulnerability to the identified hazards, including summaries of the Town of Haverstraw’s risk assessment results and data used to determine the hazard ranking. Key local risk assessment information is presented below.

Hazard Area

Hazard area maps provided below illustrate the probable hazard areas impacted within the Town are shown in Figure 9.6-1 through Figure 9.6-2. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps are provided only for hazards that can be identified clearly using mapping techniques and technologies and for which Haverstraw has significant exposure. The maps show the location of potential new development, where available.

Figure 9.6-1. Town of Haverstraw Flood and Dam Inundation Hazard Area Extent and Location

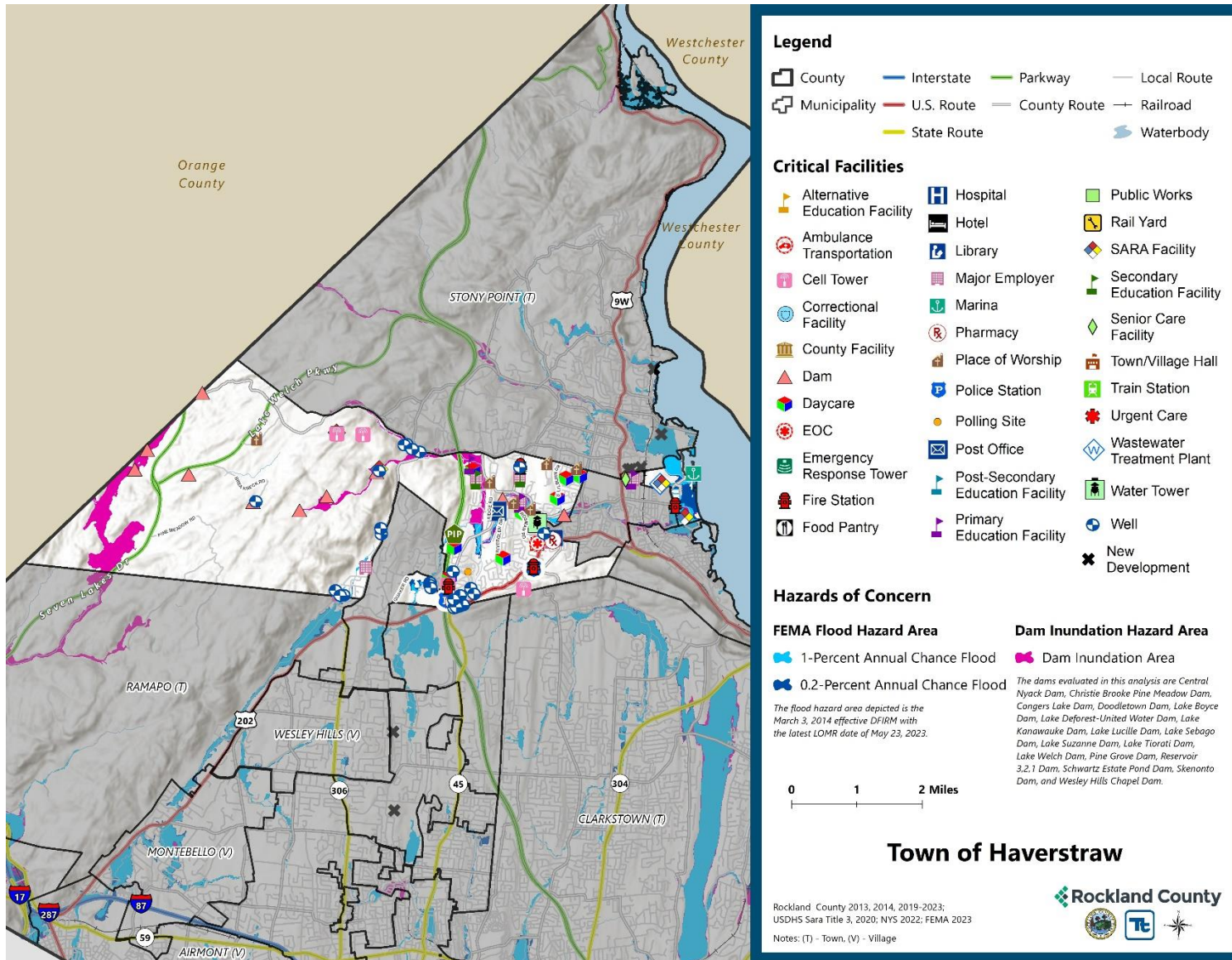
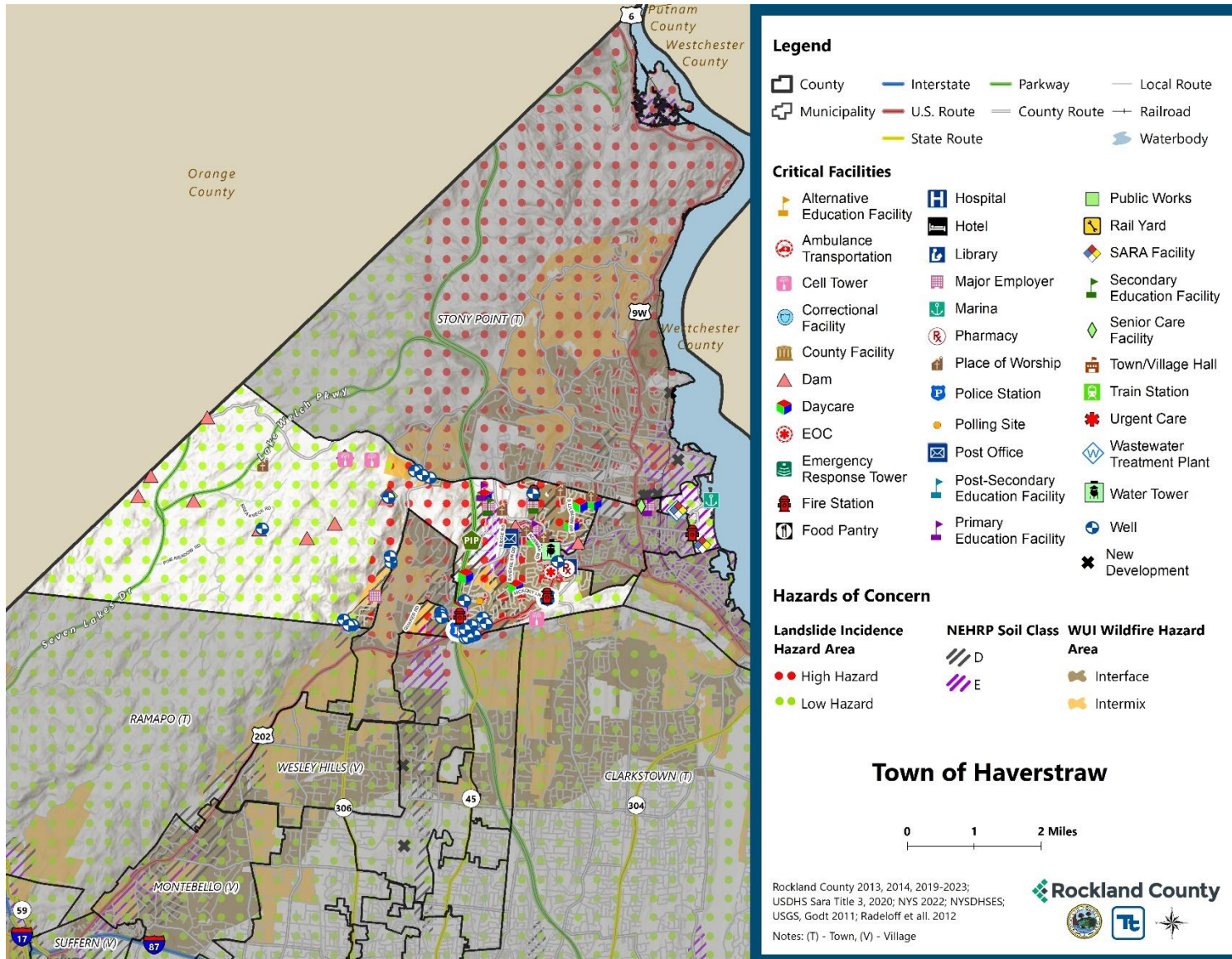


Figure 9.6-2. Town of Haverstraw Landslide, Earthquake, and Wildfire Hazard Area Extent and Location



Hazard Event History

The history of natural and non-natural hazard events in the Town of Haverstraw is detailed in Volume I, where each hazard profile includes a chronology of historical events that have affected the County and its municipalities. Table 9.6-14 provides details on loss and damage in the Town during hazard events since the last hazard mitigation plan update.

Table 9.6-14. Hazard Event History in the Town of Haverstraw

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Summary of Damage and Losses in the Town
January 20, 2020 - May 11, 2023	New York Covid-19 (3434-EM-NY, 4480-DR-NY)	Yes	The Covid-19 pandemic resulted in nationwide shutdowns, social distancing and masking requirements, and immunization efforts. Since the start of the pandemic, roughly 950 deaths have been reported in Rockland County. The federal Public Health Emergency expired in May 2023 but illness continues to occur as the virus shifts to becoming endemic.	-
April 13, 2020	High Winds		High winds across the county led to downed trees, power outages, closed roads,	\$200,000 in property damage
August 4, 2020	New York Tropical Storm Isaias (4567-DR-NY)	Yes	The center of Isaias passed about 65 miles west of New York City at 3 pm on August 4, 2020. Tropical storm force winds extended well east of the center of circulation. In addition, 1 to 3 inches of rainfall, highest west, were recorded across the county. These types of winds and rainfall across the area resulted in numerous trees and tree limbs being downed, power outages, damages to homes and automobiles, and disruption to transit.	-
August 21-24, 2021	New York Hurricane Henri (3565-EM-NY)	Yes	Rainfall from Tropical Storm Henri resulted in widespread flash flooding across southeastern New York, particularly portions of the Lower Hudson Valley. Rainfall totals generally ranged from 2-5 inches, with this rain coming in addition to the 2-5 inches that fell during the predecessor rainfall event the night before.	-

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Summary of Damage and Losses in the Town
September 1-3, 2021	New York Remnants of Hurricane Ida (3572-EM-NY, 4615-DR-NY)	Yes	Extremely heavy rainfall associated with the remnants of Hurricane Ida overspread southeast New York during the evening of September 1 and continued through the early morning hours of September 2. Rainfall totals ranged from 5-8 inches across much of the region, with much of that rain falling in just a few hours. This resulted in widespread catastrophic flash flooding.	-
July 9-10, 2023	Severe Storm, Flooding		Severe storms and flooding resulted in road closures, including portions of the Palisades Interstate Parkway, throughout Rockland County.	-

EM = Emergency Declaration (FEMA)
 FEMA = Federal Emergency Management Agency
 DR = Major Disaster Declaration (FEMA)
 N/A = Not applicable

Hazard Ranking and Vulnerabilities

The hazard profiles in Volume I have detailed information regarding each planning partner’s vulnerability to the identified hazards. The following summarizes presents key risk assessment results for the Town of Haverstraw.

Hazard Ranking

The participating jurisdictions have differing degrees of vulnerability to the hazards of concern, so each jurisdiction ranked its own degree of risk to each hazard. The community-specific hazard ranking is based on problems and impacts identified by the risk assessment presented in Volume I. The ranking process involves an assessment of the likelihood of occurrence for each hazard; the potential impacts of the hazard on people, property, and the economy; community capabilities to address the hazard; and changing future climate conditions. Haverstraw reviewed the County hazard ranking and individual results to assess the relative risk of the hazards of concern to the community. During the review of the hazard ranking, the Town indicated the following:

- There are no dams or levees in the Town.
- There is improved education related to potential disease outbreaks.
- The Town Hall is now a cooling center. The Town indicated it did not agree with the 2019 Medium ranking but did not provide an alternate preferred ranking. Due to the addition of a cooling center and the Town’s response, the hazard ranking has been revised to Low.
- There are better stabilization practices to mitigate potential landslides. The Town indicated it did not agree with the 2019 High ranking but did not provide an alternate preferred ranking. Due to the addition of a improved practices and the Town’s response, the hazard ranking has been revised to Medium.

Table 9.6-15 shows Haverstraw’s final hazard rankings for identified hazards of concern. Mitigation action development uses the ranking to target hazards with the highest risk.

Table 9.6-15. Hazard Ranking

Hazard	Rank
Dam Failure	Low
Disease Outbreak	Medium
Drought	Medium
Earthquake	Medium
Extreme Temperature	Low
Flood	Medium
Landslide	Medium
Severe Weather	High
Severe Winter Weather	High
Wildfire	Medium

Note: The scale is based on the hazard rankings established in Volume I, modified as appropriate based on review by the jurisdiction

Critical Facilities

Table 9.6-16 identifies critical facilities in the community located in the 1-percent and 0.2-percent annual chance floodplains.

Table 9.6-16. Critical Facilities Flood Vulnerability

Name	Type	Exposure		Addressed by Proposed Action	Already Protected to 0.2 percent Flood Level (describe protections)
		1 percent Event	0.2 percent Event		
Bowline Point Generating Station	SARA Facility	Yes	Yes	2024-HaverstrawT-05	No
Garnerville Dam	Dam	Yes	Yes	2024-HaverstrawT-05	No
Langshur Dam	Dam	Yes	Yes	2024-HaverstrawT-05	No
Camp Ramaquois Well #2	Well	Yes	Yes	2024-HaverstrawT-05	No

Source: Rockland County 2023, FEMA

In addition to critical facilities that are exposed to flooding, the following high hazard dams are located in or could impact Town of Haverstraw:

- Garnerville Dam

Identified Issues

After review of the Town of Haverstraw’s hazard event history, hazard rankings, hazard location, and current capabilities, the Town of Haverstraw identified the following vulnerabilities within their community:

- Town residents are not aware of hazards that they are exposed to and what can be done to further protect themselves and their properties from damages. The hazards that the Town is at risk for include dam/levee failure, disease outbreak, drought, earthquake, extreme temperature, flood, landslide, severe storm, severe winter storm, and wildfire. The Town experiences flooding along the Minisceongo Creek and its tributaries due to a combination poor drainage infrastructure and streamflow from severe storm and severe winter storm. In 2019, the Town completed a Flood Mitigation and Resilience Report that identified two High Risk Areas due to the Minisceongo Creek. Rockland County has jurisdiction over the

Minisceongo, requiring coordination with the Town. Access to the Highway Garage becomes difficult during flooding events due to increased severe storms and the. The Town has completed approximately 25 percent of this project that allows emergency access road behind the Highway Garage.

- The Town Golf Course frequently becomes flooded and inundated when it rains due to poor drainage.
- The following critical facilities are located floodplain and identified as vulnerable to the flood hazard from severe storm events: Camp Ramaquois, Well #2, O&R Bowline Substation, and Bowline Point Gas Power Plant. The Town does not have jurisdiction over these facilities to mitigate.
- The David B Roche Fire Company building is located in the floodplain and identified as vulnerable to the flood and severe storm hazards. This building is owned by the Fire District; the Town does not have jurisdiction to mitigate the structure.
- The shoreline along Bowline Park is eroding which is giving way to flood events due to severe storms.
- The municipality does not have a Substantial Damage Management Ordinance, nor do they have a standard process in place when conducting substantial damage determinations. The Town has substantial damage determination provisions in both the adopted NFIP ordinance and adopted building code, but staff are unaware of these provisions and do not leverage them.

**This issue was identified as a specific area of concern based on resident response to the Rockland County Hazard Mitigation Citizen survey.*

9.6.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritizes actions to address over the next five years.

Past Mitigation Initiative Status

Table 9.6-17 indicates progress on the Town's mitigation strategy identified in the 2019 HMP. Actions that are still recommended but not completed or that are in progress are carried forward and combined with new actions as part of the mitigation strategy for this plan update. Previous actions that are now ongoing programs and capabilities are indicated as such and are presented in the capability assessment earlier in this annex.

Additional Mitigation Efforts

In addition to the mitigation initiatives completed in Table 9.6-17, Town of Haverstraw identified the following mitigation efforts completed since the last HMP:

- Completion of new Grassy Point Bridge over Minisceongo Creek in November 2023

Table 9.6-17. Status of Previous Mitigation Actions

Project Number	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Action Review 1. Status (In Progress, Ongoing Capability, No Progress, Complete) 2. Provide a narrative to describe progress or obstacles that have prevented implementation	Next Steps 1. Project to be included in the 2024 HMP or Discontinue 2. If including action in the 2024 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
TH-1	Outreach Campaign	All Hazards	Town of Haverstraw, Rockland County	Residents may be unaware of how to prepare themselves for natural hazards. Enhance outreach to promote further public education and awareness in the community with respect to natural hazard risk management.	1. Ongoing Capability 2. N/A	1. Include 2. Revised problem description and solution. 3. N/A
TH-2	Shoreline Mitigation at Bowline Point Park	Flood, Severe Storm	Town of Haverstraw, NYS DEC & Army Corp	The shoreline at Bowline Point Park has become eroded. Construct two jetties on the riverside of Bowline Point Park to mitigate the eroding of the shoreline.	1. In progress 2. Received \$100,000 in Community Block Group Development funding in 2015.	1. Include 2. N/A 3. In process of getting environmental approvals.
TH-3	Minisceongo Creek Maintenance	Flood, Severe Storm	Rockland County Drainage Agency, Town of Haverstraw and West Haverstraw	The Minisceongo Creek frequently floods. Perform flood remediation efforts including routine stream maintenance and dredging.	1. No Progress 2. A Resilient NY report was completed for the Minisceongo Creek in 2019. It identified two High Risk Areas within the Town.	1. Discontinue 2. N/A 3. Consolidate with old actions (TH-4 and TH-7) to a single new strategy (2024-HaverstrawT-02).
TH-4	Minisceongo Creek Bank Stabilization	Flood, Severe Storm	Highway Dept., Rockland County	The Minisceongo Creek Bank has eroded due to continued floods. Stabilize banks to reduce future erosion, narrowing of the streambed, and resulting flooding along Minisceongo.	1. No Progress 2. A Resilient NY report was completed for the Minisceongo Creek in 2019. It identified two High Risk Areas within the Town.	1. Discontinue 2. N/A 3. Consolidate with old actions (TH-3 and TH-7) to a single new strategy (2024-HaverstrawT-02).

Project Number	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Action Review 1. Status (In Progress, Ongoing Capability, No Progress, Complete) 2. Provide a narrative to describe progress or obstacles that have prevented implementation	Next Steps 1. Project to be included in the 2024 HMP or Discontinue 2. If including action in the 2024 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
TH-5	Highway Garage Emergency Access Road	Flood, Severe Storm	Highway Dept., Private Landowner	Access to the Highway Garage becomes difficult during flooding events. Construct emergency access road in back of Highway Garage up to Creekview Drive.	1. In Progress 2. About 25 percent complete.	1. Include 2. N/A 3. N/A
TH-6	Golf Course Drainage Improvements	Flood	Town Golf Dept.	The Town Golf Course frequently becomes flooded in rains due to poor drainage. Drill well(s) and install storage/pump system to correct drainage on golf course fairway number 13 and 16.	1. No Progress 2. N/A	1. Include 2. N/A 3. N/A
TH-7	Maintenance of Tributary	Flood, Severe Storm	Town of Haverstraw MS4 administrator	A tributary of the Minisceongo Creek floods the area due to poor drainage. Improve drainage and stormwater control system near the tributary.	1. No Progress 2. A Resilient NY report was completed for the Minisceongo Creek in 2019. It identified two High Risk Areas within the Town.	1. Discontinue 2. N/A 3. Consolidate with old actions (TH-3 and TH-4) to a single new strategy (2024-HaverstrawT-02).

Project Number	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Action Review 1. Status (In Progress, Ongoing Capability, No Progress, Complete) 2. Provide a narrative to describe progress or obstacles that have prevented implementation	Next Steps 1. Project to be included in the 2024 HMP or Discontinue 2. If including action in the 2024 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
TH-8	Critical Facilities in Floodplain	Flood	Private Property Owners with Town of Haverstraw support	<p>The following critical facilities are located floodplain and identified as vulnerable to the flood hazard: Camp Ramaquois, Well #2, O&R Bowline Substation, and Bowline Point Gas Power Plant. The Town does not have jurisdiction over these facilities to mitigate.</p> <p>The Town will work with the Village and County to notify the facility manager/operator of these critical facilities regarding their flood vulnerability as identified during the Rockland County HMP update and NYS' requirement to protect to the 500-year flood or worst-case scenario. The Town will provide the owners information regarding grant options for funding to implement their mitigation action.</p>	<p>1. No Progress 2. N/A</p>	<p>1. Include 2. N/A 3. N/A</p>

Project Number	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Action Review 1. Status (In Progress, Ongoing Capability, No Progress, Complete) 2. Provide a narrative to describe progress or obstacles that have prevented implementation	Next Steps 1. Project to be included in the 2024 HMP or Discontinue 2. If including action in the 2024 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
TH-9	Fire Company Building in Floodplain	Flood	Fire District, supported by Town	<p>The David B Roche Fire Company building is located in the floodplain and identified as vulnerable to the flood hazard. This building is owned by the Fire District; the Town does not have jurisdiction to mitigate the structure.</p> <p>The Town will work with the Fire District to notify them of the building's vulnerability and NYS' requirement to protect the structure to the 500-year or worst-case scenario. The Town will provide the Fire District options for grant funding to implement their selected mitigation action.</p>	<p>1. No Progress 2. N/A</p>	<p>1. Include 2. N/A 3. N/A</p>

Proposed Hazard Mitigation Initiatives for the HMP Update

Haverstraw participated in the mitigation strategy workshop for this HMP to identify appropriate actions to include in a local hazard mitigation strategy. Its comprehensive consideration of all possible activities to address hazards of concern included review of the following FEMA documents:

- FEMA 551 “Selecting Appropriate Mitigation Measures for Floodprone Structures” (March 2007)
- FEMA “Mitigation Ideas—A Resource for Reducing Risk to Natural Hazards” (January 2013).

The action worksheets included at the end of this annex list the mitigation actions that Haverstraw would like to pursue in the future to reduce the effects of hazards. The actions are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in the Town’s priorities.

Table 9.6-18 indicates the range of proposed mitigation action categories. The four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table to further demonstrate the wide range of activities and mitigation measures selected.

Volume I identifies 14 evaluation criteria for prioritizing the mitigation actions. To assist with rating each mitigation action as high, medium, or low priority, a numeric rank is assigned (-1, 0, or 1) for each of the evaluation criteria. Table 2-19 provides a summary of the prioritization of all proposed mitigation actions for the HMP update.

Table 9.6-18. Analysis of Mitigation Actions by Hazard and Category

Hazard	Actions That Address the Hazard, by Action Category									
	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
Dam Failure	1	-	-	1	1	-	1	-	-	1
Disease Outbreak	-	-	-	1	-	-	1	-	-	-
Drought	1	-	-	1	1	-	1	-	-	1
Earthquake	1	-	-	1	1	-	1	-	-	1
Extreme Temperature	1	-	-	1	1	-	1	-	-	1
Flood	1	4	1	2	2	2	3	-	1	2
Landslide	1	-	-	1	1	-	1	-	-	1
Severe Weather	1	4	1	2	2	2	3	-	1	2
Severe Winter Weather	1	1	1	1	2	-	1	1	-	1
Wildfire	1	-	-	1	1	-	1	-	-	1

Local Plans and Regulations (LPR)—These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.

Structure and Infrastructure Project (SIP)—These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct structures to reduce the impact of hazards.

Natural Systems Protection (NSP)—These are actions that minimize damage and losses and preserve or restore the functions of natural systems.

Education and Awareness Programs (EAP)—These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

Preventative Measures (PR)—Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.

Property Protection (PP)—These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.

Public Information (PI)—Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.

Natural Resource Protection (NR)—Actions that minimize hazard loss and preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Structural Flood Control Projects (SP)—Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

Emergency Services (ES)—Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Table 9.6-19. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Political	Legal	Fiscal	Environmental	Social Vulnerability	Administrative	Hazards of Concern	Climate Change	Timeline	Community Lifelines	Other Community Objectives	Total	High / Medium / Low
2024-HaverstrawT-01	Public Awareness and Outreach	1	0	1	0	1	1	0	1	1	1	0	1	0	1	9	Medium
2024-HaverstrawT-02	Minisceongo Creek Flood Mitigation	1	1	1	0	-1	-1	1	0	1	1	1	1	1	1	11	High
2024-HaverstrawT-03	Highway Garage Emergency Access Route	1	1	1	1	0	1	0	1	1	1	0	1	1	1	11	High
2024-HaverstrawT-04	Town Golf Course Drainage Improvements	0	1	1	0	1	1	0	0	1	1	0	0	0	0	6	Low
2024-HaverstrawT-05	Critical Facilities in the Floodplain	1	1	1	0	0	1	0	0	1	1	1	0	1	0	8	Medium
2024-HaverstrawT-06	Roche Fire Company Building Flood Mitigation	1	1	1	0	0	0	0	0	1	1	0	1	1	0	7	Medium
2024-HaverstrawT-07	Bowline Park Shoreline Stabilization	1	1	1	0	0	0	1	0	1	1	1	0	0	0	7	Medium
2024-HaverstrawT-08	Substantial Damage Determination Trainings and Resources	1	1	1	0	1	1	0	0	1	1	1	1	1	1	11	High

Note: Volume I, Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions. Low (0-6), Medium (7-10), High (11-14).

Action 2024-HaverstrawT-01. Public Awareness and Outreach

Action Name:	2024-HaverstrawT-01. Public Awareness and Outreach		
Description of the Problem:	Town residents are not aware of hazards that they are exposed to and what can be done to further protect themselves and their properties from damages. The hazards that the Town is at risk for include dam/levee failure, disease outbreak, drought, earthquake, extreme temperature, flood, landslide, severe storm, severe winter storm, and wildfire.		
Hazard(s) of Concern: <i>Check all that apply</i>	<input checked="" type="checkbox"/> Dam/Levee Failure <input checked="" type="checkbox"/> Disease Outbreak <input checked="" type="checkbox"/> Drought <input checked="" type="checkbox"/> Earthquake <input checked="" type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input checked="" type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input checked="" type="checkbox"/> Severe Winter Storm <input checked="" type="checkbox"/> Wildfire	
Description of the Solution:	The Town will improve public awareness on hazards, prevention, and mitigation through increased outreach, including but not limited to periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/TV announcements, etc.; and incorporating as much free information as possible from the FEMA publications warehouse and other appropriate sources on the Town website.		
Lead Agency:	Town Supervisor		
Supporting Agencies:	Rockland County Office of Emergency Services		
Estimated Cost:	Low (< \$10,000)		
Potential Funding Sources:	Operating Budget		
Implementation Timeline:	Short-term (< 5 years)		
Goals Met:	1, 3		
Benefits:	This action educated Town residents.		
Mitigation Action Type: <i>Check all that apply</i>	<input type="checkbox"/> Local Plans and Regulations (LPR) <input type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input checked="" type="checkbox"/> Education and Awareness Programs (EAP)	
CRS Category: <i>Check all that apply</i>	<input type="checkbox"/> Preventative Measures (PR) <input type="checkbox"/> Property Protection (PP) <input checked="" type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input type="checkbox"/> Emergency Services (ES)	
Impact on Socially Vulnerable Populations:	This initiative aims to reach populations that are low-income, do not speak English, and have limited internet access or technical capabilities.		
Impact on Critical Facilities/Lifelines:	N/A		
Impact on Capabilities	This action strengthens the Town education and outreach capabilities.		
Impact on Future Development:	N/A		
Climate Change Considerations:	Climate change is leading to an increase in frequency and intensity of precipitation events.		
Priority: <i>Check one</i>	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Low

Alternatives	Action	Evaluation
	No action	Problem persists
	Update website without linking to other resources	Would not reach those with limited internet or technology; not preferred

Action 2024-HaverstrawT-02. Minisceongo Creek Flood Mitigation

Action Name:	2024-HaverstrawT-02. Minisceongo Creek Flood Mitigation	
Description of the Problem:	The Town experiences flooding along the Minisceongo Creek and its tributaries due to a combination poor drainage infrastructure and streamflow from severe storm and severe winter storm. In 2019, the Town completed a Flood Mitigation and Resilience Report that identified two High Risk Areas due to the Minisceongo Creek. Rockland County has jurisdiction over the Minisceongo, requiring coordination with the Town.	
Hazard(s) of Concern: <i>Check all that apply</i>	<input type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input type="checkbox"/> Drought <input type="checkbox"/> Earthquake <input type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input checked="" type="checkbox"/> Severe Winter Storm <input type="checkbox"/> Wildfire
Description of the Solution:	The Town will implement stream maintenance and consider dredging to reduce potential flooding. Stabilize banks to reduce future erosion, narrowing of the streambed, and resulting flooding along Minesceongo. Improve and maintain the County’s and Town’s stormwater and drainage infrastructure along and near the waterway.	
Lead Agency:	Rockland County Drainage Agency	
Supporting Agencies:	Town Highway Department, MS4 Administrator	
Estimated Cost:	High (> \$100,000)	
Potential Funding Sources:	FEMA FMA, BRIC and HMGP, CDBG, NYS DHSES, NYS DOT, Town Operating Budget	
Implementation Timeline:	Ongoing	
Goals Met:	1	
Benefits:	This action strengthens the Town’s ability to respond to flood events.	
Mitigation Action Type: <i>Check all that apply</i>	<input type="checkbox"/> Local Plans and Regulations (LPR) <input checked="" type="checkbox"/> Structure and Infrastructure Project (SIP)	<input checked="" type="checkbox"/> Natural Systems Protection (NSP) <input type="checkbox"/> Education and Awareness Programs (EAP)
CRS Category: <i>Check all that apply</i>	<input checked="" type="checkbox"/> Preventative Measures (PR) <input type="checkbox"/> Property Protection (PP) <input type="checkbox"/> Public Information (PI)	<input checked="" type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input type="checkbox"/> Emergency Services (ES)
Impact on Socially Vulnerable Populations:	N/A	
Impact on Critical Facilities/Lifelines:	N/A	
Impact on Capabilities	This action strengthens the Town’s ability to monitor flooding.	
Impact on Future Development:	Future development near the waterway will face lower exposure and vulnerability to flooding, particularly flash flooding.	

Climate Change Considerations:	Regular maintenance and oversight of the Minisceongo may allow the County and Town to better anticipate growing risks and needs due to increased and more intense precipitation.		
Priority: <i>Check one</i>	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Medium	<input type="checkbox"/> Low
Alternatives	Action		Evaluation
	No action		Problem persists
	Redirect waterway		Not feasible

Action 2024-HaverstrawT-03. Highway Garage Emergency Access Route

Action Name:	2024-HaverstrawT-03. Highway Garage Emergency Access Route	
Description of the Problem:	Access to the Highway Garage becomes difficult during flooding events due to increased severe storms and the Town has completed approximately 25 percent of a project that allows emergency access road behind the Highway Garage.	
Hazard(s) of Concern: <i>Check all that apply</i>	<input type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input type="checkbox"/> Drought <input type="checkbox"/> Earthquake <input type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input type="checkbox"/> Severe Winter Storm <input type="checkbox"/> Wildfire
Description of the Solution:	The Town will continue to construct emergency access road behind Highway Garage up to Creekview Drive.	
Lead Agency:	Town	
Supporting Agencies:	Town Board	
Estimated Cost:	High (> \$100,000)	
Potential Funding Sources:	Town Operating Budget, NYS DOT, FEMA	
Implementation Timeline:	Short (<5 years)	
Goals Met:	1	
Benefits:	This action allows emergency access to the Highway Garage.	
Mitigation Action Type: <i>Check all that apply</i>	<input type="checkbox"/> Local Plans and Regulations (LPR) <input checked="" type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input type="checkbox"/> Education and Awareness Programs (EAP)
CRS Category: <i>Check all that apply</i>	<input type="checkbox"/> Preventative Measures (PR) <input type="checkbox"/> Property Protection (PP) <input type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input checked="" type="checkbox"/> Emergency Services (ES)
Impact on Socially Vulnerable Populations:	N/A	
Impact on Critical Facilities/Lifelines:	Aims to keep roadways passable during flooding events.	
Impact on Capabilities	this action strengthens the Town’s ability to handle flood events.	

Impact on Future Development:	Nearby development may face reduced flood impacts.		
Climate Change Considerations:	Climate change is leading to an increase in frequency and intensity of precipitation events, which leads to an increase in flooding.		
Priority: Check one	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Medium	<input type="checkbox"/> Low
Alternatives	Action		Evaluation
	No action		Problem persists
	Relocate Highway Garage		Not feasible

Action 2024-HaverstrawT-04. Town Golf Course Drainage Improvements

Action Name:	2024-HaverstrawT-04. Town Golf Course Drainage Improvements		
Description of the Problem:	The Town Golf Course frequently becomes flooded and inundated when it rains due to poor drainage.		
Hazard(s) of Concern: Check all that apply	<input type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input type="checkbox"/> Drought <input type="checkbox"/> Earthquake <input type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input type="checkbox"/> Severe Winter Storm <input type="checkbox"/> Wildfire	
Description of the Solution:	The Town will drill well(s) and install storage/pump system to correct drainage on golf course fairway number 13 and 16.		
Lead Agency:	Town Board		
Supporting Agencies:	Golf Course		
Estimated Cost:	High (> \$100,000)		
Potential Funding Sources:	Town Operating Budget		
Implementation Timeline:	Depends on funding		
Goals Met:	2		
Benefits:	The Town will experience less flooding in the Town Gold Course.		
Mitigation Action Type: Check all that apply	<input type="checkbox"/> Local Plans and Regulations (LPR) <input checked="" type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input type="checkbox"/> Education and Awareness Programs (EAP)	
CRS Category: Check all that apply	<input type="checkbox"/> Preventative Measures (PR) <input checked="" type="checkbox"/> Property Protection (PP) <input type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input type="checkbox"/> Emergency Services (ES)	
Impact on Socially Vulnerable Populations:	N/A		
Impact on Critical Facilities/Lifelines:	N/A		
Impact on Capabilities	The Town will increase their flood capabilities.		

Impact on Future Development:	N/A		
Climate Change Considerations:	Climate change is leading to an increase in frequency and intensity of precipitation events, which leads to an increase in flooding.		
Priority: <i>Check one</i>	<input type="checkbox"/> High	<input type="checkbox"/> Medium	<input checked="" type="checkbox"/> Low
Alternatives	Action		Evaluation
	Do nothing		Problem persists
	Elevate golf course		Not feasible

Action 2024-HaverstrawT-05. Critical Facilities in the Floodplain

Action Name:	2024- HaverstrawT-05. Critical Facilities in the Floodplain	
Description of the Problem:	The following critical facilities are located floodplain and identified as vulnerable to the flood hazard from severe storm events: Camp Ramaquois, Well #2, O&R Bowline Substation, and Bowline Point Gas Power Plant. The Town does not have jurisdiction over these facilities to mitigate.	
Hazard(s) of Concern: <i>Check all that apply</i>	<input type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input type="checkbox"/> Drought <input type="checkbox"/> Earthquake <input type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input type="checkbox"/> Severe Winter Storm <input type="checkbox"/> Wildfire
Description of the Solution:	The Town will work with the County to notify the facility manager/operator of these critical facilities regarding their flood vulnerability as identified during the Rockland County HMP update and NYS' requirement to protect to the 500-year flood or worst-case scenario. The Town will provide the owners information regarding grant options for funding to implement their mitigation action. Potential feasible projects may include the following: elevations, dry floodproofing, backup power supply, retrofits, or relocation. The private owners will need to determine the most cost effective and feasible mitigation action for these facilities.	
Lead Agency:	Property Owners	
Supporting Agencies:	Town Building Department	
Estimated Cost:	Low (< \$10,000)	
Potential Funding Sources:	Town Operating Budget	
Implementation Timeline:	Short-term (< 5 years)	
Goals Met:	2	
Benefits:	Low (> \$10,000)	
Mitigation Action Type: <i>Check all that apply</i>	<input type="checkbox"/> Local Plans and Regulations (LPR) <input type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input checked="" type="checkbox"/> Education and Awareness Programs (EAP)
CRS Category: <i>Check all that apply</i>	<input type="checkbox"/> Preventative Measures (PR) <input type="checkbox"/> Property Protection (PP) <input checked="" type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input type="checkbox"/> Emergency Services (ES)
Impact on Socially Vulnerable Populations:	N/A	
Impact on Critical Facilities/Lifelines:	This project aims to ensure the accessibility of roadways during flooding events and ensures access to emergency routes and critical facilities.	
Impact on Capabilities:	N/A	

Impact on Future Development:	This project can help mitigate potential damage along any affected roadways.		
Climate Change Considerations:	This action strengthens the Village’s capabilities in protecting critical infrastructure.		
Priority: <i>Check one</i>	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Low
Alternatives	Action	Evaluation	
	No action	Problem persists	
	Town completes mitigation actions in inundation area	Does not reduce or eliminate risk	

Action 2024-HaverstrawT-06. Roche Fire Company Building Flood Mitigation

Action Name:	2024-HaverstrawT-06. Roche Fire Company Building Flood Mitigation	
Description of the Problem:	The David B Roche Fire Company building is located in the floodplain and identified as vulnerable to the flood and severe storm hazards. This building is owned by the Fire District; the Town does not have jurisdiction to mitigate the structure.	
Hazard(s) of Concern: <i>Check all that apply</i>	<input type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input type="checkbox"/> Drought <input type="checkbox"/> Earthquake <input type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input type="checkbox"/> Severe Winter Storm <input type="checkbox"/> Wildfire
Description of the Solution:	The Town will work with the Fire District to notify them of the building's vulnerability and NYS' requirement to protect the structure to the 500-year or worst-case scenario. The Town will provide the Fire District options for grant funding to implement their selected mitigation action. Potential feasible projects may include the following. The Fire District will need to determine which is the cost-effective and feasible mitigation action for this building.	
Lead Agency:	Fire District	
Supporting Agencies:	Town	
Estimated Cost:	Low (< \$10,000)	
Potential Funding Sources:	Town Operating Budget	
Implementation Timeline:	Short-term (<5 years)	
Goals Met:	2	
Benefits:	The Town will experience reduced flooding at the Roche Fire Company.	
Mitigation Action Type: <i>Check all that apply</i>	<input type="checkbox"/> Local Plans and Regulations (LPR) <input type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input checked="" type="checkbox"/> Education and Awareness Programs (EAP)
CRS Category: <i>Check all that apply</i>	<input type="checkbox"/> Preventative Measures (PR) <input type="checkbox"/> Property Protection (PP) <input checked="" type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input type="checkbox"/> Emergency Services (ES)
Impact on Socially Vulnerable Populations:	N/A	
Impact on Critical Facilities/Lifelines:	This project aims to ensure the functionality and access the building during flooding events.	
Impact on Capabilities	It ensures that the Fire District can fulfill its duties during a flooding event.	

Impact on Future Development:	This project can help mitigate potential damage near the building.		
Climate Change Considerations:	This action strengthens the Village’s capabilities in protecting critical infrastructure.		
Priority: <i>Check one</i>	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Low
Alternatives	Action	Evaluation	
	Do nothing	Problem persists	
	Elevate utilities	Does not eliminate risk	
	Identify alternate space to store trucks/equipment out of floodplain	Increases response time	

Action 2024-HaverstrawT-07. Bowline Park Shoreline Stabilization

Action Name:	2024-HaverstrawT-07. Bowline Park Shoreline Stabilization	
Description of the Problem:	The shoreline along Bowline Park is eroding which is giving way to flood events due to severe storms.	
Hazard(s) of Concern: <i>Check all that apply</i>	<input type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input type="checkbox"/> Drought <input type="checkbox"/> Earthquake <input type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input type="checkbox"/> Severe Winter Storm <input type="checkbox"/> Wildfire
Description of the Solution:	The Town will armor the shoreline and construct two additional jetties on the riverside of Bowline Point Park to secure and stabilize the shoreline. This project is already in progress. The Town is in the process of getting environmental approvals.	
Lead Agency:	NYS DEC & US Army Corps of Engineers	
Supporting Agencies:	Town	
Estimated Cost:	High (> \$100,000)	
Potential Funding Sources:	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Town Operating Budget	
Implementation Timeline:	Long-term (>5 years)	
Goals Met:	2	
Benefits:	This action reduces flooding within the Town.	
Mitigation Action Type: <i>Check all that apply</i>	<input type="checkbox"/> Local Plans and Regulations (LPR) <input checked="" type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input type="checkbox"/> Education and Awareness Programs (EAP)
CRS Category: <i>Check all that apply</i>	<input type="checkbox"/> Preventative Measures (PR) <input checked="" type="checkbox"/> Property Protection (PP) <input type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input checked="" type="checkbox"/> Structural Flood Control Projects (SP) <input type="checkbox"/> Emergency Services (ES)
Impact on Socially Vulnerable Populations:	N/A	
Impact on Critical Facilities/Lifelines:	N/A	

Impact on Capabilities	This action reduces risk from flooding.		
Impact on Future Development:	This project can help mitigate potential damage near the shoreline or surrounding areas.		
Climate Change Considerations:	This project may help the park be more able to withstand potential damage from more frequent and intense precipitation events.		
Priority: Check one	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Medium	<input type="checkbox"/> Low
Alternatives	Action		Evaluation
	Do nothing		Problem persists
	Enhance existing jetties		Uneven shoreline protection

Action 2024- HaverstrawT-08. Substantial Damage Determination Training and Resources

Action Name:	Action 2024- HaverstrawT-08. Substantial Damage Determination Training and Resources		
Description of the Problem:	The municipality does not have a Substantial Damage Management Ordinance, nor do they have a standard process in place when conducting substantial damage determinations. The Town has substantial damage determination provisions in both the adopted NFIP ordinance and adopted building code, but staff are unaware of these provisions and do not leverage them.		
Hazard(s) of Concern: Check all that apply	<input checked="" type="checkbox"/> Dam/Levee Failure <input type="checkbox"/> Disease Outbreak <input checked="" type="checkbox"/> Drought <input checked="" type="checkbox"/> Earthquake <input checked="" type="checkbox"/> Extreme Temperature	<input checked="" type="checkbox"/> Flood <input checked="" type="checkbox"/> Landslide <input checked="" type="checkbox"/> Severe Storm <input checked="" type="checkbox"/> Severe Winter Storm <input checked="" type="checkbox"/> Wildfire	
Description of the Solution:	<p>The municipality will develop a Substantial Damage Management Plan, following the six-step planning process in 2021 Developing a Substantial Damage Management Plan (https://crsresources.org/files/500/developing_subst_damage_mgmt_plan.pdf). This plan will outline responsibilities for Substantial Damage determinations, determining market value, and permit approval processes following a disaster event.</p> <p>The municipality will also take part in workshops and training sessions offered by NYSDEC to train staff on the existing provisions in the NFIP ordinance and building code.</p>		
Lead Agency:	Floodplain Administrator		
Supporting Agencies:	Building Department, Planning Board		
Estimated Cost:	Low		
Potential Funding Sources:	Municipal budget		
Implementation Timeline:	Within 5 years to develop the plan; ongoing to maintain and update the plan		
Goals Met:	2, 5, 7		
Benefits:	This plan will provide a process in making Substantial Damage Determinations and allow the municipality to make these determinations and meet NFIP requirements more quickly.		

Mitigation Action Type: <i>Check all that apply</i>	<input checked="" type="checkbox"/> Local Plans and Regulations (LPR) <input type="checkbox"/> Structure and Infrastructure Project (SIP)	<input type="checkbox"/> Natural Systems Protection (NSP) <input type="checkbox"/> Education and Awareness Programs (EAP)
CRS Category: <i>Check all that apply</i>	<input checked="" type="checkbox"/> Preventative Measures (PR) <input type="checkbox"/> Property Protection (PP) <input type="checkbox"/> Public Information (PI)	<input type="checkbox"/> Natural Resource Protection (NR) <input type="checkbox"/> Structural Flood Control Projects (SP) <input checked="" type="checkbox"/> Emergency Services (ES)
Impact on Socially Vulnerable Populations:	Substantially damaged structures are required to be rebuilt to be compliance with current codes. Socially vulnerable populations may not have the financial means to make these improvements. This action may allow for the identification of potential resources to address substantial damages to structures owned by socially vulnerable populations.	
Impact on Critical Facilities/Lifelines:	A Substantial Damage Management Plan would include all critical facilities and lifelines in the municipality.	
Impact on Capabilities:	This action improves disaster recovery capabilities.	
Impact on Future Development:	A Substantial Damage Management Plan would include all existing, current, and future development in the municipality.	
Climate Change Considerations:	Climate change is likely to increase the intensity and frequency of many climate related disaster events. This action provides additional planning for disaster recovery.	
Priority: <i>Check one</i>	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Medium <input type="checkbox"/> Low
Alternatives	Action	Evaluation
	No Action	No change
	Rely on state or federal resources following disaster events	Resources may not be available during major widespread events
	Establish MOUs with outside agencies to conduct Substantial Damage Determinations	A plan outlining responsibilities is still necessary to prevent missing important requirements